The INTERLINE

MAGNET

AI REPORT

#2024

Conceptual art by Baris Gencel

Images & art

*The front cover artwork for this publication was designed by **Baris Gencel**, an AI creator who now serves as Group Director for Digital Transformation & Innovation at Lanvin Group. Throughout this report you will find a mixture of traditional photography, art, and illustration, as well as AI-generated elements across all those categories. The Interline will continue to commission artists for all of our downloadable reports, and we endeavour, wherever possible, to use AI tools that are trained on licensed content for which original artists are compensated in some way - although the setup of AI services and the uncertain provenance of AI training data makes this difficult to guarantee.*

INTRODUCING THE AGE OF AI

BY BEN HANSON,
EDITOR-IN-CHIEF, THE INTERLINE

WELCOME TO THE BEGINNING OF OUR JOURNEY TO CHART THE EVOLUTION OF ARTIFICIAL INTELLIGENCE, AND UNDERSTAND ITS PLACE IN FASHION IN 2024 AND BEYOND.

As technology hype waves go, there's only one in recent memory that equals the fervour that's currently swirling around artificial intelligence. And that's the dot com rush and the rise of the internet.

Whether a direct comparison between AI and the web is accurate or useful is honestly beside the point: as a business you simply need an AI strategy in 2024 the same way you needed a web strategy in the late 1990s.

Which is to say that it feels, today, like everyone is demanding an immediate answer from you, to an evolving question where the end state is essentially impossible to predict.

Try to think about it like this: without the benefit of the hindsight we all now have, would you have been able to forecast when, where, and how deeply the fledgling internet was going to change our personal and professional lives? Would I?

Could anyone have really seen, looking at a loose cohort of scrappy startups and scientists, how a synergy of software, hardware, protocol and infrastructure would unlock everything from remote working and streaming media to the gig economy and progressive web applications?

With any ill-defined question with a short timeline for responding, it's extremely difficult to tell, in the current moment, whether your developing answer is heading in the right direction or not. Are you doing the right thing with AI here and now, considering how important it could eventually become? Is anyone? And are they doing it by design or by luck?

All the same, just as the word on everyone's lips in my late teens was "online," right now investors, analysts, partners, users, communities, media, lawyers - everyone wants to know where you, as an organisation, stand on AI. And like the frenzy around the web, "waiting and seeing" feels analogous to letting a potentially epoch-defining moment pass you by.

Whatever you do, the market says, you should be working to put AI in it. Not in the future. Today.

And there are, to be clear, a lot of reasons to be amenable to that attitude.

Behind the scenes, in academia, science, and R&D, deep learning, neural networks, narrow models and other techniques that fit under the umbrella of AI have been achieving remarkable things for years. They've beaten the best human minds at even the most combinatorially difficult games and challenges. They've helped decipher burnt and otherwise unreadable ancient scrolls. They've uncovered novel classes of antibiotics. And yes, they've both supplemented and supercharged human workers and, in some cases, they have straight-up replaced people's jobs.

Even before we get to the 2022-onwards explosion of interest in AI, the overall trajectory of machine intelligence as a revolutionary engine of discovery, automation, efficiency and scale was on a quiet but consistent upward curve. There might not have been so many consumer-facing businesses being built on top of it, but AI was doing anything but standing still.

Then generative AI blew the lid off the entire industry - technically and commercially.

After an apparent 100 million people signed up for ChatGPT (a Generative chatbot built on top of a Pre-trained Transformer architecture, hence the acronym) in record time, transformers and diffusion models (the systems behind popular generative image and video models, that create order from noise) quickly became synonymous with "AI" for most people.

Rapidly, both trade and general media were consumed with stories about this new class of AI sparking a revolution in the way we live, work, and create. There had, of course, been chatbots before, but it didn't take long for most of the world to coalesce around the realisation that this time was going to be different.

And equally quickly it became apparent that there was a lot of money to be made from this new category of AI tools - especially for the companies that prove themselves able to successfully read the room, sidestep cultural and ethical pitfalls, and pare down the wild possibility frontiers of large, general-purpose AI models to create focused solutions and applications that will become foundational to people's personal and professional lives.

This is why we have seen - in the space of just 18 months - an entirely new crowd of consumer and enterprise applications being built on top of these new, always-evolving generative AI models. And even established vendors of enterprise platforms and applications have made rapid moves to integrate AI capabilities into their existing solutions where they see opportunities to either change the end user experience or to offer new ways to manipulate, interact with, and surface insights from data.

So the race is on for AI toolmakers in fashion - at a scale and at a pace that reflects a similar transition the wider world is undergoing, whereby AI is breaking free of the confines of dedicated apps and becoming integrated into a wide range of applications, services, devices, and appliances.

If we want any further evidence, from beyond the walls of fashion, that AI is now seen as the next wave of technology as a whole, we needn't look any further than the CEOs of Microsoft and Google describing it as a galvanic, species-level event on the same order as the taming of electricity or fire. It's also certainly noteworthy that 2024 could be the last year where we'll have the option to buy computers, phones, and tablets that are not also billed as "AI devices". And that's without considering the fledgling new category of wearable and ambient AI hardware designed to run small models on-device and then tap into larger ones on the cloud.

This is more than just a theoretical milestone when we think about how fashion uses its top-end computing hardware. Today, the most acute demand for power comes from 3D and digital product creation teams, who need dedicated GPUs (graphics processing units) for local simulation and rendering. Are these same teams about to start clamouring for new hardware with both GPUs and NPUs (neural processing units) to run the AI assistants designed to help them with inspiration, material choices, pattern development and so on?

It's precisely this line of thinking that places me squarely in the "AI optimist" camp, because of the simple rarity of innovation happening on this kind of scale. Perhaps coincidentally, the introduction of the first GPU happened in the late 1990s - around the time the dot com boom was at its apex. And the changes brought about by that introduction of task-specific hardware are hard to overstate, from the predictable (huge leaps in real-time computer graphics) to the unintended (cryptocurrency mining).

When an entire industry aligns around the idea that a software advance is momentous enough to demand a completely fresh approach to hardware and infrastructure, change tends to happen quickly.

Which is why I personally believe it's right to be excited about the potential of AI in general. And which is especially why I believe that AI is going to have a marked impact in fashion, since ours is an industry already deep in the throes of digital transformation, where new technology is meeting tradition and creativity every day - and also an industry where automation and efficiency are high on the agenda.

This positivity is evidenced by the sheer number of applications and solutions that are now available for both domain-specific deep learning tasks and more general-purpose analysis and assistance. From language, image, and video models to generative pattern development, material yield optimisation, business intelligence, pricing, planning and competitive analysis solutions, AI in fashion is here to stay.

And if you're able to envision using AI to streamline a task or transform the way a team works, then the odds are good that either a large tech company or a disruptive startup is already building an application to support that vision. You'll find many of these companies profiled, and their senior executives interviewed, later in this report.

But while I'd pigeonhole myself as an AI optimist (but not an evangelist) even that pragmatically positive position can be an unpopular one when we consider the distaste that parts of the creative community have for generative AI in particular.

That sentiment originates from the fact that, as deployed in general purpose, cloud-native solutions like ChatGPT, Gemini, Midjourney, and so on, has largely been trained on a very opaque data set that, for all intents and purposes, includes the whole of the 'publicly available' web. Contained within that vast dataset is a huge corpus of art, music, literature, architecture, design, thought, and, yes, fashion - the majority of which was ingested as training data for these models without the permission of the creators. And for artists, designers, architects, photographers, and other creators, it feels galling to see new work being synthesised from unlicensed elements and attributes of their entire oeuvres.

This is more than a philosophical complaint, too. Right now the largest AI companies are being litigated against by publishers, authors, comedians and image libraries, on the grounds that the training of models like DALL-E and GPT4 (and its successors) constitutes something closer to theft than fair use. How those cases are resolved will have deep ramifications for how general purpose AI is trained, especially as more creators and aggregation platforms sign licensing agreements that, by default, include fashion content.

Much of the current wave of AI solutions for fashion is focused on sidestepping precisely this issue, with either finetuning or bespoke training designed to ensure that copyright data does not enter or leave the confines of the application, and that the model delivers outputs that align with a particular brand's knowledge graph, heritage and identity.

And there is also concurrent work happening to improve the attribution and traceability of AI-generated content, as well as to ensure that the results put out by large models reflect the values and diverse perspectives of the communities that use them.

Overall, when it comes to AI there is clearly a cultural evolution happening inside a technological revolution, and the answer to a lot of forward-looking questions about the direction of those twin forces is that nobody quite knows what will happen next. Whether we're talking about attribution and copyright, capabilities and use cases, or new and untested business models, unpredictability remains the watchword. And it's also important to remember that with transformer models, even the companies that created them have only a limited understanding of how they work, mechanistically speaking.

We are, in effect, barrelling into the age of AI the same way we barrelled into the web era. There will be uncharted frontiers to push back, some companies will become casualties while others achieve stratospheric valuations compared to where they stand today. Like the march of the internet, fortunes will be made and broken quickly, and the eventual future will be unrecognisable in ways we cannot predict.

Against that backdrop, what matters in the here and now is finding AI solutions (or platforms that incorporate meaningful AI capabilities) that will deliver quantifiable value for you, with use cases that can be successfully integrated into existing workflows, teams, and communities in a way that empowers and creates trust at the same time as challenging entrenched expectations.

This report - our first but certainly not our last to tackle AI - is designed to help provide a framework for finding those solutions, and to building the foundations to turn them to your advantage. Over the next 150+ pages you'll find editorials and thought leadership pieces from across our contributor and contact network (including a joint technical primer and cultural exploration of AI from yours truly) as well as profiles and interviews of leading AI technology vendors, and a first-stage analysis of the AI technology market for fashion.

This has been, I realise, a very different introduction to what readers of our prior reports on PLM, DPC and Sustainability have come to expect. But AI represents a very different prospect: a radical transformation across software, hardware, creativity, culture, and much more, affecting fashion itself and the wider world it pulls from and exerts a pull over.

I hope this report helps you to understand what AI is, why it has become such a visceral force so quickly, and what you can do, today, to translate possibility into practical reality. The Interline will be here throughout the journey.

AI IS ON THE FAST-TRACK. IT'S TIME FOR FASHION TO TALK ABOUT IT.

BY KELLY HELFMAN, PRESIDENT, MMGNET GROUP

Technology typically takes time to reach everyone. With fashion technology being one of the cornerstones of our live events, we've observed how new innovations - across software, hardware, and material science - steadily spread and scale from initial idea to wider awareness.

Artificial intelligence (AI) is different. We are now just over eighteen months since the release of ChatGPT, and everyone in fashion is not just *talking* about AI - a lot of them are actively using it in their personal and professional lives. And the designers, brands, retailers, suppliers, and service providers that make up the global MMGNET Group audience are all working out how to deploy AI to their advantage.

The pace of technological progress here is unprecedented. In the generative AI space, text, image, and video modalities all took huge leaps forward in 2023 and 2024. And across deep learning, computer vision, analytics and insights, the longer-standing applications of AI and machine learning made quieter but maybe even bigger strides - with data science now touching essentially every part of fashion.

But the speed of AI adoption means that vital conversations around its use also need to be fast-tracked. From creative designers and independent entrepreneurs, to seasoned merchandising, technical, and sourcing teams at major brands, fashion professionals everywhere have a litany of unanswered questions and concerns about AI, as well as their own unique visions for what they want to be able to do with it in the short and longer term.

What could AI mean for creativity? How will it influence culture? How is it being regulated? What are the copyright implications of AI-generated works? Which are the best tools to use? How is AI reshaping education and employability? How heavy is the environmental footprint of AI use? How much of the potential we hear about it is real? And how much of the fear floating around is justified?

All these critical conversations surrounding technology and more, have a home at MMGNET - across a new, wider remit that covers our live event brands MAGIC, SOURCING at MAGIC, COTERIE and PROJECT, and an always-on, year-round stream of trends, insights, inspiration, resources and partnerships like our long-standing one with The Interline.

Everywhere fashion meets, MMGNET is committed to creating an ecosystem that not only explores the next waves of enterprise technology in fashion, but also engages, educates and empowers everyone to move the industry forward.

MMGNET Group and The Interline will continue to work together throughout 2024 - in established and new ways. The next opportunity to see fashion technology in action, and The Interline on stage in North America, will be at SOURCING at MAGIC in Las Vegas, which runs from 19th to 21st August 2024.

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The A-Z of AI

FROM TECHNICAL FUNDAMENTALS TO CULTURAL CONTEXT, START YOUR JOURNEY WITH AN ALPHABET OF KEY AI TERMS - EACH ACCOMPANIED BY VALUABLE INSIGHTS INTO WHEN, WHY, AND HOW THEY'RE GOING TO MATTER, AND ANYTHING ELSE YOU SHOULD BE AWARE OF.

AI might be everywhere, but we are far from a universal acceptance of what it means, what it should do, where it should act, and how it should interact with culture and society. This report is designed to begin tackling those questions, and to interrogate the people behind the solutions that promise to contextualise AI and make it work for fashion. To help parse and analyse the stories, profiles, and interviews that make up the rest of this report, our team put together an A-Z of common AI terms - and asked AI to illustrate them.

A IS FOR ATTENTION

While "GPT" (defined later in this primer) has become the snappy name for the new wave of AI models and applications, perhaps the biggest unlock behind that acronym was the mechanism of attention. Rather than treating the full scope of input data it's given as a homogeneous whole, attention is a form of dynamic weighting that allows AI models to adjust their focus to prioritise the most relevant parts of the data they're given (whether it is a text or image prompt). By assigning attention to what it believes is the most relevant part of a question, for example, a model can deliver an answer that feels considered and organic. This is a fundamental part of why large language models feel 'alive' in a way previous AI chatbots haven't, and the seminal "Attention Is All You Need" paper is often cited as the catalysing event of the new AI era.

B IS FOR BIG DATA

Despite being a well-worn phrase, "big data" has taken on a new importance over the last couple of years. For a long time, enterprises were told to hoard data at all costs, with information being the 'new oil'. Then the pendulum swung towards better-quality data, and many organisations found themselves sitting on huge data lakes filled with non-normalised information that required deep effort to use. Now that pendulum sits somewhere in the middle: for AI training and use, the volume of data available matters a great deal, but the transformative, domain-specific applications of AI will demand rigorous categorisation, labelling, organisation, and integration of business data.

C IS FOR CREATIVITY

Irrespective of how you personally feel about it, the wide availability of generative AI applications has already changed the connotations of the verb "to create". Prior to the release of generative image models, for instance, someone would have to learn to draw in order to turn an idea into digital art, or a vision into a garment sketch. And prior to large language models, a person would need to learn to write well in order to compose a poem or a report - or would need to take a programming class to enable them to start building an app.

None of these things are true any longer. And while the quality of what AI can generate is extremely variable, we have nevertheless seen a fundamental shift in the skills people must learn, and the steps they must take, to translate a thought or a brief into a reality. To deliver these capabilities, though, most large language and image models have been trained - often without permission - on huge volumes of pre-existing creative work made by humans. This has been a very contentious practice, and one that is being actively litigated today across the creative industries.

IS FOR DIFFUSION

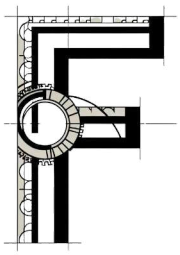
The key invention behind image, audio, and video generation models, diffusion architectures work by starting with pure visual noise and iteratively removing it to create the desired end result. They are trained to do this forward and in reverse, beginning with a clean original image, before randomly adding noise to it until the original is "lost" - after which the model learns to remove that noise incrementally until the clear image is recovered. When they are asked by an end user to generate a new image or video frame, a language model paired to the diffusion model applies attention and other techniques to distinguish intent, and a diffusion model applies weighted de-noising steps to progressively translate a prompt into a final result that comes as close as possible to the user's vision, however complex or unprecedented.

Built into this seemingly-simple process is a huge amount of complexity and power, which is why image generation models in particular have made such dramatic progress in the last few years.

IS FOR ETHICS

AI initiatives roll up a lot of pre-existing ethical, privacy, and data governance concerns. The information that goes into training a model, the output that model creates, and the user-facing application layers built on top of those things, are all subject to the same strictures that apply to other software and services. But AI projects are also uncharted ethical and governance territory since they interact with untested expansions of the definition of copyright, are being scrutinised for potential harms and biases that extend to the whole-society level, and are redrawing some of the frontiers of social acceptance.

On top of these concerns, the speed of advancement of frontier AI models is - in many people's opinion - not being counterbalanced by investment in AI safety, with OpenAI's dissolution of its "superalignment" team being the most recent lightning rod for criticism. At present, the AI industry is still largely self-policing - a situation that should give our readers in fashion pause, since they will be familiar with how comprehensively an industry can fall under the microscope of external regulation and enforcement.



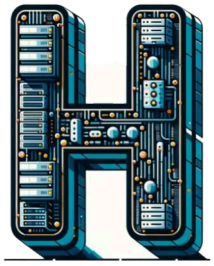
IS FOR FINE TUNING

The generative AI touchpoint most people are familiar with is a large, cloud-hosted language or image generation model which has been trained to be as broadly capable as possible. This adaptability is key to the perception of limitless potential that has driven so much of the adoption of generative AI - with the drawback being that the largest, most broadly-useful models are not always well-suited to domain-specific tasks. Fine-tuning is the process of beginning with a pre-trained model and then applying additional training with a more focused dataset (a library of all historical eCommerce product photography, for example) to enable the model to creates outputs that are on-model or more closely aligned with brand heritage and values.

This is not the same thing as training a bespoke model, which is a time, cost, and compute-prohibitive task for most organisations, but it does provide the ability to tap into the power of large generative models without being forced to rely solely on their training data. Alternative approaches include grounding and retrieval-augmented generation, which pair generative models with external data sources to be queried during use.

G IS FOR GPT

While OpenAI has begun to use the word "GPT" to refer to a tailored and lightly fine-tuned chat frontend on one of its large language models (the "GPT Store" is a place users can interact with these "GPTs", which have different personas, capabilities, and data sources for specific purposes like maths tuition, for example) for the wider world GPT refers to the core architecture behind the large language models that kick-started the current AI boom. That acronym stands for Generative Pre-Trained Transformer, which is a fairly straightforward description. These models generate an output, such as text, after being pre-trained to recognise patterns and structures in a huge quantity of source data - and they achieve this thanks to their transformer neural network architecture.



H IS FOR HOSTING

For most of the last eighteen months, AI models have been large in scope, capability and parameter count, and required a large amount of compute to run inference (see below). As a result, the only viable place for these models to be hosted was on cloud platforms like Azure and AWS. Open-source models such as Meta's Llama series, Stable Diffusion and others can be run on local consumer hardware, but much more slowly than all but the most forgiving use cases demanded.

This is beginning to change, with the development of lighter models (SLM refers to small language models, for example) that have much lower parameter counts and that are trained for narrow tasks, and which can be deployed "on the edge" - or on enterprise and consumer hardware. And as we are likely to see in consumer devices later this year, applications and operating systems will be able to dynamically decide what queries to process using dedicated neural processing hardware, and which to pass on to cloud-hosted models.

(The training of large models remains the preserve of massive supercomputer clusters, and has propelled a new hardware race that elevated chipmaker nVidia to a $3 trillion USD valuation in June 2024.)

I IS FOR INFERENCE

After a model is trained, the process of interacting with it and querying it is referred to as inference - since the model takes the user's input and infers the right output, whether that's text, data, or any other modalities. Inference is, for all intents and purposes, the "runtime" of an AI model, and as a result all the typical software interaction and usability criteria apply - especially speed and accuracy. Because large models reside in the cloud and make use of distributed compute at the time they are queried, the word inference is also sometimes used to refer to the cost of running a query.

J IS FOR JPEG

While a lot of attention is being paid to text and voice-based AI models and applications (which are, after all, how most people will soon interact with a new class of "assistants" and "copilots"), the dominant modality for fashion's use cases is likely to be image generation. This may come in the form of generative product and lifestyle photography, generative sketches and inspirations, generative materials and prints, or even generated garment patterns. Many of fashion's potential use cases for AI have a visual component front and centre, making a focus on improving the efficiency and accuracy of these modalities key to creating a better market fit for AI.

K IS FOR KNOWLEDGE GRAPH

In addition to the volume and variety of data required to train or fine-tune an AI model for fashion's purposes, most brands, retailers, and suppliers want to interact with AI that understands the structure, hierarchy, and context of their information and operations. The simplest way to think about this requirement is as the need to offer an AI model a metaphorical graph or index that connects the nodes of information that exist within your business with contextual and conceptual links - allowing an AI application to then understand the relationships between data that are not literally linked.

L IS FOR LABELLING

As part of the AI pre-training process, models need to be fed not just an avalanche of data, but an avalanche of properly tagged data that allows the training process to pick up on both the broad and the granular attributes it needs to identify patterns and make predictions. In order to understand the world, this labelling has to be done by human beings who have the contextual understanding to identify the different components of images, as an example.

This labelling process is not something AI companies or data brokers choose to talk about - not least because the work is seemingly sometimes done by underpaid, overseas workers who are also forced to wade through extremely unsavoury data to accomplish the task. And it is easy to see a through-line where garment workers in low-cost labour areas are transferred into data tagging roles for models that must be trained on vast amounts of apparel and footwear datasets where construction and material knowledge is helpful.

M IS FOR MULTI-MODAL

In AI, a modality refers to the type of input and output that a model can process and generate. Single-mode models, for instance, would take in text and output text (ChatGPT was one of these in its first instantiation) or take in images and output the same. Increasingly, AI models are becoming multi-modal to varying degrees, being capable of taking text prompts as inputs and returning images, video, code, or voice as outputs, or even vice versa. Until very recently, though, these different modalities were accomplished by quietly bridging disconnected models and systems in the background. If you spoke to ChatGPT it would not receive your voice as a direct input, but rather a translation of your voice into text. Or if you uploaded an image to a large language model like ChatGPT and asked it to generate a variation of it, it would not pass that image directly to the diffusion image generator, but would instead send over a text description of that image that the diffusion model would use as a prompt.

The latest generation of chatbot systems (GPT4o, and Google's upcoming versions of Gemini) have been rearchitected to be what's referred to as "natively" multi-modal, which gives them the ability to directly accept text, audio, video, photo and other types of inputs, and to respond directly in the form of any of those modalities. A simple example might be uploading a photo of a piece of sheet music to the upcoming GPT4o voice mode, and having it sing the notes back to you.

In fashion, different modalities are a consistent feature of almost every stage of the product lifecycle, so any attempt to realise a product design and development AI assistant would need to be natively designed this way.

IS FOR NEURAL STYLE TRANSFER

An image generation technique, neural style transfer is a way for generative models to blend the content of one image with the stylistic elements, colours, or other attributes of another. In applications where experimentation and iteration are common objectives, these abilities have the potential to allow for quick and efficient ways of introducing newness and alternative options into the creative process.

On the opposite end of the spectrum, there are many fashion use cases where one part of a particular image or other piece of content must remain absolutely unchanged from one generation to the next. This consistency proved to be a serious challenge for the first wave of generative tools and applications, but the introduction of Low-Rank Adaptation (or LoRA) has allowed users to essentially ringfence an element and then to run generative operations around it. Applications that allow users (in-house or even at the point of retail) to "stage" products in different settings, lighting conditions, and usage scenarios rely on this technique, and are a prime example of how innovation is helping to overcome the common criticisms that are levelled at generative AI.

IS FOR OPEN SOURCE

Despite its name, OpenAI does not offer its models as open source. And the same is true, in fact, of most large, high-parameter-count models: all are proprietary software that users can only access through their parent companies' applications, or by making API calls. Meta, notably, is the biggest company offering its current (but potentially not future) large models to the open source, developer, researcher, and hobbyist communities, although Mistral and other companies have also released open-source versions of their smaller models. For fashion's purposes, this debate matters primarily for companies that prioritise data sovereignty and ownership, and who do not wish their data to leave their premises, and for the global talent pool of researchers and computer scientists who are finding themselves pushed and pulled between lucrative proprietary contracts and more widely-applicable open-source work.

IS FOR PARAMETERS

In the AI lexicon, parameters are functionally the same thing as model capabilities. In the push towards "scaling," model creators have pushed parameter counts higher, and there has so far been a strong correlation between the number of parameters and the quality of a model's output. Increasingly, though, developers are building models on divergent tracks, for different purposes. Meta, for instance, is currently training a 400 billion parameter model at the same time as working to release an 8 billion parameter model - both built on the same architecture, but with greater optimisation, streamlining, and focus making the smaller models more easily deployable and less resource-intensive.

IS FOR QUERY OPTIMISATION

Fashion, and the wider world, is witnessing a transformation in how end users engage with technology. Since the advent of computing, it has been a truism that telling a computer what to do as a user - through a text-only interface, or later through a GUI - will translate into a predictable outcome. Barring bugs and some of the unevenness of display technology and calibration, inputting a CMYK colour reference using a keyboard will always result in the desired colour being shown. Making the same request of an AI model - to alter the colour of a material in a 3D design, for example - will mostly result in a predictable action, but it's not a guarantee. And this new interface paradigm of asking questions of computers is already presenting a roadblock to users who feel as though they don't know the right things to ask.

Query optimisation can refer to the manual process of getting better at extracting a desired action from an AI model - an upskilling exercise - but it can also refer to the way that multimodal models can re-interpret, embellish, and enrich users' prompts behind the scenes to help deliver better end results. Which, in and of itself, represents yet another change in how we think about engaging with software - and further uncertainty for an industry that relies on precision.

IS FOR REGULATIONS

At the time of writing, AI regulations operate on a sliding scale, where models, applications, and services that are perceived to present the greatest risk. For the time being, while the true impact of AI across cultures and communities is still being assessed, this risk is being measured in the potential for harm and misinformation in high-impact scenarios, but over time we expect that regulations and disclosure requirements will begin to demand greater transparency into the training, operations, and outputs of AI models.

IS FOR SYNTHETIC DATA

The demand for data that's voluminous enough, specific enough, and labelled in sufficient detail to train the next cohort of AI models is already beginning to outstrip supply. After scraping or licensing content from publishers and social media platforms, and capturing what content is left on the open web, AI companies will be left with a stark choice: to trawl less desirable data sources, or to begin making use of what's referred to as "synthetic data". The latter is artificial data that is intended to replicate the features of real data, and is procedurally or artificially generated according to a clear set of parameters (in the non-AI sense) that ground it in reality.

A hypothetical example of this might be an autonomous vehicle project that has been trained on sufficient footage of every road that exists, but that has not yet achieved its aims, so its creators consider training it on rendered or AI-generated footage of roads that do not exist but that otherwise accord with all the laws of reality.

This drive to augment the pool of training data available to AI models in this way could backfire for general AI (where hallucinations could become baked into the training data of future models) but could prove to be a positive thing for fashion. If a model has already been trained on your entire back catalogue, for example, digitally creating some fictitious remixes, recolours, or other ideas could help to increase the creativity of models without stretching the limits of accuracy.

IS FOR TOKENS

As used in AI parlance, a token is a basic unit that an AI model uses to take in or generate language. A single token does not necessarily correspond to a single letter or word, and different models approach the segmentation of tokens, and the relationship between them, differently. Tokens are also used as a measure of AI work, with both large language models like ChatGPT and enterprise platforms like Cohere pricing their API usage based on token throughput.

IS FOR UNSUPERVISED

While many datasets used in AI are explicitly labelled, and many training runs are performed with a target outcome in mind, there are also examples where it's desirable to have AI models learn the structure of, and derive insights from, a large volume of unstructured, or fast-changing, data that has not been labelled and where a human has not set an explicit intention. As an algorithmic approach to discovering patterns, grouping undifferentiated items, and delivering insights at a speed and scale impossible for humans, unsupervised learning has uses across fashion - from classifying items that have only extremely finite, or subjective differences, to identifying trends and market forces.

IS FOR VARIABILITY

As we saw earlier in "Query Optimisation," the fundamental difference between AI models and traditional computer programs is their ability to produce different outputs when fed the same input. Unlike deterministic interactions like coding, or moving a file from one directory to another, interacting with an AI model is an exercise in variability - where hidden and opaque factors can influence the outcome.

For basic interactions this can create frustration, and in situations where accuracy is paramount, or success is binary and objective, any deviation from it (the fabled "hallucinations") is considered a failure. But at the same time this variability is also why generative AI models can be so compelling in creative use cases, since even the most minor changes in inputs can deliver drastically different outputs, and experimentation is a matter of changing a word or two in a prompt.

IS FOR WORKFLOW AUTOMATION

On the aggregate level, fashion does not have great workflow automation. In The Interline's interaction with brands and retailers, it is rare to see a company that has a complete, end-to-end view of its design, development, sourcing, production and retail activities. At least in part, this is because of the complex nature of those processes and the dynamic, distributed shape and scope of the data they generate.

We are already beginning to see AI models applied in this capacity - from Cohere (mentioned above) to Glean in the sector-agnostic space, and several examples contained in the technology vendor section of this report. With so much of fashion brands' time and effort spent reconciling disconnected workflows, and attempting to derive real-time insights from incomplete and shifting business data, the promise of being able to apply an AI model across an entire enterprise - and then to interact with and query it, with the knowledge that it's grounded in your data - is perhaps where the biggest potential of AI in the business side of fashion will be found.

IS FOR EXPERTISE

As AI begins to test the boundaries between what should remain human work and what is a target for automation, there is still considerable uncertainty in the jobs market and in education (more on this later in the editorial section of this report), and even deeper concern amongst creative, technical, and commercial workers as to where the final balance will be struck between human effort and AI generation. At the time of this report, the threatened mass of AI-related job losses has not yet manifested, and there may indeed be room for some optimism.

Other disciplines, like programming and software engineering, have found themselves in the firing line, but so far AI is being largely used as an aid to productivity rather than a full-blown replacement. This may also be the pattern we see in fashion; while some junior roles, and some senior ones, will undoubtedly be eliminated as a result of AI adoption, the same models and applications may make for a smoother onramp for new entrants. Despite machines having surpassed human capability in chess, that game is now more popular and accessible than ever, and people and AI working together have been able to begin dissecting its art and its mechanics in more detail.

IS FOR YIELD

Yield can be defined in two ways. First, as a measure of the efficiency and optimisation of AI models and systems, quantifying the ability of an AI to produce relevant outputs at speed and scale. And second in its longstanding usage as a yardstick for the efficiency of nesting and material cutting and utilisation, and manufacturing processes - both of which could be augmented by sensitive, intelligent use of AI.

IS FOR ZERO-SHOT

The jury may still be out on whether the new batch of generative AI models can be said to be "intelligent," but the fact remains that we have entered into a new era of both enterprise and consumer technology where systems and assistants available to us on a range of devices are capable of performing tasks, generating outputs, or making predictions that they have not been expressly trained to do.

This ability, referred to as "Zero-shot" learning, provides some evidence against the criticism that generative is a kind of "fancy autocomplete" that simply parrots extremely varied permutations of language it has been trained. For these models to instead create meaningful language, accurate insights, or identifiable objects in images in areas they have never encountered before, the more logical conclusion is that generally capable models can be capable of delivering genuinely novel results in unseen and unpredictable use cases.

And where fashion is concerned, unpredictability is everywhere - making generative AI not just a unique but a potentially extremely useful prospect.

THE EVOLVING CREATIVE TOOLKIT

The designer of this report's cover art (and the images accompanying our Market Analysis later in this publication), Baris Gencel, was an early advocate for the potential of AI to serve as a creative partner for designers. And as the pace of AI adoption has picked up, his perspective on how to effectively incorporate it into the artistic process has become increasingly sought-after.

Baris recently won an art award and spoke at the United Nations AI For Good Summit, an event focused on how AI could be used to accelerate the UN Sustainable Development Goals. And in his role as Group Director for Digital Transformation and Innovation at Lanvin Group, Baris also has a unique perspective on how AI is becoming a key pillar of leading brands' all-round digital transformation.

On the eve of the publication of this report, we sat down with Baris to discuss process, possibility, and why he believes AI will change every element of fashion.

INTERVIEWEE: BARIS GENCEL
ARTIST,
AND GROUP DIRECTOR, DIGITAL TRANSFORMATION & INNOVATION, LANVIN GROUP

The Interline: Before your current role, you spent a long time spearheading AI design as an art form in its own right - one that's capable of having a tangible positive impact in multiple different areas. How do you feel the fashion industry's recognition of that potential has developed over the last two years? And how much of that positive possibility space do you think has been realised?

Baris Gencel: Over the past two years, I have not seen a significant shift in the fashion industry's recognition of AI as an art form and its potential for positive impact until recently this year. Initially, there was a degree of skepticism and resistance, with many viewing AI primarily as a tool for copying rather than creativity. However, this perception is evolving rapidly. Fashion houses and designers are increasingly acknowledging the innovative capabilities of AI, embracing it not just for optimizing supply chains or enhancing marketing strategies, but as a creative partner that can inspire and generate new ideas.

AI's integration into fashion has opened up numerous possibilities. For instance, it has enabled more sustainable practices through predictive analytics and resource management, reducing waste and promoting eco-friendly production. AI-generated designs have also pushed the boundaries of creativity, leading to unique and avant-garde collections that might not have been possible through traditional methods alone.

Despite these advancements, we are still only scratching the surface of AI's potential in fashion. Many positive possibilities remain untapped. As AI technology continues to evolve, I believe we will see even more profound impacts, such as hyper-personalized customer experiences, AI-driven fashion shows, and deeper collaborations between human designers and AI systems. The journey is ongoing, and the future holds immense promise for further integrating AI into the core of fashion innovation.

The Interline: On a similar topic, you recently spoke at the United Nations "AI For Good" summit. What were your key takeaways from that conference in terms of how state-level actors are thinking about the positive impacts that AI could have?

Baris Gencel: First of all, I am honored to have received the AI for Good Award for my art. This UN initiative means a lot to me. I had the privilege of attending the UN's AI for Good Summit and gave a speech that I feel was very inspiring. The summit's focus was on how AI can be used to meet the UN's Sustainable Development Goals, such as eradicating poverty and hunger, achieving gender equality, promoting clean energy, and taking climate action.

Leaving the summit, I felt a mix of confidence and determination. AI has the potential to play a meaningful role in advancing these goals, but we must ensure that all leaders, governments, and citizens of the world push stronger for change. AI should be a tool that decreases our impact, inspires us, and creates works that make people care more about our planet and all the species we share it with.

The Interline: You designed the artwork for our front cover as a new entry in a thematic series. Walk us through some of the inspirations behind the image, and the tools and processes you used to bring those ideas to life.

Baris Gencel: The cover artwork for Interline's AI Report 2024 represents a fusion of technology, human creativity, and the evolving landscape of digital transformation in fashion. Every work we create is a culmination of the experiences we build up in our lives. Our creativity thrives on combining known elements to form new ones, and this boundary of imagination based on our experiences is what I have been exploring.

Having spent 23 years in Asia, I have been profoundly influenced by its rich cultural heritage. The tattoos on the figure's body merge traditional art with futuristic themes, symbolizing the bridge between past and future. This fusion reflects the idea that while technology advances, it remains deeply rooted in cultural and artistic expressions. The tattoos add a layer of personal identity and storytelling to the otherwise mechanical form.

The Interline: Right now, in 2024, how do you believe the roles of the creative designer and creative director have changed as a result of generative AI? And how do you see them changing further in the near future?

Baris Gencel: As AI becomes more integral to design, educational institutions will increasingly incorporate AI training into their curricula. Emerging designers will learn to work with AI from the outset, making AI-assisted design a standard practice. This shift will produce a new generation of designers who are adept at leveraging AI to enhance their creative processes. by the integration of generative AI, leading to enhanced creativity, efficiency, and personalization. Looking ahead, these roles will continue to evolve as AI becomes even more embedded in the design process. By embracing AI as a collaborative partner, focusing on sustainability, and committing to continuous learning, designers and directors can navigate this transformation and drive the future of fashion innovation.

The Interline: If you were to speak to an emerging designer, or someone currently in education and hoping to move into a career in fashion, what advice would you give them about developing a creative process and a skillset that's fit for the future?

Baris Gencel: Understanding and integrating technology into your creative process is essential. Learn about AI, 3D design software, digital pattern-making tools, and virtual reality. These technologies can enhance your creativity and efficiency, enabling you to experiment with new ideas and techniques. Stay informed about the latest advancements and consider how they can be applied to your work.

Conceptual art by Baris Gencel

Focus on Sustainability: Sustainability is no longer optional in fashion. Educate yourself on sustainable practices, materials, and processes. Think about how you can incorporate eco-friendly methods into your designs and advocate for ethical production. Consumers are increasingly valuing sustainability, and being knowledgeable in this area will set you apart.

Cultivate a Diverse Skillset: The fashion industry is multifaceted, and having a broad skillset will make you more versatile and valuable. In addition to design, learn about business, marketing, and technology. Understanding the entire fashion ecosystem will enable you to navigate it more effectively and seize diverse opportunities.

Develop a Strong Personal Brand: In a crowded industry, having a distinctive personal brand is crucial. Use social media and digital platforms to showcase your work and share your design philosophy. Build a portfolio that highlights your unique style and creativity. Networking is also essential; connect with industry professionals and participate in relevant events and competitions.

Stay Curious and Open-Minded: The fashion industry is constantly evolving, and being adaptable is key. Stay curious about new trends, technologies, and cultural shifts. Be open to feedback and willing to experiment with different styles and concepts. Continuous learning and adaptability will help you stay relevant and innovative.

The Interline: What do you believe is the right approach for brands looking to translate some of the possibilities of AI into lasting institutional transformation? Where should they start, and what do you see as the areas where AI has the potential to add the most value in the shortest timeframe?

Baris Gencel: In my opinion, the right approach for brands looking to translate the possibilities of AI into lasting institutional transformation involves a strategic and phased implementation. By starting with a clear strategy, leveraging data, initiating pilot projects, upskilling employees, and scaling AI initiatives, brands can translate AI possibilities into lasting institutional transformation. This approach not only drives immediate value but also sets the foundation for sustained growth and innovation.

Encourage a culture of innovation and experimentation. Employees should feel empowered to explore new ideas and use AI to solve problems creatively.

AI can analyze vast amounts of data to identify emerging trends and consumer preferences, guiding the development of new products.

AI-powered design tools can assist in creating innovative and efficient product designs.

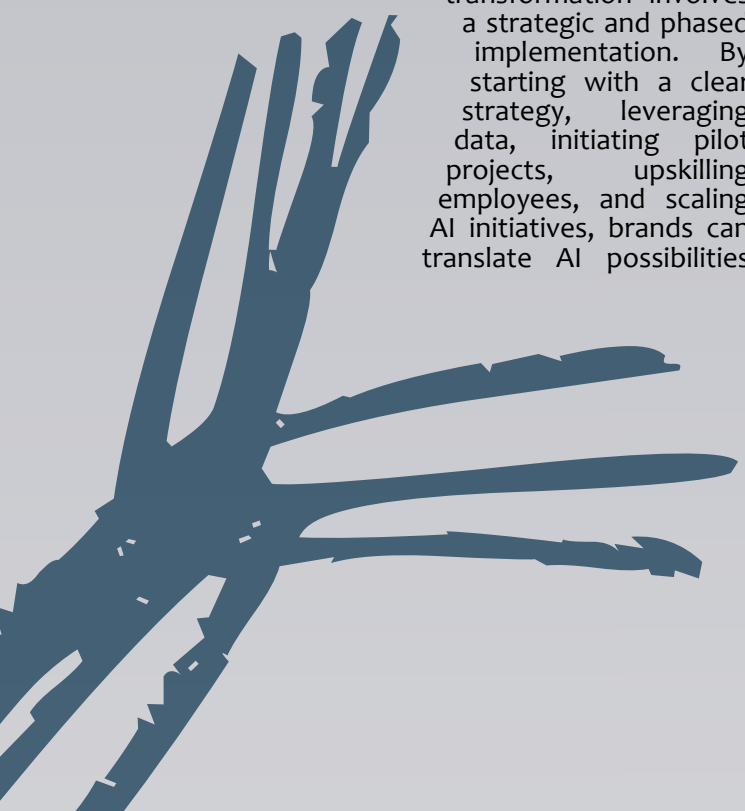
AI can automate repetitive and mundane tasks, freeing up employees to focus on more strategic activities.

The Interline: In your role as Director of Digital Transformation, how do you believe AI fits into the broader ecosystem of technology-enabled and technology-adjacent change? A lot of brands and luxury houses are already several years into transformation journeys that are built on digital workflows, digital assets, digital twins and digital experiences. How do you see AI slotting into those? And how much might it accelerate them?

Baris Gencel: In my role as Director of Digital Transformation, I see AI as an indispensable force in the ecosystem of technology-enabled and technology-adjacent change. AI seamlessly integrates with existing digital workflows, assets, twins, and experiences, propelling them to new heights of innovation and efficiency.

At Lanvin Group, we are committed to embracing new technology, with AI being a key focus area. Our CEO and the group's vision emphasize leveraging cutting-edge innovations to drive our brands forward. This commitment ensures that AI is not just an addition to our digital transformation toolkit but a catalyst that enhances every aspect of our journey. By integrating AI into digital workflows, assets, twins, and experiences, we aim to unlock new levels of efficiency, creativity, and customer engagement. The potential for AI to accelerate these transformations is immense, positioning us to lead in the dynamic landscape of luxury and fashion.

LANVIN GROUP's brands all have a long history and unique brand DNA. Moving forward, we will continue to innovate with AI while maintaining the unique DNA of each brand, allowing more people to understand the profound heritage of our brands.
In conclusion, AI is integral to our strategy at Lanvin Group. By harnessing its power, we are poised to achieve significant advancements and deliver exceptional value to our stakeholders. Our vision is clear: to be at the forefront of innovation, setting new benchmarks in the luxury fashion industry.



The Interline: For some readers, the positioning of AI as the next wave of consumer and enterprise technology may feel like a repeat of the hype that was built around the visions for the metaverse, and for Web3, over the last few years. Why do you believe this wave is different? And what would you say to anyone who might find themself fatigued by a series of bold visions for change that do not necessarily pan out?

Baris Gencel: The wave of AI is different because it is backed by a proven track record, rapid advancements, seamless integration capabilities, adaptability, and wide-ranging applications. It offers tangible benefits that are already being realized across industries. For those wary of new technological promises, AI stands out as a mature and transformative force that is not only here to stay but also poised to drive significant, lasting change.

By focusing on real-world applications and measurable outcomes, brands can harness the power of AI to achieve lasting institutional transformation, ensuring that this wave of innovation leads to sustained success and growth.

The Interline: What do you see coming next from AI? With the speed at which existing models are evolving, and the pace of development on new models, new modalities, and new applications - what do you see as the future of AI in fashion in the next two years, the next five years, and the next ten years?

Baris Gencel: The future of AI in fashion is incredibly promising, with rapid advancements expected to transform the industry at every level. From enhancing personalization and sustainability to driving creativity and ethical practices, AI will be a catalyst for innovation and growth. By embracing these technological advancements, fashion brands can position themselves at the forefront of the industry, delivering exceptional value to customers and stakeholders alike.

In the immediate future, AI will further revolutionize personalization in fashion. Brands will leverage AI to create highly personalized shopping experiences, using advanced algorithms to analyze consumer data and preferences. This will enable real-time customization of product recommendations, styling advice, and even bespoke designs tailored to individual customers.

AI will play a significant role in the creative process. Designers will collaborate with AI tools to generate innovative concepts and explore new aesthetics. AI will analyze vast amounts of design data and trends to inspire new collections, pushing the boundaries of creativity while maintaining brand identity.

AI will drive advancements in sustainable fashion by optimizing material usage, reducing waste, and promoting circular economy practices. Machine learning algorithms will help identify eco-friendly materials and processes, enabling brands to produce high-quality, sustainable products at scale.

FASHION IN 2050: PICKING UP WHERE WE LEFT OFF OR STARTING ANEW?

WHAT MIGHT A RADICALLY REIMAGINED, AI-NATIVE FASHION VALUE CHAIN LOOK LIKE? AND HOW CLOSE ARE WE TO HAVING AN "ANSWER ENGINE" FOR THE INDUSTRY'S RECURRING QUESTIONS?

BY JONATHAN BRUN
CO-FOUNDER & CEO
OFF/SCRIPT

Jonathan Brun is the co-founder and CEO of Off/Script. Before launching Off/Script, Jonathan co-founded Lighthouse, an immersive media search engine used globally. He also worked in venture capital, investing in AI and consumer sectors. Jonathan began his career in investment banking, specializing in mergers and acquisitions as well as capital markets transactions. In addition to his professional achievements, Jonathan is a father of four and an avid martial arts practitioner.

Technological change comes in waves. This is something we all understand intuitively, because we are accustomed to having it happen to us and around us. In telecommunications, we went from 1G to 5G. In transportation, we moved from mechanical, to fossil, and now electric energy. Our monetary systems transformed from basic barter to forms like trading cards, gold, paper money, and now, digital currencies. There are thousands of examples like these.

Even if the difference between how things are and how they were in the past can feel enormous in retrospect, transformation often happens incrementally, going broadly unnoticed until we zoom out and realize the progress we've made.

Yet, every so often, a breakthrough technology emerges that is so revolutionary it catalyzes an entirely new paradigm and leaps us forwards in a way that's not just perceptible but extremely prominent. These types of new frameworks do not simply build incrementally on what came before. Rather, they introduce a transformative way to rethink old problems, opening doors to solutions previously unimaginable, and they give rise to new opportunities that were impossible to envision - at least with any degree of practicality - previously.

These types of innovations are black swan events that fit the adage: "there are decades when years happen, and years when decades happen". I don't think it's an exaggeration to say that 2022 and 2023 were examples of the latter.

The rise of generative AI, I think (and many agree) , represents such a pivotal shift. Vaulting to the front of people's minds in late 2022 and continuing to up-end industries, our understanding of "work" and much more over the 18 months that have followed, generative AI models as experienced through user-facing applications like ChatGPT and Midjourney are fundamentally changing how we think about not just higher-order tasks but some of the basic pillars of society.

And the world of fashion is not exempt.

As entrepreneurs, designers, and trendsetters, the disruptive potential of this technology forces us to question the current state of affairs and wonder what the world could look like if we restarted anew, leveraging the cutting-edge technology available today. How different would our processes, industry dynamics, and economics be? Would our products be better or worse? More human, or less?

What would fashion look like if we built it with AI in mind?

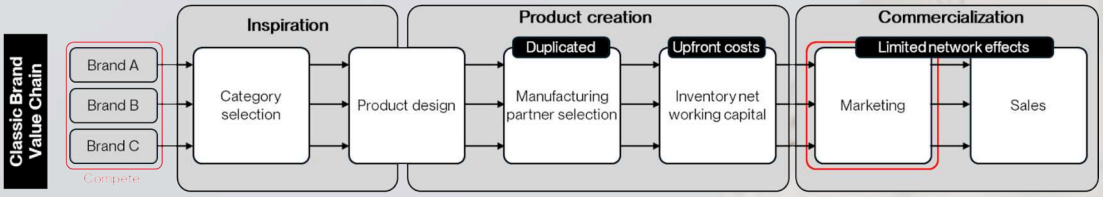
Would we, after some initial experimentation, wind up settling for some fairly prosaic use cases and getting incremental innovation, or would the re-imagined industry be a transformed one, pushing us to rethink the things we considered to be hard truths about the fashion beforehand?

BRANDS' MAIN CHALLENGES

First, let's ask the question: what are the biggest challenges brands face today?

The brand value chain is both complex and simple at the same time. Complex in that it involves a large number of different parties - each with their own set of incentives. Simple in that this framework has been, by most measures, unchanged for the last 500 years. To an outsider, the way fashion products make the journey from idea to market looks, frankly, messy. To an insider, that complexity and disorder is just the way things work and have always worked.

Below is a highly simplified view of a brand's value chain as it exists in 2024. I want to walk you through it, step-by-step, starting with the context of the industry itself.



LAYER 0: INDUSTRY DYNAMIC

The first challenge of a traditional brand value chain lies in its inherent competitive dynamic. Brands all compete for mindspace and share of wallet, bidding against each other to the point where unit economics have become broadly unsustainable for most players.

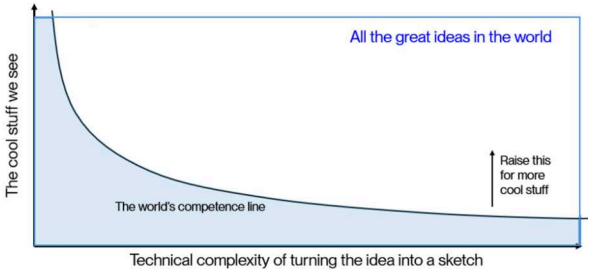
At first glance, this doesn't seem like a challenge AI can fix. Every industry that has a number of players growing faster than its market size is exposed to economic cannibalization and a race-to-the bottom in terms of profitability.

From a purely commercial perspective: with low (and lowering) barriers to entry, the number of brands in the fashion industry should continue to grow until a market equilibrium is reached where no one is truly making money, and where weaker actors are competed out of the market.

LAYER 1: INSPIRATION

The inspiration layer for most of us is the fun one. It's where passion lives. At this layer, designers are thinking: What should I create? What message do I want to share with the world? While this layer is obviously informed by the previous one - market realities increasingly dictate what gets made - this is also where the ineffable "creative" spark sits. This layer also flows through many stages, namely: personal experience, idea, and sketch.

Here the challenges are obvious: there is a limited supply of great ideas, getting unbiased market validation on the merits of an idea is hard, and transforming great ideas into great sketches requires technical skills that not everyone has. The technical skills required to transform an idea into a sketch reduce by several orders of magnitude the number of inspirations we get to ultimately consider to be developed into new products.



LAYER 2: PRODUCT CREATION

The product creation layer is my personal favorite. It's technical, messy, and requires a lot of coordination with outside actors. This layer is defined by the following stages: tech packing / 3D design, manufacturer selection, golden sample production (often with many rounds of iteration), inventory production.

Challenges are basically all there is at this part of the process! But if one wants to be specific, here are the key pain points most brands face:

- **TRANSPARENCY:** it is hard to find good manufacturers and it is even harder to know if you are paying a fair price to work with them.
- **PARALLELIZATION:** each brand has to do the same work as the others. Functionally the same tech pack will be designed thousands of times by thousands of different brands, with every one reinventing the wheel multiple times over.
- **SKILLS:** Tech packing and 3D design, visualization and simulation require expertise, as well as dedicated hardware and software for the latter.
- **QUALITY ASSURANCE:** Finding the good manufacturing partners is costly as it involves good through multiple rounds of sampling, knowing what to look for, etc.
- **FINANCIAL RISK:** Finally, the biggest challenge of this phase is the negative working capital involved in building inventory before knowing if you can sell it. This is the main reason why so many brands die or never see daylight: guessing what the market wants, committing to producing it in volume, and then finding that it doesn't sell is an extremely common occurrence.

LAYER 3: COMMERCIALIZATION

Finally, the third layer: getting sales.

This one has already been transformed by AI in a meaningful way through product recommendation algorithms, better ad targeting, dynamic pricing, etc.

Commercialization can be broken down into two phases: (i) marketing - i.e. creating a purchase intent for your product, and (ii) commerce - i.e. handling the mechanical aspects of completing a transaction (payment processing, ERP update, fulfillment, shipping, duties optimization, after-sale support, etc).

The commerce side is usually what people identify as the "boring" part of the business. The name of the game here is efficiency more than anything else. There are best practices, and for most brands, the key is to follow them diligently, not innovate. Other industries, too, have already set fairly cast-iron templates for having the most seamless routes to market.

The marketing side gives more space for creativity and experimentation.

Which channel to use? How to frame your messaging? How to design visuals that stand out and stick? Here the biggest challenge is optimizing ROAS (return on ad spend) by creating better promotional material, faster, and distributing it to the right people, at the right time, and in the right way.

WRAPPING UP ON CHALLENGES

As we've seen, there are a bunch of challenges that brands need to overcome at the inspiration, product creation, and commercialization layers. Although there are hundreds of them individually (and any one can easily become a bottleneck that holds back the speed, quality, creativity or other outcomes of a final product), we can bundle them into three core categories:

- **FINANCIAL RISK:** (i) product development risk, (ii) inventory risk, (iii) high customer acquisition costs
- **SKILLS SCARCITY**: shortage of (i) inspiration, (ii) sketches, technical, and 3D design skills (iii) quality insurance expertise, (iv) marketing efficiency
- **TIME CONSTRAINTS:** the inability to move through each layer faster, or even in parallel.

> "THESE TYPES OF INNOVATIONS ARE BLACK SWAN EVENTS THAT FIT THE ADAGE: "THERE ARE DECADES WHEN YEARS HAPPEN, AND YEARS WHEN DECADES HAPPEN"

LEVERAGING GEN AI TO PROPOSE A NEW FRAMEWORK

Now that we better understand the inherent challenges coming with launching a fashion brand or a new collection, let's explore if and how generative AI might help us.

From that perspective, the first question to ask is: has it done so already? Did the world truly change over the last year or so in a way that's delivered meaningful AI applications into the hands of brands and retailers? A few observations:

- We have already gone from a world where only a handful of trained designers can conceive breathtaking concept mock-ups to one where everyone with taste has that capability. We hear a lot about generative AI's ability to "democratize" creativity (and there are certainly strong opinions on both sides as to whether that is a desirable thing) and this is the neatest encapsulation of it. If you want to bring an idea you have for a product - no matter whether it fits into the apparel, footwear, or accessories categories - to life, you can now do so without needing to learn to draw or model in 3D.

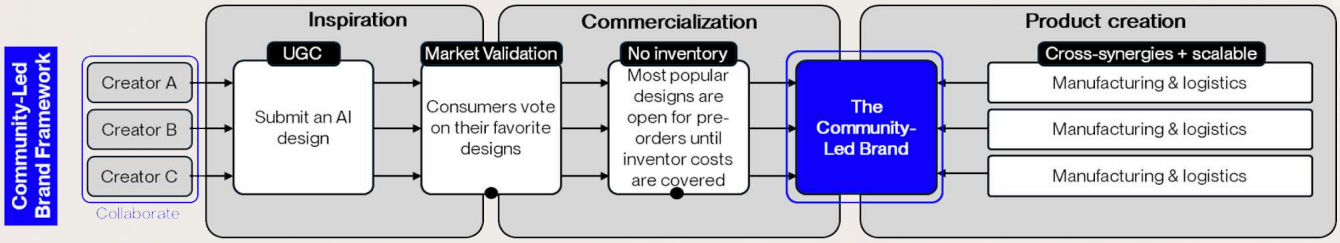
- We have already moved from a world where creating captivating marketing materials and validating consumer demand could only be done post production with professional assistance, to one where AI can do the job at much earlier stages of the product lifecycle, in a way that requires far fewer professional skills.

- We have already moved from a world where manufacturers had little visibility and exposure to end-buyers to one where data can both inform and connect them with customers. And while that data itself is not generated by AI, an increasing number of supply chain connectivity and visibility platforms are making extensive use of AI to provide clarity, accountability, and a new channel for engagement and exposure.

- We have already moved from a world where creatives *might* be able to collaborate instead of compete, to one where universal accessibility of digital creative tools, digital production methods, and community sourcing platforms has made it easier than ever to work together and to make use of both innovative manufacturing approaches and collective buying power across traditional ones

Taking stock like this, I think it's important to recognise how quickly some of the fundamentals of fashion have *already* changed. But, building on these facts, let's consider how AI could empower us to propose a completely rethought value chain for emerging brands.

The framework proposed on the next page obviously has its own flaws and does not claim to be the answer to all of the industry's challenges. However it is a new structure only made available by the rise of generative AI we've witnessed over the last year - and by linking those new possibilities into some of those pre-existing innovations I listed in design, marketing, and manufacturing.



I believe this approach is interesting not just because of its innovative approach, but because it also offers a realistic way for emerging entrepreneurs to offload risk. For the moment, let's call it the Community-Led Brand Framework, and let's consider how it would differ from where fashion finds itself today.

LAYER 0: DYNAMICS

The traditional competitive landscape, where brands vie for market share and visibility, is transformed into a collaborative ecosystem. In this community-led dynamic, every new player – creator or consumer – adds value. Network effects, often non-existent in the classical approach are now amplified as each participant not only consumes but also potentially contributes ideas, enriching the pool of designs.

By crowdsourcing ideas and having all involved actors incentivized in growing the network, the community-led brand transforms the net zero competitive nature of a multi-brand ecosystem to positive-sum multi-creator ecosystem.

This may sound unrealistic in such a cutthroat market, but we only need to glance at the communities that have grown up around online creators and hobbies, or the communities built around AI tools like Midjourney, to see that this model is not just feasible but that it also potentially better fits the reality of content creation and consumption in 2024.

LAYER 1: INSPIRATION

In a generative AI-infused world, the bottleneck of creativity can be removed. Anyone with taste and patience can generate an amazing product mock-up, irrespective of technical skill. Market validation, previously a stumbling block, is now facilitated by a captive ecosystem of actors voting on the concepts they would like to see move forward.

> "TO PUT IT SIMPLY: AI-NATIVE FASHION COULD GET US TO A STAGE WHERE WE DON'T NEED TO ASK SO MANY REPETITIVE, RHETORICAL QUESTIONS ALONG THE ROAD FROM IDEA TO FINISHED PRODUCT."

This measurably meritocratic community idea validation process derisks the chances of producing something nobody wants, turns passive buyers into active participants, and more importantly, allows creators to finetune their approach and designs, significantly accelerating the feedback cycle necessary to their development as designers.

There are, of course, social and copyright considerations to take into account here, but broadly speaking the closer fashion gets to culture, and the more the two are allowed to grow in symbiosis, the better they will feed into one another.

LAYER 2: COMMERCIALIZATION (NOT PRODUCT CREATION)

A significant shift in the traditional value chain occurs here, as commercialization leapfrogs product creation, at least up to a certain degree.

With generative AI, the market validation phase can inform and precede manufacturing. This is what on-demand producers like Shein are doing, but this can also be accessible to smaller brands if they join an ecosystem where speed of delivery is removed from the equation for consumers.

This is a profound change. Moving to a pre-order and on-demand production model, effectively mitigates the financial risks associated with inventory and unsold stock. Commercialization becomes an intelligent, data-driven process that actively shapes the products to be created. And the sustainability benefits of effectively removing waste could be profound.

Obviously, customers will not wait forever to receive their products, though. While shoppers are increasingly understanding that fashion cannot be cheap and fast without the planet or another person paying the ultimate cost, fashion is still driven by whims and desires just as much as by practical, long-term planning. For every time someone commissions a piece of on-demand occasionwear for a pre-planned wedding, there will be a scenario where someone needs something much sooner *- just because*.

So is there anything meaningful that can be done with the now new layer 3, product creation, to accelerate that cycle? Could we reach a point where delivery delay doesn't exclude such a big market segment that the community-led brand model becomes effectively unviable.

LAYER 3: PRODUCT CREATION

Product creation in the community-led framework must be agile, proximate, and proactive.

In this new model, the generative AI concept generation model of the community-led brand leverages a visual database of manufacturers' design capabilities to arrive at something producible. When creators input their concepts, the AI analyzes this visual history and steers the design towards the nuances and capabilities of the most fitting manufacturing partner - covertly matching inspirations with components, materials, and machinery.

This AI-native system wouldn't be about pondering variables such as cost or timing, which are where the traditional fashion value chain spends the most time circling back on itself; instead, it's a direct conduit between the creative concept and the manufacturer's proven expertise, ensuring a smooth transition from idea to physical product. As the AI is exposed to more historical data, patterns, operations, components and so on,its ability to match designs with manufacturers becomes even more precise, accelerating the production process without compromising on the manufacturer's strengths or the creator's vision - and without needing anyone to completely re-engineer a basic t-shirt.

Just like ChatGPT, Perplexity, and others are opening the era of "answer engines" in opposition to "search engines", the community-led brand's ever evolving network of manufacturers can create the foundation of a new "answer-machine" when it comes to handling how to transform a given design into a fully fledged product.

To put it simply: AI-native fashion could get us to a stage where we don't need to ask so many repetitive, rhetorical questions along the road from idea to finished product. And if you don't *need to* ask them, how many designers, creators, and brands would choose to?

CONCLUSION

Through the lens of generative AI, each layer of a brand's value chain could be imbued with new capabilities. Inspiration is no longer confined to a select few; commercialization shifts upstream, influencing what is produced; and product creation becomes a dynamic and demand-driven process.

A lot needs to be achieved to get there, but I believe the evidence is out there, in both our personal and professional lives, to suggest that this is not a wild idea. I see it as feasible and desirable to reconfigure the entire value chain around these possibilities, heralding a new era where community, collaboration, and creativity are at the heart of fashion innovation. More importantly, this model could open a new path for aspiring brand owners to tip their toes in the world of entrepreneurship while reducing their risk and need to focus on the "boring" parts of having a brand.

If this model sparked your curiosity, you might want to consider downloading Off/Script from the app store. My team and I have been working for a long time on turning this vision into a reality, and we'd love to hear what The Interline's audience thinks.

CHANGING ROLES

HOW AND WHERE AI IS TRANSFORMING JOBS, AND WHY OTHERS COULD BE AT RISK

BY MACKENZIE RYAN
INVESTIGATIVE JOURNALIST

MacKenzie Ryan is an investigative journalist based in Utah. A former investigative producer for the CBS affiliate in Salt Lake City, she has also been a contributor to The Guardian since 2022.

At a whole-society level, thought leaders and analysts are still split on whether breakneck improvements in AI, and what seems like its inevitable widespread adoption, are more likely to result in greater productivity, efficiency, and support for existing talent, or in longstanding roles being eroded away by automation.

And in both cases, the same commentators are also undecided as to which disciplines will be the most affected – with the prevailing sentiment being that essentially anyone, from the junior creative to the seasoned CEO, could have their position either augmented or usurped. Where once machine learning-linked job transformations were reserved for clerical and statistical roles, today a massive spectrum of creative and commercial jobs are potentially in AI's sights.

What does this mean for fashion?

In researching this piece, the experts I spoke to confirmed the expectation that few jobs will be unaffected by AI. In the very near future, manufacturing, marketing, sales forecasting, designing, and even modeling will all necessarily leverage AI as either a creative aid, a productivity boost, or a way to minimize costs and reduce time to market.

And in the slightly longer term, AI does have the potential to subsume some of those roles entirely.

In every case, there's also unanimity amongst analysts that fashion industry professionals who become fluent in these technologies will have the advantage in the job market – either as a lever to safeguard their jobs, or as a way to demonstrate their commitment to embracing new technology. Because, as the CEO's current favourite adage goes, "AI might not take your job, but someone proficient in using AI might".

ROUTINE TASKS AND ADMIN-INTENSIVE WORKFLOWS WILL BE FIRST ON THE CHOPPING BLOCK.

"AI is most likely to replace roles [primarily made up of] repetitive tasks," explained Professor Linwei Xin, from the University of Chicago's Booth School of Business, when we spoke this spring. According to Xin, this is an extrapolation of the existing trend of companies using automation in areas where they don't have enough humans, or enough *interested* humans, to fill highly routine roles.

Until now, that automation has taken a more common and recognizable form: factory robotics, just-in-time supply chains, logistics, warehousing, and distribution. These are what we might characterize as the jobs where technology has been slowly augmenting and replacing human labor for decades. In the United States and China, where relative labor costs have skyrocketed, automation and robotics deployed up and downstream have been key components in reducing companies' overall costs. And as Xin pointed out to me, this same driving force is likely to be behind the adoption of AI across the fashion value chain – making its probable impacts easier to predict.

Some of the fashion industry's manufacturing is already automated, particularly cutting, explained Juan Hinestroza, Cornell University Professor of Fiber Science and Apparel Design, who I also spoke to in researching this piece – although the global distribution of that automation is still uneven.

Depending on where garment and textile manufacturing is taking place, it is still currently cheaper for companies to employ humans to make and sew in markets where labor is cheap. But this

trend, too, has a clear through-line from the original driver for automation: cost cutting. Fashion has, for several decades, lifted and shifted its sourcing and manufacturing from one region to another as micro and macro-economic forces evolve.

In industry parlance, this is what's referred to as "chasing the cheapest needle," and it has remained common practice even in the face of coordinated campaigns to "reshore," or return production to consumption markets like the US, EU, and UK.

Hinestroza reminds us that, in the 1970s and 80s, fashion jobs boomed and busted in Eastern Europe, then they moved to China - and now they're being relocated to Africa and South America where there is a net benefit to brands that spans both proximity (shipping is quicker and cheaper from those locations to key markets in Europe and North America) and labor cost.

"[As a brand] you are always racing to minimize costs and continue your production," Hinestroza says. "But what do you do with people who that's the only thing they know how to do?"

And this, really, is a critical question. It may be more likely for on-demand, digital production technologies and deployable, composable 'microfactories' to replace offshore manufacturing, but the principles and the unanswered queries behind AI adoption are set to be the same.

When you have an established system, or a part of one, that operates and sustains itself based on the inputs of people who have been exclusively trained on just that system – what happens to them when the commercial justification for letting AI do their jobs becomes stronger than the social and moral imperative to keep them in place?

This is more than just a theoretical tension, too, since there are entire segments of the fashion value chain where AI already has the capability to replace a swathe of human talent – and we are already seeing a pushback from communities (and the general public) that suggests that a delicate balancing act is currently taking place.

WILL AI REPLACE REAL LIVE MODELS?

The process of making final physical production samples in one part of the world, shipping them to another, identifying the right human beings to wear them, then booking studio space or locations for a professional photographer to shoot them in – and *then* translating the resulting images into marketing and eCommerce materials – is a long,

expensive and circuitous one. And this makes it a prime target for AI automation, since a generative model could potentially condense many of these steps into one, and many of these people and skillsets into a single piece of software.

But is it quite that simple? The commercial argument may be compelling, but the cultural counterargument is equally strong.

Dutch AI studio Lalaland has become a prominent name in fashion thanks to its pipeline, which can generate lifelike fashion photoshoots featuring artificial models by training an algorithm on actual photos and on a brand's specific products, as their CEO and Founder Michael Musandu explained to me. At a first glance, their work raises clear questions about whether fashion brands, which spend thousands to millions of dollars a year to hire models alone – without even factoring in the costs of all the other photoshoot elements I mentioned earlier - could cut back on the money they spend on photoshoots, and the models, photographers and other professional skills and materials needed for them, and reinvest that income elsewhere.

Instead, Musandu believes their AI models are helping to create equity for brands of all sizes and different budgets, allowing them to scale their photoshoots without those overheads becoming constraints. "By saving 70% of the costs associated with traditional shoots, we've seen brands reinvest these savings into more marketing campaign videos and images featuring real models," he notes.

"Lalaland's AI-model supplement does not replace real models," Musandu pointed out to me. "We believe human models will continue to play a vital role in the fashion industry, establishing genuine connections with consumers. Our technology aims to support this." Musandu argues that the industry will not only need to continue employing models and photographers and lighting engineers and booking studio space, but it will actually need more of that talent to come from more diverse and underrepresented groups, and that AI-enabled automation can be a lever to help that happen.

[*The complicated status of AI and diversity and inclusivity is analysed in more depth in another feature contained in this report – Editor*]

And this raises an important consideration for any organization looking at AI as a way to augment or automate any creative, technical, or commercial role: does that job create a pinch point by simply existing, or could the time and effort the person filling that role expends create greater value elsewhere? Or, in other words, is the opportunity a matter of throughput and speed, or of releasing untapped potential?

The answer to this question is likely to fall somewhere in the middle, but the template being set by AI-generated product photography does suggest that fashion is going to see an evolution of traditional roles rather than a wholesale replacement of them. Although the net result may still be fewer jobs in some areas, including those that have traditionally been considered sacred in fashion.

THE INDUSTRY WILL TREND TOWARD HIRING FEWER, MORE AI-FLUENT DESIGNERS.

Despite the public perception, technology-enabled or technology-adjacent automation is rarely the proximate cause of a shift in the jobs market. Instead, analysts and thought leaders suggest, the real replacement for an entrenched role is talent with a different, more contemporary skillset.

"It's not that the worker gets replaced by a robot or a machine in most cases, especially for desk jobs, it's that some better or more educated worker can do that job because they can be twice as productive or three times as productive," Code.org Founder and CEO Hadi Partovi said during this year's World Economic Forum. "The imperative is to teach how these tools work to every citizen, and especially to our young people."

And Hinestroza reports that he's been using AI for almost two years himself, as well as teaching generative and non-generative tools in his classes because his students "need to be prepared [for the] reality of the industry". Designers in particular need to be fluent, Hinestroza told me, because the largest improvements in the underlying technology have been observed in generating visuals.

And Hinestroza points out, that at the beginning of last fall semester, the output of generative image models went from lackluster quality to experiencing an "incredible leap of images and technology". When he attended the biannual Canton Fair, one of the world's largest trade shows, he noticed nearly every company designing was using text-to-image generators like Midjourney and Dall-E as a way to cope with the demands of creativity in a fast-paced industry. "If you look at a butterfly, and want a collection based on butterflies in Mexico, [AI models] will create an entire collection for you," he says.

Does this mean the end of non-AI fashion design as an occupation? Hinestroza reminded me that we simply don't know yet. One potential outcome is that designers and AI become co-pilots, with generative models providing creative inspiration and assistance – and even potentially helping with technical design and patternmaking tasks. On the other hand, companies are signaling that they won't need as many designers, with the hope being that the use of AI tools could help to open up other roles for those professionals – even if the prospects are potentially bleak for junior designers who may no longer get the opportunity to prove themselves before being elevated to mid-weight and senior roles.

In an use case that may feel dystopian or unremarkable, depending on your perspective, Hinestroza described a hypothetical example to

me whereby a brand might fully automate a spring collection based on fruits in Asia, for instance, and then a designer could create a separate portfolio leveraging different tools - and another executive could choose which workflow and which set of tools did the better job. And while this may not be completely a case of pitting people against machines, it would, in the very least, be an instance of machine-assisted humans being set against machine-native creative pipelines.

Crucially, the timeline for this kind of experimentation is short, as Hinestroza told me:

"Most of the companies are using these tools. Some admit it. Some don't. [I] don't know why they don't admit it. Maybe they want to pretend to be more human-centered, but at the end of the day, you have deadlines [to meet] and [AI] can accelerate the process."

AI OPTIMIZES. HUMANS MAKE DECISIONS.

Earlier this year, Massachusetts Institute of Technology labor economist David Autor argued in Noema magazine that the fear of AI replacing jobs is misplaced and, instead, the adoption of AI could instead serve as a catalysts for what we might term 'capability elevation' - enabling a larger set of workers to perform higher-stakes decision-making.

And the experts I interviewed were all clear that AI's impact will not just be felt in narrow roles, but that AI should, at least in theory, enable mid-level to executive-level fashion industry professionals to make better–and fewer–decisions.

"Imagine selling 100,000 products. You have to manage each of them, every week [deciding] how many of this shirt [to order] from this supplier. If you're selling thousands and thousands of products, it would be difficult and tedious for human buyers," Xin explained to me. Which is equivalent to asking how can one person make *all* of the decisions that need to be taken across the extended product lifecycle, and in the compressed timeframe needed to bring new styles to market when they still have a good chance of selling.

Xin described to me an example of how AI used past sales data to do a better job of forecasting so that "your human buyer can focus more on best sellers" and continue the job of communicating with suppliers. A prime instance of something considered an intuitive or 'higher order' task that is, in reality, another matter of efficiency, time, and accuracy – underlining the extent to which technology can progressively shift the window of what is considered a task that's suitable for automation.

Instead of having people fly around the world and identify trends by visiting runway shows or conducting field trips to fashion capitals, now algorithms work more effectively and efficiently. They process social media photos of what people are wearing in Singapore, London, or Rio and, in real-time, decision-maker are able to "ask the machine" to create a collection based on the next trend.

Large brands use mass customization instead of traditional forecasting to reduce the lead time to produce specific items, Xin explains. In this process, AI predicts trends and optimizes their scheduling from design to delivery. When customers choose preferences for the product they're purchasing, the brand effectively delays customization until the last step in choices such as color and material. This concept is known as postponing.

Casting the net wider, Xin could not comment on whether or not the fashion sector would cut marketing jobs. Hinestroza, though, told me that he believes most marketing now can be 100 percent automated with AI tools. His students are already learning how to use AI to market clothes to different ages and different markets, and earlier comments from Musandu at Lalaland reinforce that the choice between tradition and automation is not always a binary one – suggesting that this next generation of talent will be the one to navigate the fine line between an evolving technology frontier and cultural attitudes.

AI can also optimize shipping routes and manufacturing, Xin says, even predicting disruptions rather than leaving brands needing to react to them. The push to make supply chains more robust has ramped up after

COVID and the Russia-Ukraine war. For the 20 years prior, companies wanted to minimize operations, leaving them vulnerable to disruptions and limitations in supply chains, he explains. Even with AI taking on a powerful role in planning and monitoring supply chains, though, Xin argues that there would still need to be high-level executives managing the human connections and relationships that keep these supply chain functioning.

Xin did express concern about how automation is replacing some formerly human-powered jobs. However, he repeatedly noted that there will be many jobs AI is less likely to replace, particularly those that involve human relationships and their psychology. Xin used chess moves as an illustration: AI chess engines can tell a player what the best move is, but only a human coach can tell a player *why* it's the best move. And from a disclosure and trust-building perspective, that transparency is likely to matter a great deal.

BRANDS—AND STOCKHOLDERS—BENEFIT. TECH COMPANIES ARE NEXT.

With such an unclear picture of how and where AI is going to supplement or supplant human labour, the question remains: who is financially benefitting from the proliferation of AI tools in fashion?

Hinestroza says tech companies aren't making huge amounts of money from it yet–but they will soon enough. This is likely down to the high cost of training and running inference for large AI models, but there is already evidence to suggest that these costs are being driven down, and that the sliding scale of customer revenue to cost will soon tip over into profitability.

Brands, though, are already successfully minimizing their cost, Hinestroza believes. In a new workflow, AI generates designs quickly, the brands choose the best designs for human creatives to either iterate on or approve, and then the manufacturers create prototypes very fast. This also, in effect, minimizes production because it reduces the overall amount of prototypes developed and increases the adoption rate of design ideas and samples to finished products.

And Hinestroza also reminded me that, in his experience, most of the designers for big brands are already contractors. In the future, brands may only need to hire a reduced number of full-time people to take care of AI programs. And while Western brands may hesitate to adopt similar workflows in their own operations, Hinestroza told me that when he was in China, he saw substantial third-party design companies leveraging AI design tools to create their new product catalogues, and those designs then being sourced by brands and supplying clothes all over the world, knowingly or otherwise.

So while obvious AI use by domestic brands is the tip of the iceberg, the reality is that AI has likely already deeply infiltrated the fashion value chain and is creating a commercial edge for suppliers – one that brands themselves will want to replicate.

Quite how this develops culturally, is currently very difficult to say. The impact on fashion's talent base is clearly imminent, but how that impact will be perceived by the shopping public is hard to predict given the backlash against the use of AI in creative fields.

"If you're in the business of fashion, you have to sell clothing to people, not computers. It's a complicated phenomenon," Hinestroza concludes.

FASHION HAS BEEN TARNISHED BY INEQUALITY. CAN GENERATIVE AI HELP DELIVER A MORE EQUITABLE FUTURE?

CAN AI BREAK DOWN FASHION'S BARRIERS, OR WILL IT ENTRENCH EXISTING BIASES?

AASIA D'VAZ STERLING
CENTRAL SAINT MARTINS

Aasia has a Masters in Fashion Entrepreneurship and Innovation, a degree in Fashion Design Technology, and has previously worked as an Associate Lecturer and Enterprise Consultant - all at London College of Fashion. She now works as a Partnerships Manager at Central Saint Martins and is also an alumna of the University of Cambridge Innovators For Sustainable Fashion accelerator.

Equity, diversity, and inclusion — although not a specialist in the field, these are words I am faced with every day, and I am sure you are too. At work, in the news, and on social media, awareness is everywhere and embedded into our collective consciousness.

So why, despite some notable effort from certain brands, does a truly equitable, diverse, and inclusive fashion industry feel so far away?

Maybe it's because these three weighty words come in many forms and guises, not just through the endless ways in which we organise, structure, and refer to them — EDI, DEI, D&I, etc. — but more importantly, how we view, prioritise, and interact with them as concepts.

It's a complex discourse that can sway between lip service and lively debate, distraction and genuine change as we navigate and establish their meaning and importance. For example, should we strive for equality or equity? How do we measure diversity of thought? Can inclusivity truly be all-encompassing?

Yet to even begin unpicking these questions requires context, patience, and emotional efficacy — virtues the fashion industry is not famously known for.

So often within the industry, we speak about EDI as objectives to be achieved under the umbrella of CSR metrics and marketing strategies, but for all of us, EDI needs to exist as concepts that organically live and breathe in both the broader and smaller everyday aspects of our lives and society.

As a result, for a long time, genuine inclusivity within the fashion industry has failed to feel like a feasible reality. It has just been too far away.

Yes, it can be said that the industry is making strides forward, but sometimes progress feels akin to treading water. This is particularly acute when we see examples of individuals at the top of the fashion food chain facing discrimination. Last year Tremaine Emory resigned as creative director of Supreme, alleging that there was "systemic racism at play" at the brand. And just take a look at representation across the four major fashion weeks, there has been a decrease in total size inclusivity, making body positivity feel like a fleeting trend.

Only two years ago, the British Fashion Council reported that just half of fashion businesses had coordinated D&I strategies. So as generative AI speeds ahead in its development and implementation within the fashion industry, I wonder if artificial intelligence can and will help us to do better - or whether it might have the opposite impact, and lead to deeper entrenchment of the current makeup of the industry.

Like fashion itself, generative AI is a pandora's box of ethical concerns, philosophical dilemmas, and felt risks. And it isn't surprising that models trained on our reality, a huge corpus of the world's publicly available data, reflects the aggregate biases that are present in that reality. Day to day, our world is hampered by bias, stereotypes, and discrimination, which begs many of us to question if we are cultivating the right intelligence within our technologies - or if we're even capable of doing so.

But whether we're ready to answer this or not, generative AI is here, and its application in fashion is evolving at lightning speed. Which should bring deep cultural questions that have long gone under-recognised firmly back into the spotlight.

EMBEDDING ETHICS INTO GENERATIVE AI AND ITS FASHION APPLICATIONS

Similarly to fashion itself, a lack of diversity in AI has long been a concern for EDI thought leaders, with notable departures from the EDI departments of technology giants illustrating a worrying trend whereby the people developing and shaping the AI systems seem to downplay the concerns of people who are worried that those systems are inheriting ingrained biases. So, as these two worlds collide to form innovative solutions, it's clear to see why these worries surround their union.

But what does EDI mean in the context of generative AI and fashion? Franki Tabor — who works in AI as both an ethics and fashion consultant — explains: "In the labyrinth of AI, ethics is the compass guiding us towards responsible innovation."

Tabor has established 7 pillars on which ethics in AI are upheld. Her thoughts on fairness and accountability, in particular, speak to the challenges of approaching EDI within a fashion industry that's rushing towards AI adoption. "Fairness in AI is not just an option; it's the foundation of equitable technology for all. Accountability in AI (is) where innovation meets responsibility, ensuring technology serves humanity."

These statements begin to answer my question. Simply put, fashion's use of AI must be equitable for, and conscientious of, everyone in order to serve everyone, but this is easier said than done. Not just because of fashion's own difficult history in this regard, but because generative AI, in a wide, industry-agnostic sense, has already proven to be problematic.

PULLING BACK THE CURTAIN ON GENERATIVE AI

We've all read the not-so-surprising yet still saddening statistics that illustrate the lack of diversity in boardrooms across corporate institutions. And we've all seen the articles lambasting brands for recruiting yet another white, male creative director to lead or revitalise a legacy brand.

While the world is filled with bias, fashion often comes under fire because the industry, with its vast cultural impact, should be a blazing a very public trail behind the scenes the same way it has started to do on the runway and in marketing.

According to the British Fashion Council's 2024 DEI report, models on catwalks and in advertising campaigns have become more ethnically diverse, yet only 9% of executive teams are people of colour. And while I rejoice at the sight of women who look like me depicted in the media that encapsulate Western culture, I can't help but want to peel back these representations of diverse characters and hear the stories of real people of colour who inhabit the workspaces where campaigns are developed.

However, what many of us clearly see as a glaring lack of diversity is evidently not recognised by many others. Recent research found that 14% of white men working in fashion believe that the industry is not diverse, compared with 54% of women of colour and 48% of people with disabilities. And looking at the AI sector, we seem to be tackling a similar beast — a staggering 91.88% of the AI workforce is made up of men.

So, when we question how Generative AI is built, tested, and refined, we have to scrutinise the lived experiences of the people developing and informing the text, image, and video models that seem as though they will be defining the future of fashion creation and marketing - and if they not only disregard the voices of those not present in the room but even notice that they're not there.

The many examples of existing biases being transferred into Generative AI, don't put these concerns to bed, with a 2023 study finding that three-quarters of organisations are making no effort to identify or reduce bias in their AI models. If we were to continue down this path, the technology could seriously threaten EDI's much-needed improvement in the fashion industry.

DEMOCRATISED NOW AND EXCLUSIVE LATER?

Depending on your position in the contentious AI debate, its speed of advancement can induce excitement or anxiety—or, in many cases, both.

This sentiment is echoed by Fashion Photographer Stefan Jakubowski, who leapt into incorporating generative AI into his practice. "It was a combination of curiosity and anxiety that motivated me to start using it…my plan initially was simply to try it out, see how it worked and what kind of results it would produce so I would know whether I had genuine reason to be fearful for my industry and career," he told me.

One of the most prominent concerns around AI is its potential to replace humans at their jobs. [This side of the AI debate is analysed in depth elsewhere in this report - Editor] And this is especially true in an industry where the availability of opportunity is already stacked against individuals from diverse cultural, socio-economic, and geographical backgrounds, or people with neurodivergence and physical disabilities.

But for all the gaps in its training data and the flaws in its outputs, we may actually be witnessing the beginning of generative AI's ability to make the fashion industry more accessible and potentially more equitable for such individuals. Where we've seen social media decentralise fashion opportunities from major cities and institutions, generative AI solutions such as BLNG AI - a model that generates ideas for jewellery design, an often expensive craft to learn and realise - are continuing this work.

Tabor explains how the opportunistic space created in fashion by AI inspired the launch of Fashion AI, a creative community and agency. “The digital transformation across industries prompted us to rethink how fashion is designed, created, and shared. Thus, Fashion AI was born out of a desire to democratise fashion design, making it accessible to aspiring designers who may lack traditional resources but possess abundant creativity and vision.”

But as Jakubowski puts it, this is "a double-edged sword." What might first look like a positive move that "...lowers the barrier to entry into the industry"

could irrevocably change the fashion industry. "Is there an economic flip side to that? If you consider the situation in the music industry, where it's more accessible than it's ever been to start producing and distributing music, yet so many music artists are now struggling to make a living, are we headed ultimately for a point where fashion... ceases to become a viable full-time career for everyone but a very small section of people right at the top of the tree?" Jakubowski elaborates.

And this gets to the heart of many of our fears - we know it's coming, but what does radical, AI-catalysed change look like in an already uneven playing field?

According to McKinsey & Company, by 2030 women are 1.5 times more likely to need to move into new occupations than men, and as AI stands to alter the nature of global workforces in every industry, fashion brands will need to consider how they maintain and grow their EDI metrics at the same time as exploring new frontiers of automation and efficiency.

"What I hope will offset... (job losses) is that, similar to how the internet and mobile apps created and opened up whole new ecosystems, products and communities, generative AI will 'grow the pie' of the fashion and creative industries." Jakubowski optimistically adds.

It's too soon, however, to tell what these new business models and revenue streams might look like - but what is evident is the impetus to take action born out of these concerns, and this is precisely what a variety of founders are doing by creating models that reduce discrimination within AI.

INCLUSIVITY DRIVEN SOLUTIONS

To bring light to the limitations of current generative AI models, creative agency McKinney developed the quiz, "Are You Blacker than ChatGPT?" Taking this test is an eye-opening exercise that emphasises the lack of data sources that influence the ground-breaking OpenAI platform - the aforementioned gaps in the training data seem like chasms when we view them from the vantage point of anyone who does not fit the very narrow profile of the people who designed those models and the cloud applications that people use to interact with them.

Then there's Latimer, a model that takes this observation a step further. As an AI model trained with sources from lesser-represented cultures, oral traditions, and localised archives, Latimer is a refreshing solution that provides inclusive intelligence that expands the ability to imagine a more equitable generative AI ecosystem.

In 2022, Web 3 creative studio People of Crypto, working in collaboration with The Sandbox and Nyx created the first non-binary avatar collection including 36 skin shades; every ethnicity, sexual orientation, and gender identification; as well as prosthetic limbs and cultural identifiers like the hijab. They continue to help brands build culturally relevant experiences. Just last year, they worked with Walmart to launch the Cultureverse to broaden access to technology for Black creators.

And ensuring diversity behind the scenes of technology are community-driven organisations like Black Girls in Tech created to give a safe space to women of colour in a white-dominated industry and support them to develop in their careers.

GENERATING DIVERSE REPRESENTATION WITHIN THE FASHION INDUSTRY

At the end of the day, what is fashion if not a reflection of culture? An amalgamation of ideas and perspectives that trickle down, bubble up, and stick to the fringes.

Surely, we'd be putting ourselves at a disadvantage if we created generative AI models that isolate the technology from the knowledge, influence, and voices that diverge from our own.

While ethnic representation in the fashion industry increases year on year, it's not been an easy battle. Historically when diverse individuals are present in the media, there's often a lack of consideration to the lived experiences of people with protected characteristics. Remember those Dove and H&M ads? — context is everything.

For a long time brands have ignored the problem of casting diverse individuals in front of the camera and not considering the different worlds that these

people inhabit. Now that the industry is embedding generative AI to create consumer-facing content entirely from scratch these risks could become even more exacerbated, and a backlash is looming for companies that could be accused of using AI to create ersatz diversity in place of real diversity.

Jakubowski warns brands "not to be complacent" when it comes down to integrating AI into existing workflows. "… AI might be doing more of the creative 'heavy lifting' but the ideas, the creative direction, the choices will always come from humans." And brands would do well to take direction from Jakubowski in both the creative and commercial spaces.

Working with real humans requires their involvement, and even in the smallest capacity, we are beginning to see more instances of 'the talent' being heard and not just seen.

But what happens when these opportunities, these water-cooler conversations between concept development, outfit changes, and editing, are entirely removed, and imagery immediately moves upstream to downstream without essential spaces for dialogue and collaboration that allows a diversity of perspective?

BUILDING AUTHENTIC REPRESENTATION WITH GENERATIVE AI

Characters like Lil Miquela - the racially ambiguous virtual influencer - are increasingly popping up over social media. For example, Aitana López — a Spanish AI influencer — is a 'self-described' "fitness fanatic", which is quite an accomplishment given she doesn't even have a body. Personalities such as Lopez make me feel like we're treading into dangerous territory, pushing already impossible body and beauty standards imposed on women made from flesh and bone.

When Levi announced their partnership with Lalaland, the denim brand faced backlash from their audience, accusing them of cutting out real models in favour of computer generated ones at a time when representation actually seemed to be starting to improve.

But if the fashion industry is going to use AI tools to render models regardless of these concerns, is it better to lean in rather than resist to ensure that diversity is still present? However you may answer this question, it is vital to consider the effects AI models and influencers will have on real people and how they perceive themselves, in addition to the impact on how they are perceived by others through artificial representation.

Fundamentally, depictions of individuals generated using AI will need to be brought to life through human-centred and participatory methods; otherwise, brands risk co-opting marginalised voices for the purposes of marketing, sales, and branding.

We're already on shaking ground. Cultural appropriation is rife within the fashion industry - just look at the popularity of accounts like Diet Prada, calling these practices out, and models are already accusing AI of stealing their faces, adding a whole new dimension of ethical and legal quagmires that allows brands, agencies and creators to use their likeness without the need for consent.

As consumers increasingly desire authenticity and transparency, businesses will need to be careful with how they deploy generative AI to cut costs, fast-track content, and generate campaigns. They should act with empathy, challenge their assumptions, and, most importantly, invest in the development of inclusive and diverse work environments that will, in the long run, save them and others the pain of insensitive communications.

EMPATHETIC AND CULTURALLY AWARE AI

Gemini is a cautionary tale on the opposite side of this equation: a model that willfully pushes diversity at the detriment of context. The viral images depicting black Nazis and female popes from simple prompts that did not specify ethnicity or gender are amusing at first with their wildly unrealistic and historically inaccurate representations. Still, it raises concerns about the lack of nuance in these models.

At the moment, there's so much work to be done to scrub bias from the fashion industry, I look forward to a time when generative AI will take blind inclusivity that step further to enhance equity and intersectionality by recognising us for our differences and reflecting our personal truths rather than those of the people programming them.

While we know that artificial intelligence and emotional intelligence are vastly different - simulating empathy is not the same as feeling it. Cogs — an AI wellbeing app for neurodivergent people — and Black Female Therapist are compelling attempts to service people as individuals that exemplify another of Tabor's ethical pillars, "Building AI with a conscience: Where technology meets humanity, crafting a future that respects all beings."

The keyword here is "all." To succeed in today's hunger for hyper-personalisation, generative AI will need to learn how to balance inclusivity and representation with the complex and intersectional aspects of identity. This will be a monumental task.

Even within this article, I approach the topics of EDI from a perspective rooted in my own identity and experiences, whereas someone else might pose other questions, concerns, and highlight risks drawn from their own views and characteristics.

THE FUTURE OF FASHION AND GENERATIVE AI

Throughout this piece, I have asked a multitude of questions, many of which have different answers depending on who's answering. What is less subjective however, is the fact that generative AI is a minefield. While a lot of this report is given over to the practical and technological considerations inherent in rolling out a potential transformative class of technologies, we cannot ignore the fact that a cultural evolution is inextricably wound up in that technological revolution - or the need for sensitivity, understanding, and recognition.

As both a society and an industry, though, we are in a unique position where we have the opportunity to learn from mistakes in a way that should help inform policy and regulation, rather than trying to find ways to retroactively prevent them.

"Fairness and bias mitigation in AI are not just technical challenges but ethical imperatives. Ensuring that AI systems operate equitably is essential for building trust in AI technologies and harnessing their potential for positive societal impact." Tabor states.

And I couldn't agree more. The volatile and complex global landscape of today has put us into a state of perpetual anxiety about the future of our planet and society. I have no doubt that AI will wield immense power in the way we navigate our impact on both, as well as across a suite of more prosaic but no less vital personal and professional use cases.

I just hope that as generative AI evolves we are forced to think outside of ourselves and make EDI and ethics the rule and not the exception.

IS FASHION EDUCATION READY FOR AI?

HOW, AND HOW QUICKLY, THE NEXT GENERATION OF TALENT IS BEING PREPARED FOR A TRANSFORMED WORKING ENVIRONMENT.

BY EMMA FELDNER-BUSZTIN
NEWS & FEATURES EDITOR, THE INTERLINE

Emma Feldner-Busztin writes about how technology is shaping our world and how global trends and patterns will impact the fashion industry. She currently serves as The Interline's News and Features Editor.

Until recently, artificial intelligence (AI) in fashion has primarily been used for process optimisation and narrow, well-defined use cases in object recognition, inspection, product discovery and personalisation that kept it confined to technology departments at brands - and to computer science departments in education. But in 2022, AI surged into the mainstream thanks to the sudden public emergence of generative AI architectures, models, and applications - altering the status quo of fashion, and other creative industries alongside it.

While fashion brands and retailers might, on the surface, seem to be taking a "wait and see" attitude to AI, the reality is that a good proportion of businesses are actively trialling, experimenting with, and generally exploring the possibilities of AI - and finding ways to map that potential to a return on investment. The results of those pilots might be variable, but in-industry the broad parameters of AI are already being tested.

But when it comes to preparing the next generation to enter fashion's workforce - it might be a different story. It's obviously logical that education will lag behind the bleeding edge of technology innovation, but with AI changing things so comprehensively and so frequently, are institutions really equipped to close that gap in a meaningful timeframe?

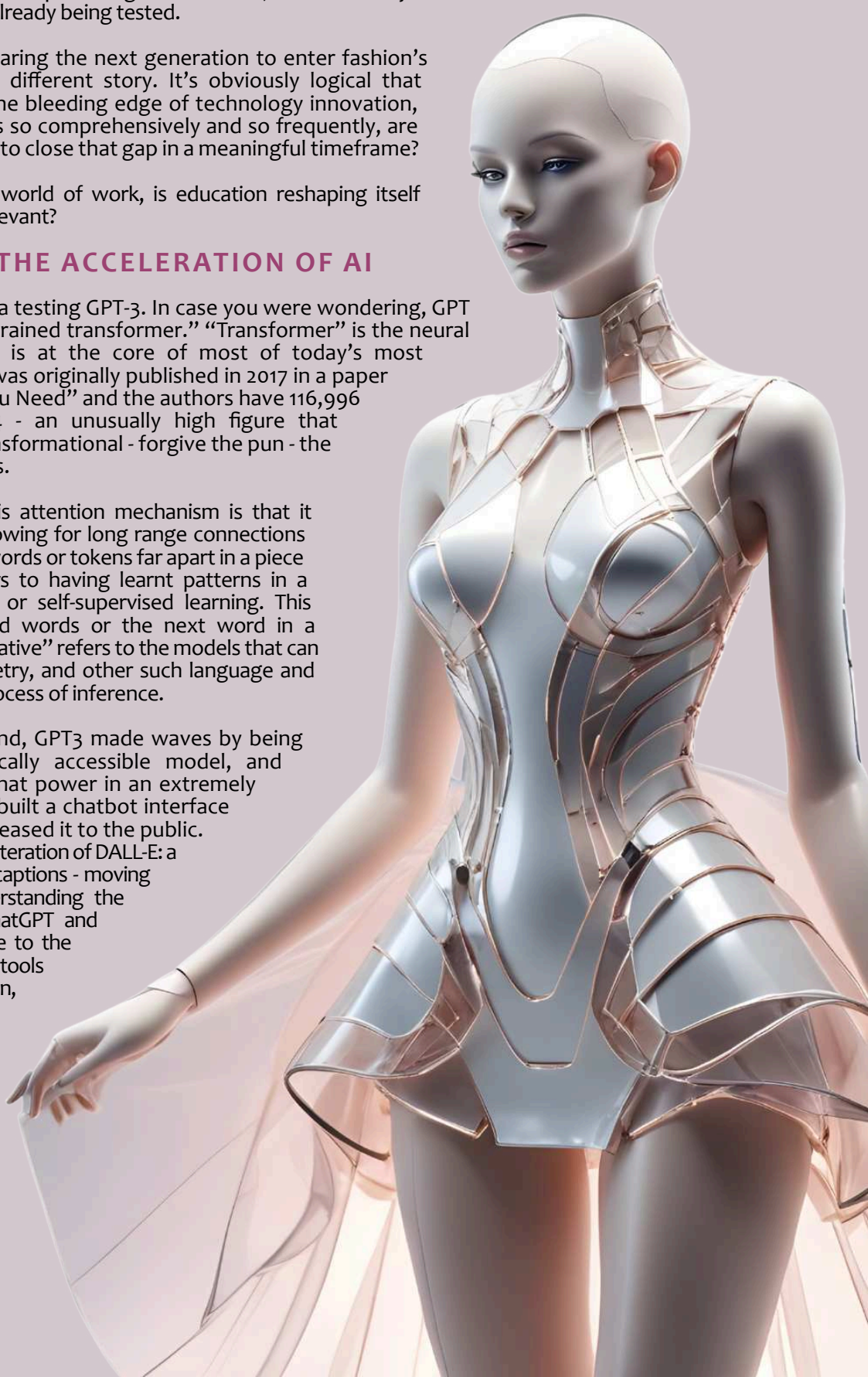
If AI is truly reshaping the world of work, is education reshaping itself quickly enough to remain relevant?

NEW TOOLS AND THE ACCELERATION OF AI

In 2021, OpenAI started beta testing GPT-3. In case you were wondering, GPT stands for "generative pretrained transformer." "Transformer" is the neural network architecture that is at the core of most of today's most powerful AI. The concept was originally published in 2017 in a paper entitled "Attention is All You Need" and the authors have 116,996 citations as of April 2024 - an unusually high figure that demonstrates just how transformational - forgive the pun - the underlying architecture was.

The overarching idea of this attention mechanism is that it learns what to focus on, allowing for long range connections (i.e., making links between words or tokens far apart in a piece of text). "Pretrained" refers to having learnt patterns in a dataset from unsupervised or self-supervised learning. This could be predicting masked words or the next word in a sequence. And lastly, "generative" refers to the models that can be used to create code, poetry, and other such language and writing tasks through the process of inference.

While not the first of its kind, GPT3 made waves by being the most powerful publically accessible model, and people became aware of that power in an extremely splashy way, after OpenAI built a chatbot interface on top of the model and released it to the public. OpenAI also released the first iteration of DALL-E: a tool that produced accurate captions - moving AI one step closer to understanding the visual world. Soon after, ChatGPT and DALLE-2 were made available to the public, as were other AI tools Midjourney, Stable Diffusion, Google's Imagen AI, and Adobe Firefly. These could now be used by anyone to create new content, including audio, code, images, text, (and soon videos, with OpenAI's upcoming Sora).



The creative industry reacted with a complex mix of amazement and fear. In a very short window of time, AI had changed from being a primarily of interest in R&D, narrow use cases, science, and academia, to being a free, widely-available set of tools that could generate output that straddled numerous creative fields. And while the initial releases of Midjourney et al did not exactly clear the bar for accuracy, realism, or consistency, later updates made it essentially trivial for end users to generate digital art, illustration, or "photography" that would often pass as being authentic.

In a study by Engine Creative on AI, many in creative industries agree that AI tools have the potential to play a role in acting as a springboard for ideas, and streamlining certain aspects of the creative process and could be used for inspiration. On the other hand, concerns arose in this survey - and this mirrors the general sentiment worldwide - around potential job losses for those not embracing AI, and being left behind by not being offered certain opportunities.
Here is where the root of AI anxiety and vertigo lies: AI has very rapidly been positioned as being something essential to learn and use, in fear of falling into irrelevance. But at the same time, the provenance of AI training data, and the deeps-seated feeling that creativity as a whole was being ingested, regurgitated, and resold, led to a very real and very visceral sense that the productivity and efficiency benefits of using AI were coming at a profound cost.

Intriguingly, in the Engine Creative study, many participants actually agreed that AI could force human beings to be more creative and productive. Designers in particular had a conflicted overall sentiment towards AI, with 60% believing that AI could support them in the future, but that AI and human work are too different to compare in terms of value. A further 18% of the surveyed designers believed that AI would have a negative impact on the creative industry, with most of them stating that AI will eventually be used to reduce costs and headcounts within businesses - bringing that existential fear to life.

Even though this is just one study, it seems to represent the overall ambivalence to AI in the fashion industry - where there is equal part optimism and scepticism. But all the same, the chances are that the next cohort of fashion creatives is going to be using AI in some capacity in their personal lives, even if it's not for creative purposes. And there's an even greater likelihood that by the time the new wave of designers, merchandisers, and marketers make it into the industry, the demand from employers will be for them to understand and be ready to use AI for a full suite of professional reasons as well.

ARE FASHION SCHOOLS KEEPING UP?

We have an idea about how the industry feels and the kinds of tools available to them now to use in their work. Bear in mind, this all happened over the last two years. But even prior to this, fashion schools were beginning to incorporate AI into their curriculums. In 2020, the Fashion Innovation Agency at London College of Fashion (LCF) launched an 8 week AI course for 20 volunteer fashion students to

learn Python to write code to gather fashion data. This data would then be used to develop creative fashion solutions and experiences. The syllabus included: "Python programming, command line tools, Jupyter notebooks; writing a Python script to collect fashion data; training a model to classify items of clothing; training a model to predict fashion trends from social media; training a Generative Adversarial Network to create designs."

Teaching the course was **Pinar Yanardag, who is now an Assistant Professor at Virginia Tech in the Department of Computer Science.** Before her current post, she was a postdoc at MIT, and received her Ph.D. in Computer Science at Purdue. No doubt, an exceptionally high level of technical proficiency and expertise for a course instructor, but also a potent example of just how far the skillsets of computer science, data science, and fashion now need to cross over.

"I introduced programming and state-of-the-art AI methods to fashion designers, and I believe that these skills are becoming essential in the industry," Professor Yanardag told me. "The integration of technologies like AI into fashion necessitates a basic proficiency in programming. This knowledge not only enables designers to innovate and optimise processes from design through to retail but also enhances their ability to create customised, consumer-driven products through computational design."

However, the selection of courses that are available today seem to have become *less* technical since then - possibly influenced by the widespread availability of the neatly packaged AI tools mentioned earlier.

The LCF course predated the release of ChatGT by two years, placing it firmly in the realm of AI as a scientific discipline, where narrow, focused applications were the model. Then the release of that landmark generative AI chatbot ushered in the era of what we might term more general AI - not in the sense that it is generally intelligent, but in the sense that the models are trained on an extremely broad dataset, given capabilities that transcend coding, art, writing, data analysis, conversation and much more.

This has undoubtedly been a major turning point for not just how society perceives AI, but how educational establishments and businesses think about it, and from my research it appears that fashion schools are still largely unsure how to incorporate this change into their curricula.

In writing this article, I reached out to 15 of the top fashion schools around the world, and the majority responded that they were not at liberty to comment on their teaching methods, course content, and classroom affairs. To me, this signals that there is so much going on with AI, and the capability window is so broad, that some - perhaps

Images created with Stable Diffusion.

many - fashion schools are struggling to reckon with the move from AI as an easily-compartmentalised set of research projects, to AI as a general-purpose, industry and discipline-agnostic assistant.

In the wider world of consumer and enterprise technology, we see this same evolution: where AI was once reserved for specific applications, the world's largest tech companies are now promoting general-purpose "copilots" and "agents". What this means in practice for end users of technology, or creative, technical, or commercial professionals who use technology as a lever to assist in their work, is inherently difficult to pin down.

When AI is sold as being able to help you do basically anything, how does this affect an industry - education - where the goal is to provide people with the aptitude to do one thing well?

To evidence this, I have noticed a trend in the courses that have published their syllabi online, more towards the conceptual side of AI. For instance, at an institution called the Milan Fashion Campus, there is a course named "AI Fashion Design, Integration in Fashion Design Process" that has the following learning outcomes: understanding the fundamentals of Artificial Intelligence (AI) and its application in various fields, including fashion design; demonstrating the ability to utilise AI platforms such as ChatGPT, Midjourney, and NewArc for fashion design projects; exploring advanced prompting techniques, such as using image prompts and text prompts to enhance AI-generated designs; and how to apply AI in the virtual restyling of fashion items, and creating concepts for product photoshoots.

Along the same lines, the Fashion Innovation Agency also appears to have updated its syllabus for the more general purpose side of AI for fashion, as well as to recognise the divisive nature of its use amongst creatives . This now includes "exposure to empirical research and real-life case studies in order for participants to consider the potential for AI, and be able to make an informed decision around its application; exposure to the mechanics of AI in order to develop a sound understanding of the technology; how AI can help enhance creativity; how AI can assist in providing a more rounded omnichannel offering and assist with a greater global reach; and the ethics of artificial Intelligence."

Other schools with programs in AI include Parsons School of Design at The New School, which has a variety of courses centring on AI. Two that stood out to me in particular were the "Exploring A.I. Through Art & Design" and "Generative Media And Artificial Intelligence: Digital Theories Of Autonomy And Alienation."

These courses have a focus on the philosophical, historical, and fundamental understandings of AI and machine learning, as well as AI's multidisciplinary origins and applications from an art and design perspective. **Maya Georgieva, Senior Director, Innovation Centre - XR, AI & Quantum Labs at Parsons (The New School)** explains that this contextual approach is intentional. "At the New School, we have a long history of addressing contemporary social issues, sustainability, and environmental impact," she tells me. "I advocate for our students to not only experiment with AI in their projects but also

to critically examine and, in some instances, challenge the capabilities and implications of these tools. Some of our students want to create projects with AI, and others want to do projects that expose or even break generative AI tools." She has students' whose opinions vary widely, from viewing AI-generated work as lacking authenticity, to appreciating the collaborative potential with AI.

This is a fascinating shift, from education covering AI as a practical, scientific subject when it was less widely-available and less generally capable, to education porting AI back into the realm of philosophy and cultural theory once it became clear that it was becoming (as our Editor puts it) "the next wave of consumer and enterprise technology".

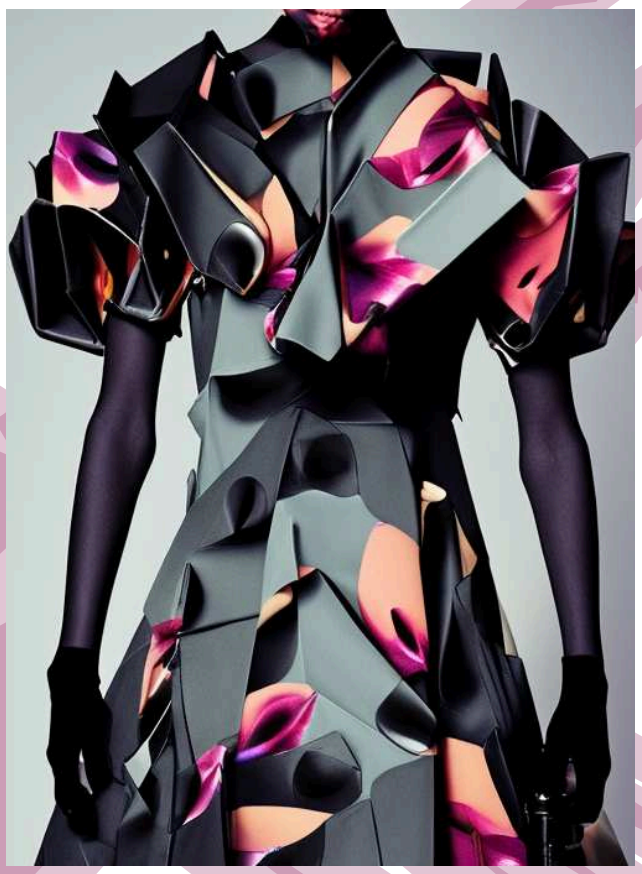
I think that the more conceptual approach does have its benefits for understanding the wider context of AI and its potential impact, as well as on how to use off-the-shelf AI tools. And I'm confident that it will help to produce more graduates who understand the broad philosophical parameters of AI and are equipped with the right grounding to help us navigate a future where the balance of human and machine work has shifted.

But if AI development and deployment continues to roll out at the pace it has been over the last eighteen months, are fashion schools moving the needle quickly enough on employability?

BENEFITS OF A DEEPER UNDERSTANDING OF AI

What fashion schools should try to avoid is creating a new generation of students who don't have the first clue about how AI-tools work if they were to open up their hood. These skills don't need to be on the level of a computer scientist, but there is likely to be a benefit to having digital skills that transcend the traditional skills that have been taught at fashion schools through the ages - referring here to fashion design, patternmaking, textiles, sewing and garment construction, draping, illustration, and marketing and merchandising - and that lead to a cohort of graduates that aren't capable of just using AI, but also recognising its limits.

A large amount of effort amongst AI researchers is currently being invested in the field of interpretability - or building a concrete understanding of how large language models arrive at the outputs they do. And for young professionals who are likely to be asked to use generative AI when they do land in-industry, similar questions are going to arise. Why does AI do what it does? What can brands do to influence the way it behaves? What skills are truly necessary for not just obtaining results from AI, but actually understanding and being able to influence those results?

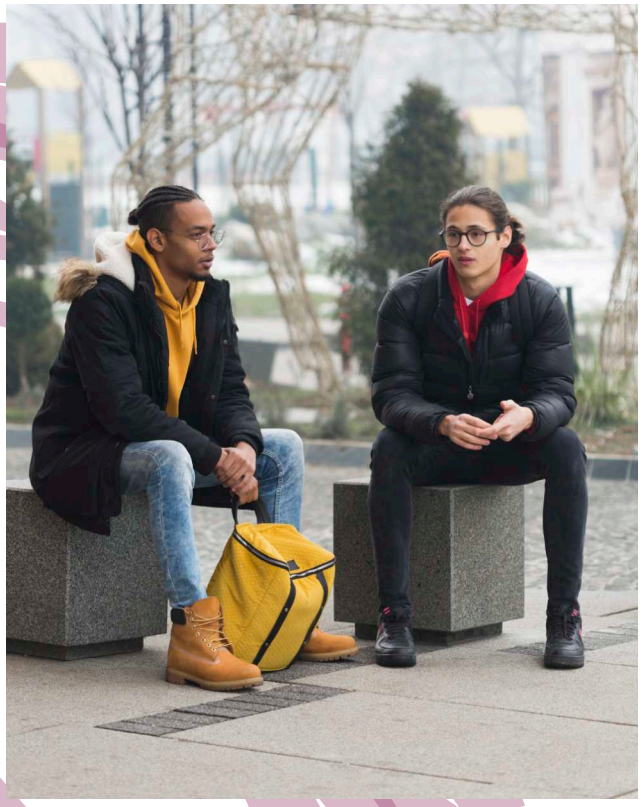


Images created with Stable Diffusion.

Another benefit of students having a solid grip on AI fundamentals is the ability to fix things when they are broken. Already, fashion brands are being forced to hire from outside the industry's walls in order to interacting with APIs that hook into cloud-based, opaquely-trained large models leaves the user at the mercy of the software provider who may well have better things to do than handle your query.

Another tricky thing that fashion schools need to reckon with is the understanding that the best AI (as defined by the broadest set of general capabilities) is currently centralised in the hands of a few companies, and the temptation is, therefore, to merely use their products - and to focus educational courses on them. While valiant efforts have been mounted by the open source community, the company behind the popular open image generator Stable Diffusion is perhaps the poster child for the challenges in competing against some of the biggest and richest technology companies in the world - losing its CEO and exposing just how expensive large models can be to train and operate versus the limited revenue potential to be realised from users.

In that context, there is a clear argument for preparing students to use the "de facto" AI tools, since these appear to be cornering the market in both content licensing agreements (ensuring that they will retain access to new training data from key publishers and other sources) and, in a very recent move, resale partnerships with management consultants to provide more "penetration into industry verticals" according to OpenAI's global head of alliances and partnerships. And when a particular solution reaches this stage of institutional adoption and entrenchment, it becomes effectively essential for people to learn.



But a lot can change in AI in a very short span of time, functionally and culturally - and if OpenAI's ecosystem does not remain ahead of the pack, talent with transferable skills will become sought-after very quickly.

There is however an alternative future to centralised AI, one which I'm rooting for. In this future, fashion professionals and creatives would need to build more technical computer science-type skills, but they would be less reliant on massive, monolithic models to build them.

Although the open source community has, as I mentioned, struggled, there are still communities that are working to keep the power of AI in the hands of the many instead of the few.

HuggingFace, an AI company based in Paris and New York has emerged as a bit of an AI-era Robin Hood, as they publicly host a wide range of models, including large transformer models. This month, the number of models hosted on their site surpassed 1 million. These include text-to-image models, which designers can use to generate their own images - similar to DALL-E 2.

Why would fashion schools have any interest in these open source models as opposed to closed source models? The primary argument for open source models is that they're free and community-maintained, so fashion schools will not need to be locked into working with a single AI-as-a-Service company.

And with open source models there is also the option of local deployment, provided students and creatives are given access to the right hardware to run diffusion or inference locally.

THE EMPLOYMENT ENDGAME: FASHION SCHOOL EDUCATION VERSUS JOB MARKET DEMANDS

It's likely that fashion institutions are looking at the industry and the job market in order to make the decisions of how to design an updated curriculum that incorporates AI.

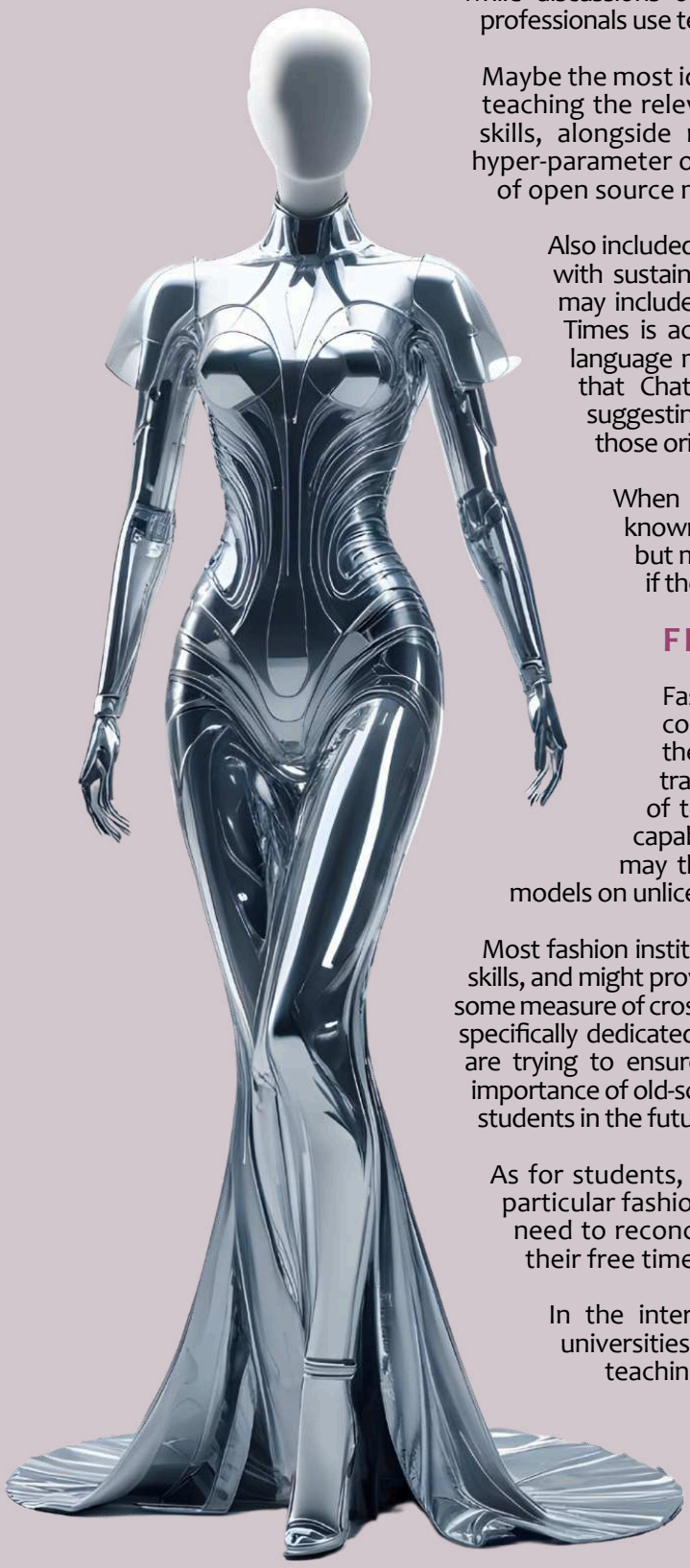
The key problem though, is that lag between industry roll-out and the speed with which a curriculum can be created and added to the institution's list of degrees (measured in years) or the speed at which existing courses can be adjusted.

Although some universities and colleges are doing admirable work in making broad AI education available to their students, in general the next generation of fashion talent is not being taught the

skills that they may need upon graduating in a competitive job market where their adversaries are not just fellow graduates but also AI models trained to either supercharge their efficiency (a dystopian phrase if ever there was one) or make them obsolete.

Against this backdrop, the students who will pull ahead upon entering the job market are those who are going the extra mile in their free time and acquiring technology-based skills that are relevant to a role they might apply for in future. These candidates with hybrid skills - of traditional fashion as well as AI and broader technology - are going to stand out and likely be chosen for the job.

"As technology becomes more ingrained in every aspect of fashion, those with a technical background are likely to have a competitive edge in the job market," says Professor Yanardag. But as identified, education is lagging behind industry, so how to keep up? "Practical workshops and interdisciplinary projects can provide hands-on experience, while discussions on ethical considerations in AI ensure that future fashion professionals use technology responsibly" Professor Yanardag offers.



Maybe the most ideal teaching approach for a fashion school would include teaching the relevant AI tools for that particular set of traditional fashion skills, alongside more technical aspects like building neural networks, hyper-parameter optimisation, and learning how to navigate the ecosystem of open source models while tailoring them to one's own needs.

Also included would be the ethical considerations around AI that intersect with sustainability and intellectual property rights. Compulsory reading may include the recent New York Times versus OpenAI lawsuit, where Times is accusing OpenAI of infringing copyright by training its large language models (LLMs) with Times content, and with the accusation that ChatGPT could, on command, replicate entire NYT works – suggesting that the model does "contain" by some definition a copy of those original works.

When it comes to sustainability, there is also still a lot that is not known about the environmental ramifications of using big models, but may be well worth fashion students being aware of, especially if they are going to be using them frequently.

FINAL THOUGHTS

Fashion schools and their students find themselves at a uniquely complex crossroad. Schools need to consider how much to alter their courses to keep up with the zeitgeist, while ensuring that traditional skills are still taught - at a time when the cutting edge of technology is being redefined week by week, even if those capabilities are being built on top of shaky legal foundations that may threaten to collapse the entire AI house of cards if training models on unlicensed content is not found to constitute "fair use".

Most fashion institutions, though, are still focused on teaching those traditional skills, and might provide a module or course on AI related to the particular skill - or some measure of crossover or collaboration for computer science students who are specifically dedicated to machine learning projects and ambitions. These schools are trying to ensure that new, buzzy industry topics don't overshadow the importance of old-school techniques, but that the ones that will be critical for their students in the future aren't omitted. It's not an easy task.

As for students, they constantly compare what they are learning in their particular fashion school to what is happening in the fashion industry, and need to reconcile that they might need to do a lot of extra upskilling in their free time - anticipating what future fashion employers may want.

In the interim, we would love to believe that the reason so few universities were willing to go on the record about how they are teaching AI is that those focused courses are under active development, and competitive secrecy is a factor. But the more pragmatic perspective is that education, just like every other segment of fashion and the world at large, still is not sure what AI is going to look like when it reaches further along the maturity curve…

IF AI IS THE FUTURE OF ENTERPRISE TECHNOLOGY, THEN ENERGY, COMPUTE AND INFRASTRUCTURE ARE THE CURRENCIES OF TOMORROW

ARTIFICIAL INTELLIGENCE IS IN VOGUE, ALMOST INESCAPABLY SO. BUT IS IT A ONE-SIZE-FITS-ALL ALL INNOVATION? AND HOW IS THE INFRASTRUCTURE TO SUPPORT THE DEMANDS OF AI IN ALL ITS DIFFERENT FORMS – HARDWARE, SOFTWARE AND MORE – BEING BUILT TO SCALE?

BY KEVIN COCHRANE
CHIEF MARKETING OFFICER, VULTR

Kevin is a 25+ year pioneer of the digital experience space. Now at Vultr, Kevin is now working to build Vultr's global brand presence as a leader in the independent Cloud platform market.

AI needs a facelift. The top concerns I hear day in, and day out when I speak with customers are that AI is complicated, companies lack the skills internally to make effective use of it, its use cases don't apply to their specific market niches, or the resource cost of implementing AI is just too high. Unfortunately for the companies who are letting inertia beat innovation, AI *is* changing the way we think about enterprise and consumer technology, and those who don't take the time to understand it will be at a disadvantage moving forward.

So what about AI makes it so easy to compartmentalise as being complicated, niche, or overly expensive? The reality is that this misconception is born from the tech industry's tendency to oversell AI's capabilities. Surely if it's this world-changing technology that will revolutionise everything from how consumers interact with brands to how electronics and manufacturing equipment communicate with each other it must be universally powerful and capable, right? Not so much.

AI has some extremely strong use cases, especially in the world of fashion, but it's not a panacea. It won't suddenly turn every business on earth into a trillion-dollar titan of industry with completely new levels of productivity. What it will do though, is drive efficiencies in carefully selected areas. AI is phenomenal, for example, at parsing large data sets, but therein lies one of the devils among all the details: AI is only as good as the data it's trained on and what it's trained to do with it.

Starting from the top

The first step in any AI journey is to choose a model, be that open source, a pre-packaged commercially available model, or the decision to build your own. But here's where the first misconception originates, AI isn't a monolith: there are certainly different ways to *acquire* a large language model or a diffusion image creation model, but those only represent two architectures and use cases that sit under a very broad AI umbrella.

The loudest kind we see in the market at present is Generative AI (GenAI), which synthesises an output, be that text, audio,

image or video, based on an input. The architectures behind these generative models represented a step change in taking AI mainstream in that they broke from what is sometimes called "traditional AI". Whereas GenAI can take the data it has been trained on and synthesise new data, "traditional AI" can primarily serve very narrow, typically analytical purposes.

To put this in the context of the fashion industry, "traditional AI" might have been used for data-analysis and prediction tasks like demand forecasting or customer segmentation. These are valuable uses of the technology – especially in an industry that struggles with deriving insights from information quickly enough to effect change - but are also somewhat limited in scope. GenAI, on the other hand, opens up avenues like creating virtual fashion designs, personalising customer experiences with virtual try-ons, massively scaling-up product 'photography, 'or even generating new fabric textures, patterns, or embroideries based on existing designs.

But here's the catch: while GenAI offers exciting possibilities, it also demands more from the hardware and software infrastructure that supports it. The shift from "traditional" to generative models has placed a huge – and ever-growing – weight on the systems and the pure silicon that sit underneath the AI boom.

And this means that businesses in every industry need to rethink their AI infrastructure strategy, because this broad spectrum of potential use cases will only be realised if organisations are able to rely on the foundations that will run training, inference, and general use of AI models.

The elastic waistband of AI infrastructure

Building out the infrastructure for AI, though, is not just about investing in the latest hardware or software. It's about creating an ecosystem that supports experimentation, agility, and scalability. And at a society-wide level, increasing AI adoption and putting new possibilities in the hands of creators, enterprises, and entrepreneurs means lowering the barriers to entry for businesses looking to adopt AI and push the envelope for what it can accomplish in their specific verticals.

As heavy as they already are, as AI workloads will grow and evolve further, and the supporting cloud infrastructure needs to scale seamlessly to accommodate these changes. Scalability ensures that infrastructure can handle larger datasets, longer training runs, more complex models, and increased user interactions without compromising performance.

Elasticity goes hand in hand with scalability. While scalability refers to the ability to grow, elasticity refers to the ability to adapt to changing demands in real time. To picture it in practice: one month you might be running simulations for a new fabric blend, and the next you're handling a surge in demand for virtual try-ons. AI infrastructure needs to be able to scale up or down based on these demands, which can't always be forecast. An elastic infrastructure means that you only pay for the resources you use, making it cost-effective and efficient.

Flexibility is another crucial aspect of AI infrastructure. AI projects are often iterative, requiring frequent updates and adjustments. A flexible infrastructure allows you to experiment with new AI models, algorithms, and techniques without major overhauls. You might need more computing power during peak seasons like Black Friday or you could be trialling a particularly intensive model during an off-peak season.

The privacy question

As AI continues to reshape fashion (along with many other industries), the issue of data privacy and ownership will continue to be on the tip of everyone's tongue. With the vast amounts of data being generated and processed, questions about who owns this data and how it's used are becoming increasingly important.

When brands store their data on the cloud, they're essentially entrusting cloud service providers with sensitive information about their customers, products, and operations. This is precisely why many companies are imposing limits on employees interacting with the most popular cloud-based language models – for fear of sensitive information leaking. And this is also why paid enterprise accounts with companies like OpenAI include stipulations that user data will not be used to train new models or newer iterations of existing ones.

But these concerns about data ownership and control need not feel so imposing. As an independent infrastructure provider we, for example, have strict policies and processes in place that ensure the complete privacy and security of all user data, and we are further evidence of that idea that AI is not a monolith at the infrastructure level any more than it is at the solution level.

This is just one of the reasons why independent infrastructure providers could be more desirable than the 'hyperscalers' or large cloud service providers. Just like with other enterprise technology initiatives, vendor lock-in is set to become a key concern when we think about the cloud services that underpin AI - especially when the default option is to work with hyperscale providers like AWS, Google Cloud, or Microsoft Azure.

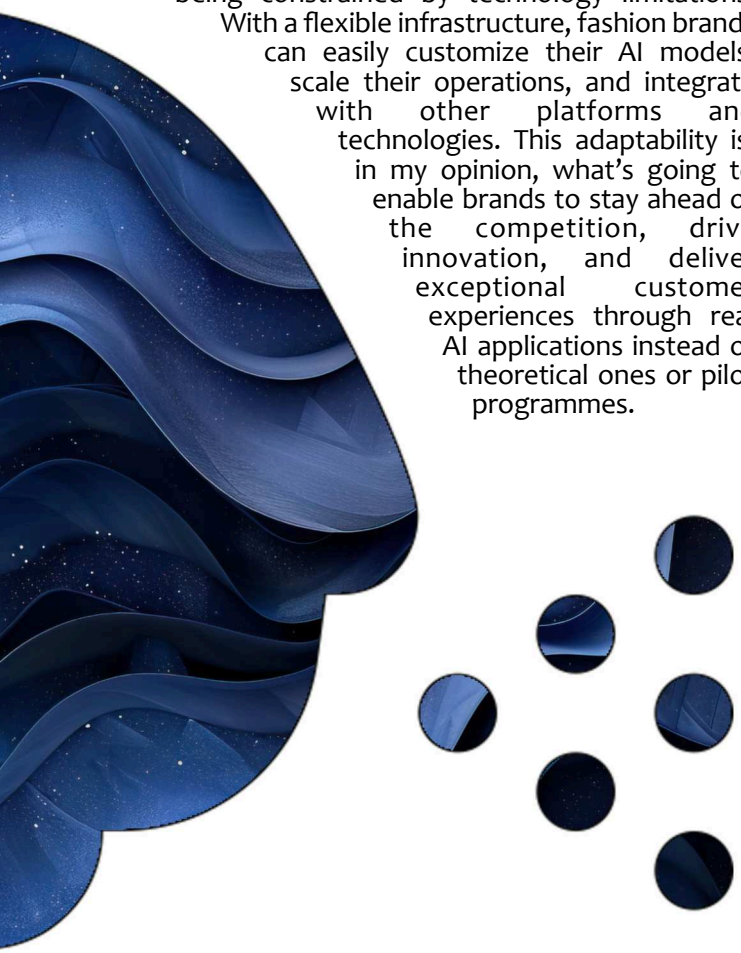
Vendor lock-in occurs when a company becomes overly dependent on a single provider's services, making it difficult and costly to switch to another provider or bring services in-house.

The main argument, casting our eyes slightly forward to where AI use cases and demand for computer is scaling up quickly, is that if a brand is experiencing vendor lock-in, that can seriously hamper their AI ambitions. Scalability, elasticity and flexibility aren't typically associated with hyperscalers' offerings which can cause trouble for fashion brands in particular.

Is your infrastructure behind the trend?

Fashion brands are particularly susceptible to some of these issues. The industry tends to face more fluctuating demand, seasonal trends, and evolving consumer preferences than others, making it imperative to make sure its AI structure has those all defining features I just touched on. As AI rollouts mature, these issues are only become more magnified – and in fashion, unlike other sectors, the timeline for growing infrastructure and scaling capabilities and performance is potentially going to be short and unpredictable.

Early on in an AI programme, flexibility is paramount. Whether it's launching a new product line, rolling out a personalized marketing campaign, or integrating new data sources, a flexible AI infrastructure would allow brands to experiment, iterate, and innovate without being constrained by technology limitations. With a flexible infrastructure, fashion brands can easily customize their AI models, scale their operations, and integrate with other platforms and technologies. This adaptability is, in my opinion, what's going to enable brands to stay ahead of the competition, drive innovation, and deliver exceptional customer experiences through real AI applications instead of theoretical ones or pilot programmes.



As AI implementations mature data volumes increase, AI workloads become more complex, and demand for AI-driven insights grows, brands need an infrastructure that can scale seamlessly to meet these evolving needs. A growing AI infrastructure allows fashion brands to handle large volumes of data, support more complex AI models, and serve a growing number of users without compromising performance or reliability. This scalability ensures that brands can continue to leverage AI effectively as their business grows, without the need for costly and disruptive infrastructure upgrades.

Elasticity, then, provides brands with the agility to respond quickly to market opportunities and challenges, ensuring that they can capitalize on trends, optimize operations, and deliver value to customers when it matters most.

It might sound hyperbolic, but I believe that the choice of AI infrastructure – and a recognition of just how much it matters – is going to be as important for brands as the decisions they take around what they want to accomplish with AI in the first place.

Sewing it shut

Looking across the extended fashion value chain, everything from design, production, and distribution, right through to point of sale can potentially be improved by AI. Those possibilities have not just been dreamed up out of whole cloth: AI is here and it's set to make a major difference to how fashion operates.

Two guiding rules though: never expect AI to do everything; but always make sure you have the infrastructure to support what it can do.

AI IS READY TO DISRUPT DIGITAL TRANSFORMATION

BRANDS HAVE WORKED HARD TO REPLACE PHYSICAL PROCESSES WITH MORE EFFICIENT DIGITAL ONES - ESPECIALLY IN 2D AND 3D DESIGN. COULD GENERATIVE AI LEAPFROG IT ALL?

BY MARK HARROP, FOUNDER & CEO, WHICHPLM

Mark has been a fashion technology evangelist and process expert since 1985. He blends decades of direct experience in manufacturing with a long history of introducing new technologies and new processes to the apparel and footwear industries. Today he heads up WhichPLM Advisory, where he is trusted by the biggest brands, the most recognisable retailers, the most innovative manufacturers, and the most exciting technology companies on the global stage to spearhead change.

BY GOOR MOSHE, BUSINESS DEVELOPMENT & AI ADVISOR

Goor has a diversified skill set with a strong background in animation, film and creative arts, to manufacturing and most recently business development in the high-tech sector. He now advises companies on developing sales and marketing strategies, and how they can implement AI into their creative, sales and marketing processes. He also runs his video podcast about the intersection of Business and AI.

That title might feel like a blunt statement. But the fact is that Artificial Intelligence is already changing the way fashion is designed, presented, produced and purchased - in both obvious and hidden ways. As the common tech refrain goes, this is a super fast-moving train – you either jump on board or get run over by it. And there is very little time for companies to adjust their strategies in either direction. What might this mean for one of fashion's biggest centres of digital transformation (3D and digital product creation)? And what indicators can that give us for how significant the impact of AI could be across the full scope of existing and new digital transformation initiatives?

HOW DIGITAL TRANSFORMATION DIFFERS FROM DIGITAL PRODUCT CREATION

Over the last twenty years, our industry has witnessed a complete paradigm shift away from predominantly physical sampling of garments, footwear, accessories, jewelry, watches, and other categories. For many brands, the majority of samples are either already digital, or are targeted to become digital as part of multi-year strategic transformation projects.

And today, associated processes like market research, trend analysis, merchandising, buying, design, development, and more recently upstream manufacturing are shifting to a new digital best-practice model. Physical sampling is becoming a second-best approach, driven by the need for speed, sustainability, and cost. If you want to be quick to market, with a reduced footprint and the right margins, the more you can do digitally - using 3D design, simulation, and visualisation tools - the better.

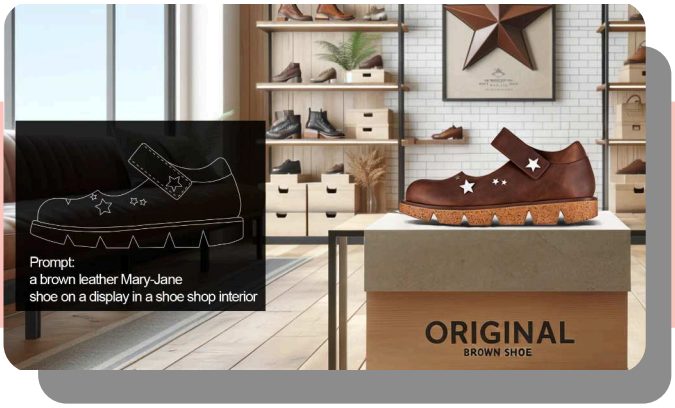
For most of the fashion workforce, that shift from physical to digital still feels "new" even if the core principles behind 3D design have been consistent for decades. Many brands are, right now, actively scaling their 3D departments in design, technical design, engineering, and downstream content creation, and 3D artists are amongst fashion's most sought-after talent. So the assumption would be that this way of working, feeling close to the cutting edge of digital transformation, is as safe as any workflow can be?

Which is why it's been so interesting to see that paradigm shift being dwarfed by the emergence of Generative AI, which is now enabling fashion brands to not just improve on some of the steps of a 3D / DPC workflow, but to potentially sidestep them entirely.

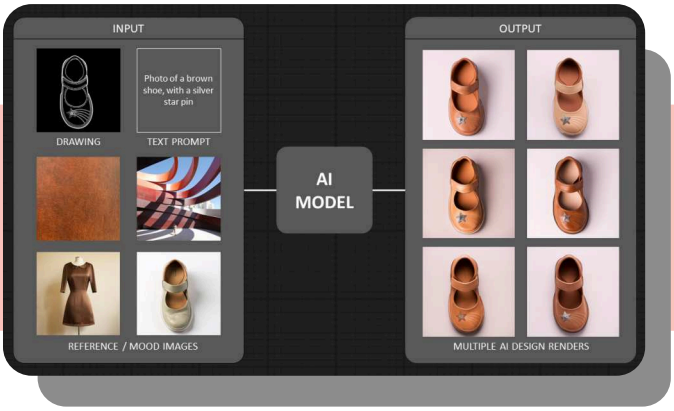
From automating the creation of styling options through iterative prompts, to virtualising and simulating costing, environmental impact, and operational best practices, bringing together AI and DPC tools can help to realise the original (and largely untested) vision for making the full scope of creative and commercial decisions based on a digital representation of a product, material, or method.

But the last few months we've also witnessed even more eye watering advancements, with AI and Gen-AI models becoming adept at analysing vast amounts of real-time data, enabling brands to predict upcoming trends with greater accuracy, identifying cultural shifts, consumer preferences, even hyper-personalisation, and able to deliver customised product styles not just in sketch or technical specification form, but as potentially eCommerce-ready images and video.

Another interesting use-cases include Gen-AI Storyboarding, that will analyse a design-brief, and using a brand's own design assets, to help create exciting new style contents, including the use of backgrounds, layouts, that combined, will help design & marketing teams to visualise the story and at the same time will produce new options in a matter of seconds.



Shoe drawing & design: Goldline Creative / Image renderedy by AI



Goldline Creative

Script-to-video is a prime example of how a Gen-AI development transforms designers', and marketing team's workflows. Very soon, we can expect to see CMO's introducing editors into their teams, that will use the design brief to create marketing scripts to be used to develop videos for downstream use-cases/Of course, there are challenges with Gen-AI video right now, especially linked to the quality (resolution and accuracy remain problematic)) and detail that we expect from professional production teams, but we need only look back a couple of years at the images AI models were capable of creating - surreal smudges mainly - to see how far the technology has progressed in a very short span of time. It would be naive to assume it won't progress any further, even if effort is translating into diminishing returns in some cases.

And when those improvements happen in modalities like product images and videos, where might that leave 3D and DPC departments?

To get a better idea of how tangible this impact could become, it's helpful to remind ourselves not just what AI can potentially do, but how the method of training, deploying, and using AI will influence its outcomes. Because, to stretch our metaphor a bit, while the train as a whole is definitely barrelling towards the industry at high speed, we do still have the opportunity to determine which carriages arrive where - and how.

WHAT'S IN A MODEL? OPEN, CLOSED, LLM AND LMM

The most prominent frontier in the AI race: both closed and open source Large Language Models (LLMs) and Large MultiModal Models (LMMs) are readily available at a significantly lower project cost compared to developing and maintaining a private model.

This is perhaps the biggest shift in how AI is sold, bought, and used that has occurred in the last 18 months. Where once we would need to design, develop, train, test, finetune, deploy, refine and maintain dedicated models for very narrow, specific tasks, there are now multiple different routes to rolling out and scaling a new AI initiative that make use of general-purpose pretrained models and the largest infrastructure and cloud architecture providers on the planet. This can be crucial especially for smaller brands or those starting out with a Gen-AI POC (proof of concept) project.

Another consideration will be the access to voluminous and diverse (in a literal sense) data. Open and proprietary LMMs are trained on massive amounts of publicly available data, including text, sound, videos, fashion trends, material science, the principles of carbon impact measurements and much more . This spread can be advantageous for brands both large and small that want to trial AI and

Gen-AI projects without acquiring their own datasets, although it can also backfire in the sense that those brands have no control over what data was used in initial training - and while fine-tuning can adjust the output of a model, it remains a concern that the largest public models are trained on potentially copyrighted data and on potentially biased and exclusionary datasets

On the positive side, though, by using shared data to generate innovative unexpected designs, the broader data exposure can spark creative inspiration and help push boundaries beyond the brand's existing data or style types. Potential examples could include the use of trend data driving new text-prompts that in turn use Gen-Ai to create new concepts, material suggestions, style details, sustainability options, and potentially the optimal manufacturing sources.

Open models can also potentially capture and reflect current fashion trends quicker than relying solely on internal data, which might take longer to analyse and to then be available to update the merchandisers, buyers and design teams.

And by understanding how open models perform, and fine-tuning their output, brands can identify the specific areas where an LLM can be most beneficial and potentially inform the development of a customised model in the future.

So, what are the downsides of using Open source and general commercial models? There is what we call a risk of noise, meaning that retail brands that are sharing the same pool of data could result in similar product concepts, or worst case you could inadvertently use another brands design I.P. (intellectual property), which can lead to I.P. infringement lawsuits, which can be costly and time-consuming to resolve.

MOLDING YOUR OWN MODEL

Let's examine the benefits of creating a closed private LMM model approach Data privacy and control within a private Gen-AI LMM model allow brands to train the model on their own proprietary data, locally on their own network, which can include for example; trend intelligence, design sketches, photographs, product descriptions, customers feedback, etc. This level of control over the training data can help to mitigate the risk of unintentional copying other brands' I.P. And not only can we use that data for Gen-AI use-cases, but brands could also look at using e the same data to support upstream development and manufacturing, including environmental & sustainability scientific measurements.

Maintaining brand consistency, by training a private Gen-AI LMM model, brands can ensure that the model generates outputs that are consistent with their brand identity and aesthetic DNA. This will be important not only for maintaining brand consistency and protecting brand value, but to ensure that the model can be consistently updated based on your own design strategy. With a private Gen-AI LMM model, brands could also have much greater control over the outputs of the model. This means that they can prevent the model from generating outputs that are similar to those using an open shared LLM, offensive imagery, discriminatory, or otherwise harmful concepts that may affect their brand reputation.

Whatever approach you take, however, the route to success will lie in striking a balance between leveraging Gen-AI models and maintaining human creativity and oversight. Like a lot of professionals and analysts, we predict AI & Gen-AI models being used more as co-pilots or assistants to designers and developers. To obtain the best possible results from AI, and its subcomponents it will be essential to its success that humans are clearly in the driving seat!

TAKING AI IMAGE GENERATION FOR A TEST DRIVE

We have all been using image verification on multiple platforms on the internet to verify we are indeed human for years now. Along with other manual image tagging and categorisation efforts, the results of that activity have contributed indirectly to this new world of AI language models with image generation, by helping to train and test the ability of computer vision models to recognise the constituent parts of a picture.

It's just 18 months ago that AI image generation started taking hold in the public space, and new open-source platforms like Stable Diffusion, and closed-source but API-accessible models like Midjourney and Dall-E began to allow anyone to generate unique and controlled images from simple (or increasingly ornate) text prompts.

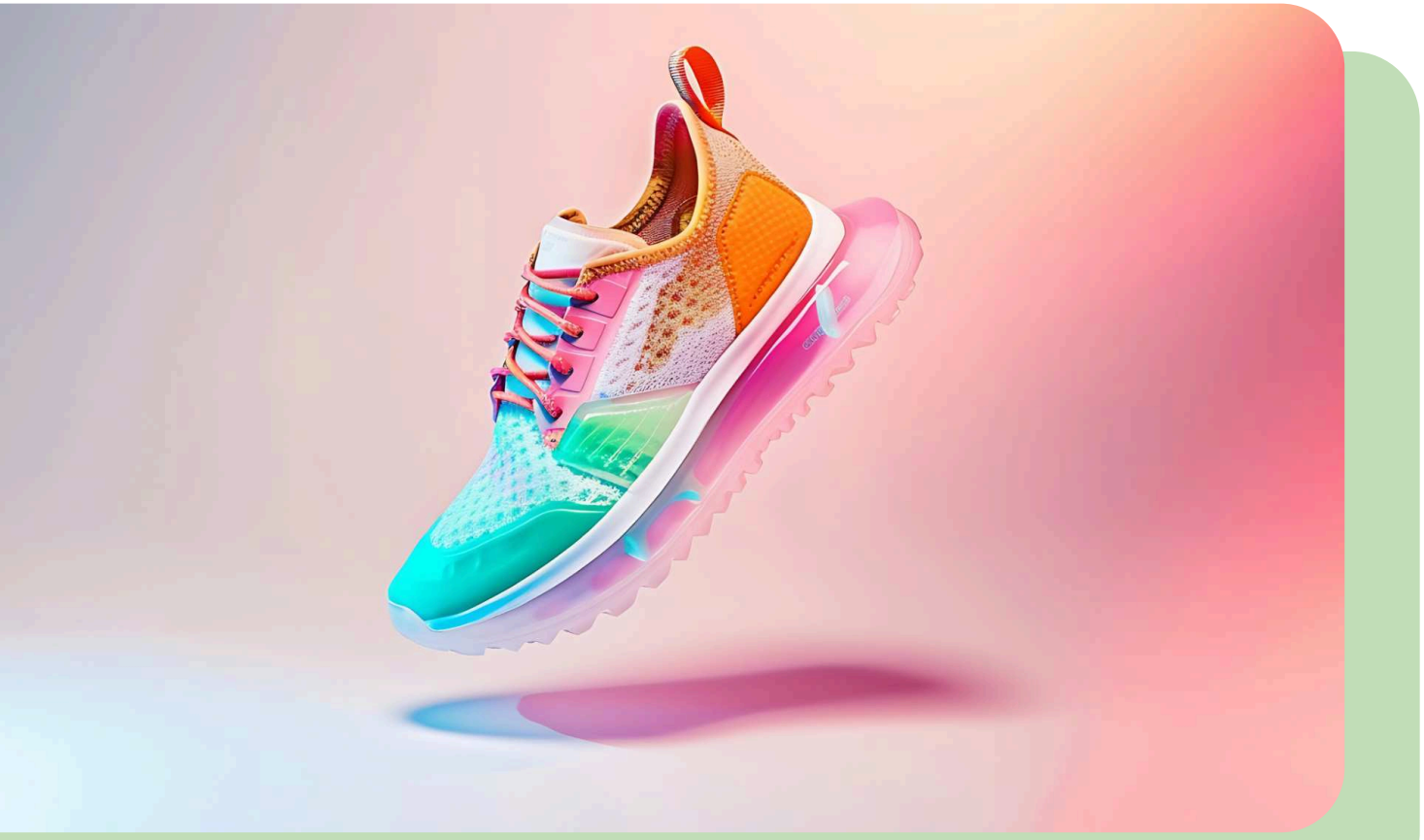
During that initial rush, it appeared as though the fields of art and design would be instantly disrupted, and while some measure of that vision has come to life, it's still a little unclear how those off-the-shelf models are impacting the specific disciplines of apparel and footwear design.

So as part of the process of researching this article, we decided to test their performances as potential design assistants and copilots for fashion and footwear designers, to understand not just how capable these models are in those narrow areas, but also how ready their outputs are to be used in processes further down the line - all the way to production and the supply of fashion products.

Very quickly it became apparent that the Large Multimodal Models used for AI image generation available to the public were impressive in their image quality and potential, but it was difficult to control the details and style, and receive enough consistency from them. This is not a surprise when we consider the provenance of their training data, as we outlined earlier - these models are trained on vast and extremely varied sources such as the internet and image banks.

So, all the images from brands and the huge number of varying designs out in the public sphere, especially from the more popular brands, were influencing the outputs we received, regardless of how well we constructed the text prompts, and as we have touched on previously, raising the risk of IP infringement.

This led us to look at training our own models connected to the existing LMMs. By feeding a collection of our own brand images and text-prompts, we were able to constrain the influence from the outside world to a certain extent, but still received 'noise' from the public space via the larger LMMs our fine-tuned models were based on.



The results we received were already viable as a design assistant for designers in the early ideation stage, allowing designers to brainstorm ideas extremely quickly, without having to worry that their initial designs were already infringing on other brands' IP. But the idea of taking any of these designs further forward was problematic, even if the seed of the idea was sound. So, once a designer wishes to develop more finalised designs with specific materials, design details to present to their clients and manufacturers, our finding was that the current open-source models are not yet ready to deliver as they are.

So, by feeding drawings, reference/mood images, and precise contextual text-prompts, through an LMM coupled with one's own trained models, we explored how brands could speed up the early design process without those concerns. Within minutes a designer can have tens of design ideas rendered in photographic quality images. These can then be fine-tuned, or used for further design work on other platforms.

However, once they wish to develop more finalised designs with specific materials, design detail styling to present to their clients and manufacturers, the current open-source models are not able to deliver as they use general data types and you will require primary datasets.

The solution to this requires development of brand and product specific SMMs, using what we call the design-DNA of a brand. And this is also true with AI in general. As popular as general purpose models have become for - as the name suggests - general purposes, as we move forward, we are starting to see more 'expert AI models' being developed for specific domains.

We fully expect the apparel and footwear industries to follow suit here. AI models for certain garment types will not be the same as expert AI models for footwear. The language needed will be different, as will the materials used and the visual elements. Additionally, there will be differences from brand to brand. Which is why brands may need to invest in proprietary models to maintain integrity of their brand identities from design onward.

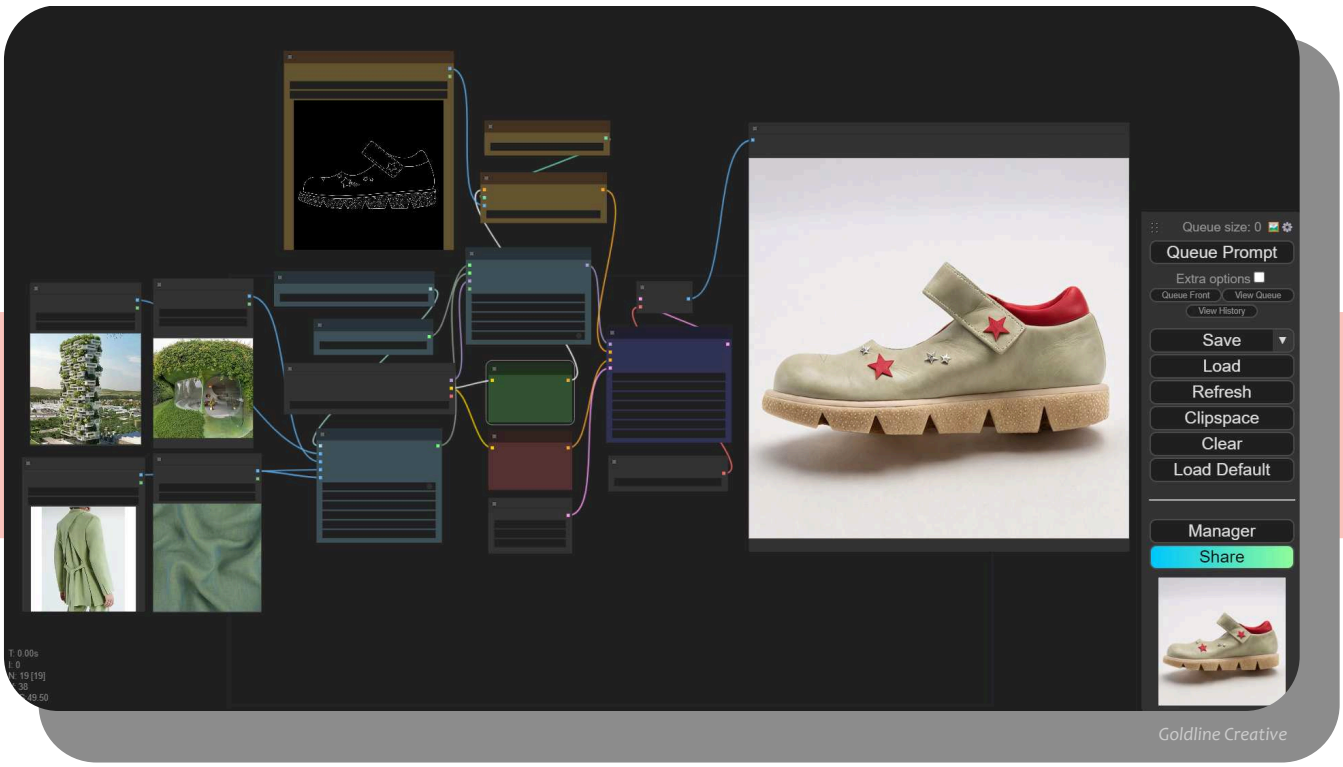
To help make a decision of that magnitude, though, it will be important to weigh up the potential on both sides.

MODEL TYPES - LMMS PROS & CONS

PROS OF USING LMMS IN DESIGN, DEVELOPMENT, AND MARKETING OF FASHION

Open LMMs are trained on vast datasets of fashion images, trends, and historical data, which they can access immediately, allowing them to generate innovative design options, patterns, and colour combinations that might not be readily conceived by human designers at least not at the speed that is required in a fast moving business, thus enhancing creativity and innovation.

Open LMMs can provide accessible tools for aspiring SME brands, designers, or individuals with limited resources, allowing them to participate in the creative process without needing specialised software or expertise.



Goldline Creative

Using LMMs can also automate various tasks in the design process, such as generating variations of existing designs, materials, creating design briefs, mood boards, and analysing customer preferences, leading to faster and more efficient development cycles.

These models can accelerate and empower new ways for marketing departments to message their brand name and products to their customers. The current AI image generation tools already allow marketers to produce quality imagery that is equal to those produced at a photo studio. And with careful use of these tools they can have virtual models wearing or advertising their products. And with the LLMs available like Chat-GPT they can combine imagery with text messaging in line with their brand messaging.

PROS OF USING CLOSED LMMS IN DESIGN, DEVELOPMENT, AND MARKETING OF FASHION

LMMs have the potential to create extremely fast renders of new concept designs according to the brand's style or DNA. All of a brand's historical styles, sketches, imagery, accessories, materials, etc. can be used as local data that a closed LMM can access. No other AI model will have this access to this data. All prompts and reference images will result in unique imagery that will be in the brand's identity.

LMMs can personalise the design process by analysing individual user preferences, detailed body measures, and foot measurements, even style and fit preferences, leading to the creation of unique and tailored garments.

LMMs can be used to analyse and optimise material types, identify eco-friendly alternatives, sustainable science based processing, and suggest ways to minimise waste in the production process, contributing to a more sustainable fashion industry.

Since a closed LMM can have access to all local data, such as pricing from different suppliers, if built correctly it could provide accurate estimates on the cost per design in different territories, as well as a sustainability report as mentioned.

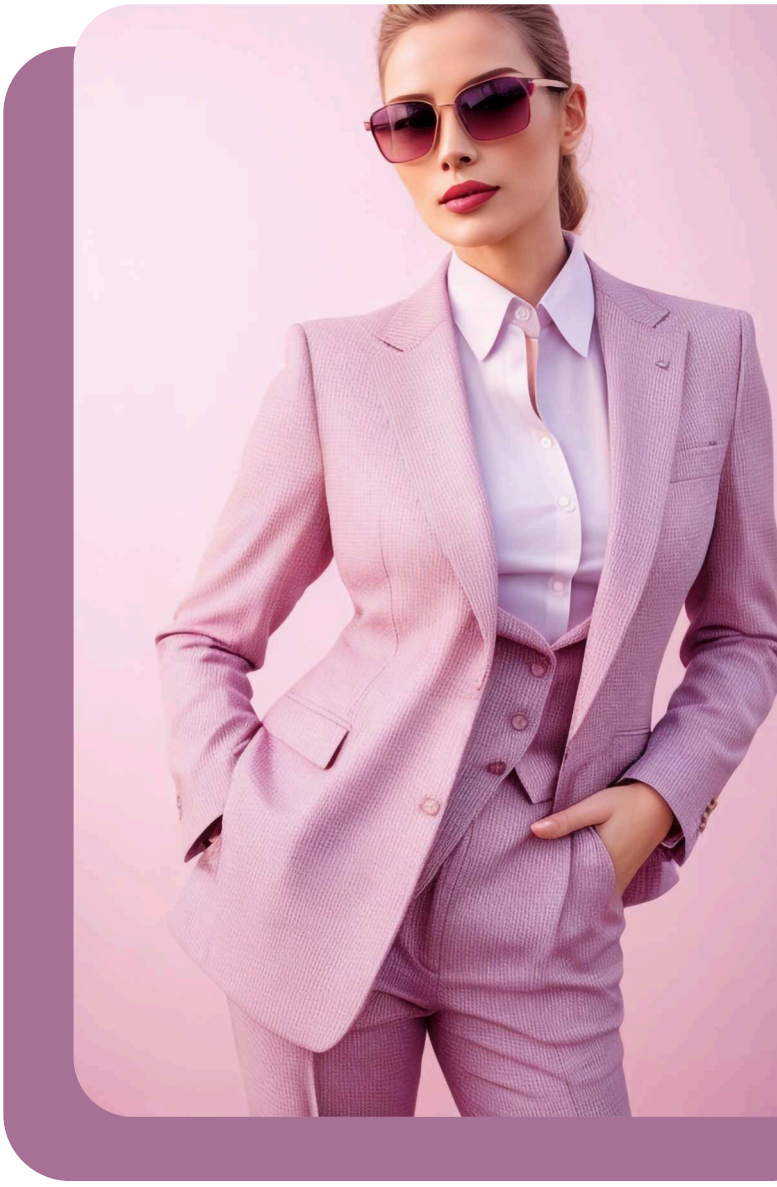
Since closed LMMs work only on brand specific data, marketing departments can be confident in generating imagery that is more accurate to the products they are, or will sell. Additionally, brands can create brand owned virtual models/actors that become recognisable, to present their products.

Trends come and go, as do personalised preferences of customers. As time passes the local closed LMMs can be regularly updated to include new data to keep supporting the brand's departments.

CONS OF USING OPEN SOURCE LMSS FOR DEVELOPING FASHION

Despite some of these industry-agnostic (and even industry-specific) benefits, open source and cloud-hosted proprietary LMMs currently have a limited understanding of fashion trends and nuances. While they access vast data sets, and can work from historical trends, they might not possess the same nuanced understanding of cultural context, emotional aspects, and the "intangible" aspects of fashion that human designers bring to the business. With closed LMMs, brands and designers can train models on these nuances, and direct them to achieve the aesthetic results they wish for.

There are also the ethical considerations to take into account. For example, the use of LMMs in fashion raises ethical concerns regarding potential biases in the training data, leading to discriminatory outputs or perpetuating harmful stereotypes.



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Over-reliance on these LMM-generated ideas might also stifle genuine creativity that individual human designers bring, and lead to homogenisation in fashion design with less originality.

With AI in general, there is the fear of job displacement. Increased automation in the design processes through LMMs could lead to job losses in the fashion industry, particularly for roles involved in repetitive tasks. However, as we have already stated several times, we strongly believe that the perfect combination of Gen-AI is with humans being firmly in the driving seat, to continuously teach models to deliver on the current strategic design intent.

LMMs, both open source and closed models, are still under development, and their capabilities are indeed limited in terms of generating high-quality, detailed, and trusted designs that translate into actual production-ready garments and shoes. Human influence, editing and final decision making will be needed for the foreseeable future.

SHIFTING PARADIGMS, AND WORRIES OF 3D-DPC PROFESSIONALS

A shift has already begun from 3D-DPC visualisation to a dynamic, AI-driven design conceptual-ecosystem, potentially creating a leapfrog opportunity for design and marketing teams.

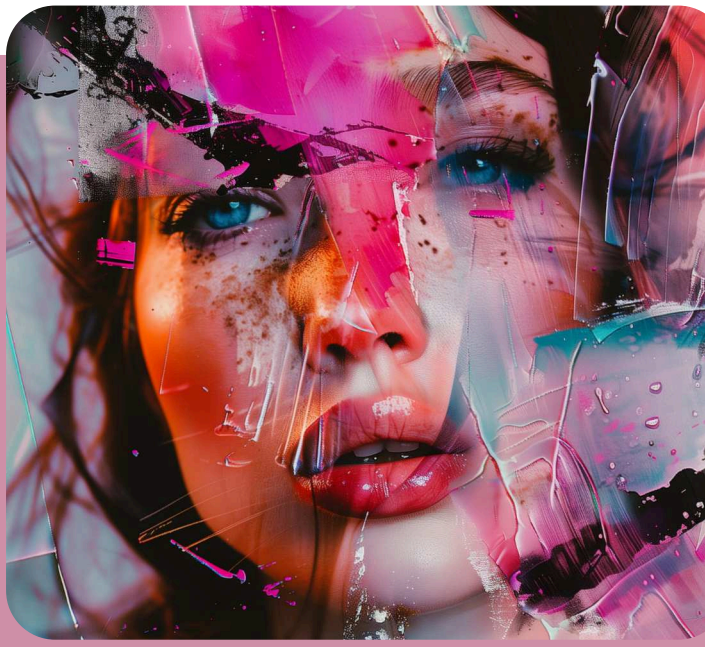
Think about it this way: is the shortest route from an idea to a realistic-looking product visualisation (based on which other professionals can make confident creative and commercial decisions) to build 3D geometry, texture it with a scanned or procedurally generated material, simulate the drape on a 3D avatar, and then pose and render out an image? Or is it to simply prompt the attributes you want and then receive a generated image or video in a matter of minutes?

Imagine a design brief in the future being used as a script to help produce a video that could be used for internal and external marketing, and even for design and developers to better visualise their concepts.

We can foresee that in the future image and video file formats could include a detailed amount of Metadata of every aspect of the visual, including elements such as textures, camera info, lighting, objects and their form in an environment, which the designers to marketers will be able to interact with through prompting. Traditional 2D images or video will now become 3D in nature, from which images, video and even 3D models with textures can be generated for our different needs.

Based on the promotional materials shown, these newer text to video - and even text to 3D models - can also generate subjects with correct perspective, form, and consistency, making us ask the question: what now for 3D and DPC?

It takes many, many hours and skill for humans to create 3D models and render them for design, production and marketing purposes. For the Gen-AI models it takes just a few words and minutes to render out photo realistic images. This new reality carries huge opportunities for brands, and empowers the creatives like never before - as well as creating difficult questions where resourcing and cost are concerned.



Imagine brands owning their own brand and product specific LMMs, where the Gen-AI understands the elements of the design DNA, from trims, accessories, styling, colours, etc, coupled with these exciting text-to-video models – and soon enough the AI could be a fully-fledged assistant for designers and marketers, working at speeds that no human with a 3D-DPC license or design studio can compete with. All it will need is clear direction and foresight to provide results that would previously have taken days or weeks to realise .

There will, no doubt be an evolution of 3D-DPC together with Gen-AI to develop the new workflows - indeed we are already seeing DPC technology vendors promoting workflows that begin with AI, enter the 2D and 3D realm where they can inform manufacturing with accurate imagery for production. But the driving engine to the product creation workflow of the future is likely to be Gen-AI image generation.

Unlike when 3D-DPC entered the industry, the brands now have the opportunity to direct this evolution. By investing in training, and building in-house tools, brands will gain the most efficiencies and build the correct workflows, utilising their resources effectively.

Future off-the-shelf design tools based on 3D-DPC will not offer such benefits, as they will most probably be based on open-source models. They won't be tailored on brand specific data. AI development is moving too fast for them to cater for the number of brands - each with their own nuances and design DNA, and each with its own market position to occupy.. Which is why we believe brands need to look at how they take ownership of their workflows and tool building.

The industry has already connected design with materials libraries and sustainability strategies. This is a process that consumes time and many work hours, even with the help of other platforms such as PLM and ERP. The brands that invest in their own Gen-AI models with their own closed data sets, will be able to design with the sustainable goals and materials libraries in consideration automatically, as it will be able to access their data in real time as it renders out design and marketing imagery.

BEYOND DESIGN

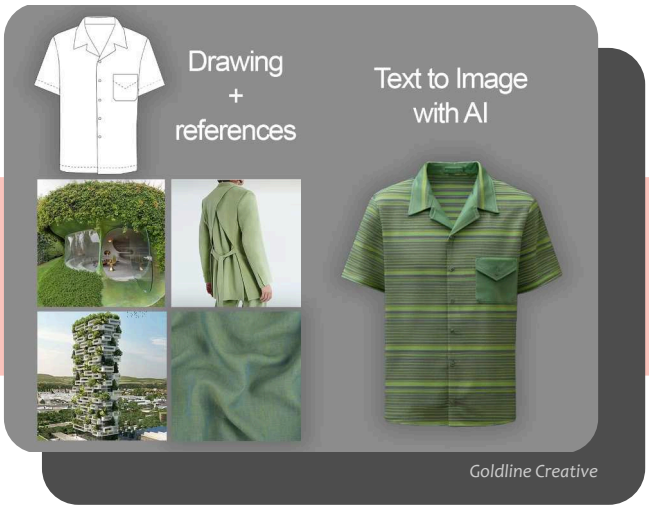
AI image generation will alter the structure and requirements of not only the design departments, but within marketing departments as well. Even more creativity will be needed to direct the AI to create the most effective messaging both textually and visually - leading to an exciting opportunity for individuals interested in sales and marketing fashion and footwear brands, as their needed skill set has just been expanded.

As more LMMs develop, the more marketing departments will be able to rely on visuals generated by AI, as the models will deliver better accuracy and specificity. The response time and flexibility will greatly improve for those departments that utilise AI fully in their toolkit.

We recently witnessed a huge leap forward in text-to-video with Open AI's SORA and Alibaba's EMO. In basic terms, the AI is now able to combine its understanding of language (currently English, but very soon all languages) and new knowledge of imagery, form, and motion to generate videos and animations in high quality.

Brands will need to redefine the skills and qualities needed in their sales and marketing departments. AI image, video and even 3D model generation will be extremely fast, that marketing brands will need to staff people in-house with the traditional skills found in design and film studios, and who know their brand identities, to make those quick decisions and direct the AI for the best results.

In the online world we already live in, and armed with these new tools and skill sets, sales and marketing will be able to showcase new designs and offer customers choices before proceeding towards manufacture more effectively than current methods.



We can imagine a design going from conceptualising, to a video of that product, to being viewed on social media, with positive or negative response, forming a brand's decision to proceed to manufacture or not within a day, if not hours.

Which means the departments from design, to product development, to sales and marketing, will need to be communicating and in tune with the AI assisting them at speed.

THE PENCIL REVOLUTION

Back in the early 1980's before companies like Adobe were incorporated, we witnessed what we called the pencil revolution. Up until this time designers had drawn their garment and footwear sketches by hand, or hand painted material prints, stripes, etc. Over the next few years, we taught designers how to use vector sketch tools like Micrografx Designer, and Coreldraw. Today Adobe has become the prominent designer's choice when it comes to the Apparel and Footwear industry and is also leading the charge in Gen-AI.

TIME TO EMBRACE CHANGE!

The fashion industry must continue and encourage a shift in mindsets, positioning Gen-AI not as a threat but as an opportunity that can help the industry to revolutionise and elevate traditional roles. We need to think of Gen-AI as our personal assistant, or co-pilot.

It is true that Artificial Intelligence is a disruptive technology, and by definition will replace existing processes and jobs, as previous disruptive technologies have. But unlike other historical changes, Gen-AI and AI will empower brands and designers, from small to large, as the cost of design up to manufacture will reduce dramatically, releasing resources to develop and deliver more variety, and reduce inherent waste in our current processes.

THE CRITICAL ROLE OF HUMAN MODEL OWNERSHIP

We have already emphasised the symbiotic relationship between Gen-AI and human creativity, underlining the importance of human input in maintaining authenticity and aesthetic standards. We have also highlighted the unprecedented opportunities for professionals and businesses willing to embrace Gen-AI in their 3D-DPC modeling workflows.

Businesses should be encouraged to think strategically about integrating Gen-AI into their complex workflows, using AI & Gen-AI to deliver innovation that can lead to competitive advantages and new industry standards. Beyond your own businesses it will be important for you to collaborate and adapt in the face of evolving technologies, fostering an industry-wide culture of collaboration and innovation. We are shifting quickly from closed platforms to open-ecosystems that, when combined, will deliver exciting results.

To deliver in this direction, we will need to re-educate, train and upskill the workforce in AI & Gen-AI-related skills, empowering professionals like designers and data-scientists working together in navigating the evolving landscape with confidence. Our marketing teams will need to learn how to direct and produce new video content. Let's consider the evolving collaborative partnering and learning opportunities within the Gen-Ai ecosystem community, fostering an environment where insights and experiences are shared to collectively adapt to Gen-AI-driven standards.

IN CONCLUSION

Whilst the AI hype continues, businesses, particularly brand owners and decision-makers, are rightly asking themselves how to turn AI to their advantage - and how to anchor it into their overriding strategic objectives. . But it's important to remember that the current applications of generative AI are also just the tip of the iceberg: from multi-model-databases, AI LMM models, to self-improving agents linked to connected wearables, decentralised applications (dapps), the fashion ecosystem is in rapid change-mode at both the strategic and tactical levels..

As we see it, embracing AI is not just an option but a strategic necessity - a foundational piece of building a roadmap towards a future where innovation, creativity and efficiency can coexist.

REDEFINING CORPORATE LEADERSHIP IN THE AGE OF AI

HOW CEOS AND BUSINESS LEADERS CAN BALANCE THE CULTURAL EVOLUTION AND THE TECHNOLOGICAL REVOLUTION REQUIRED TO DELIVER ON THE POTENTIAL OF AI.

BY ERIC HUIZA, GLOBAL CHIEF TECHNOLOGY OFFICER, AIONIC DIGITAL

Professor Eric Huiza is a renowned thought leader in the field of artificial intelligence and data management and is nearing completion of his thesis for a Ph.D. in Computer Science. As CTO of Aionic Digital, Eric brings more than two decades of experience helping Fortune 500 companies implement solutions that optimize efficiency and drive innovation. Prior to joining Aionic, Eric served as Senior Solutions Architect for Authentic, A Concord Company, and has worked with brands such as NASDAQ, AMEX, Wells Fargo, AKAMI, Walt Disney, Universal Studios, Virgin Experience Days, and Children's Hospital.

Artificial Intelligence (AI) is only getting more deeply integrated into global corporate enterprises over time. As a result, CEOs and business leaders are finding themselves at a new confluence of innovation, efficiency and ethics – and the success of strategic AI projects is set to be measured as much by the careful balance struck between technology and culture as it is by traditional, harder metrics.

As a CEO, you might be accustomed to steering, sponsoring, and supporting technology initiatives where technical prowess and business potential are the focus, but where AI is concerned the ethical considerations are equally important – even if they are not immediately obvious.

To help understand why each of these elements is such an important part of due diligence and leadership, and to grasp how they influence one another, I have assembled a list of five critical but easy-to-miss considerations where technology and ethics need to go hand-in-hand.

1. BIAS VERSUS MORALS

While much has been said about data bias *[including elsewhere in this report – Editor]*, less attention is paid to bias in AI design and development phases. Ethical AI necessitates considering not just the data inputs but also the underlying algorithms and their predisposition towards certain outcomes.

In the AI domain, bias and morality should not be considered the same thing. Bias refers to systematic errors in judgment or decision-making, often stemming from ingrained prejudices or flawed data. However, an ethical AI *framework* begins with inclusive design principles that consider diverse perspectives and outcomes from the outset. In a typical technology initiative this diversity of input and representation would involve ensuring that stakeholders are able to influence how the technology in question is deployed and used; in an AI project this would also need to incorporate much wider considerations.

In contrast, morality embodies principles of right and wrong, guiding ethical behavior and societal norms.

While bias is generally viewed as detrimental, AI often requires a degree of bias to function effectively. This bias isn't rooted in prejudice but in prioritizing certain data over others to streamline processes. Without it, AI would struggle to make decisions efficiently or adapt to specific contexts, hindering its utility and efficacy. Therefore, managing bias in AI is essential to ensure its alignment with moral principles while also prioritizing the capabilities and the functionality that will deliver the desired return on investment.

2. BEYOND "THE BLACK BOX"

AI's "black box" problem is well-known, but the ethical imperative for transparency goes beyond just making algorithms understandable and their results explainable. It's about ensuring that stakeholders can comprehend AI decisions, processes, and implications - guaranteeing they align with human values and expectations, and helping to build trust in a class of technologies that many people are predisposed not to trust.

Recent techniques, like Reinforcement Learning with Human Feedback (RLHF) that aligns AI outcomes to human values and preferences, confirm that AI-based systems behave ethically.

This means developing AI systems where decisions are in accordance with human ethical considerations and that can be explained in terms that are comprehensible to all stakeholders - not just the technically proficient. Business leaders have a significant role to play here, since securing buy-in from process champions, fellow executives, and end users requires the ability to comprehend and communicate not just the rationale for adopting AI, but the mechanics of the models themselves.

Explainability empowers individuals to challenge or correct erroneous outcomes and promotes fairness and justice. Together, transparency and explainability uphold ethical standards, enabling responsible AI deployment that respects privacy and prioritizes societal well-being. This approach promotes trust, and trust is the bedrock upon which sustainable AI ecosystems will be built.

3. THE FUTURE SOCIAL HORIZON

As leaders, it's our duty to ponder the future we're building. AI is and will continue to change how we work, live, and play–all while moving us closer to a vision for productivity. This is both an incredibly broad goal and a bold one, and any transformation on this sort of scale will encounter friction.

Ethical AI practices, then, require a forward-thinking approach that considers the lasting imprint of AI on society. Aiming for solutions that benefit humanity as a whole, rather than transient organizational goals, is crucial for long-term success. And in the fashion industry in particular, the relationship between business success and the price people and planet pay is under heavy scrutiny already.

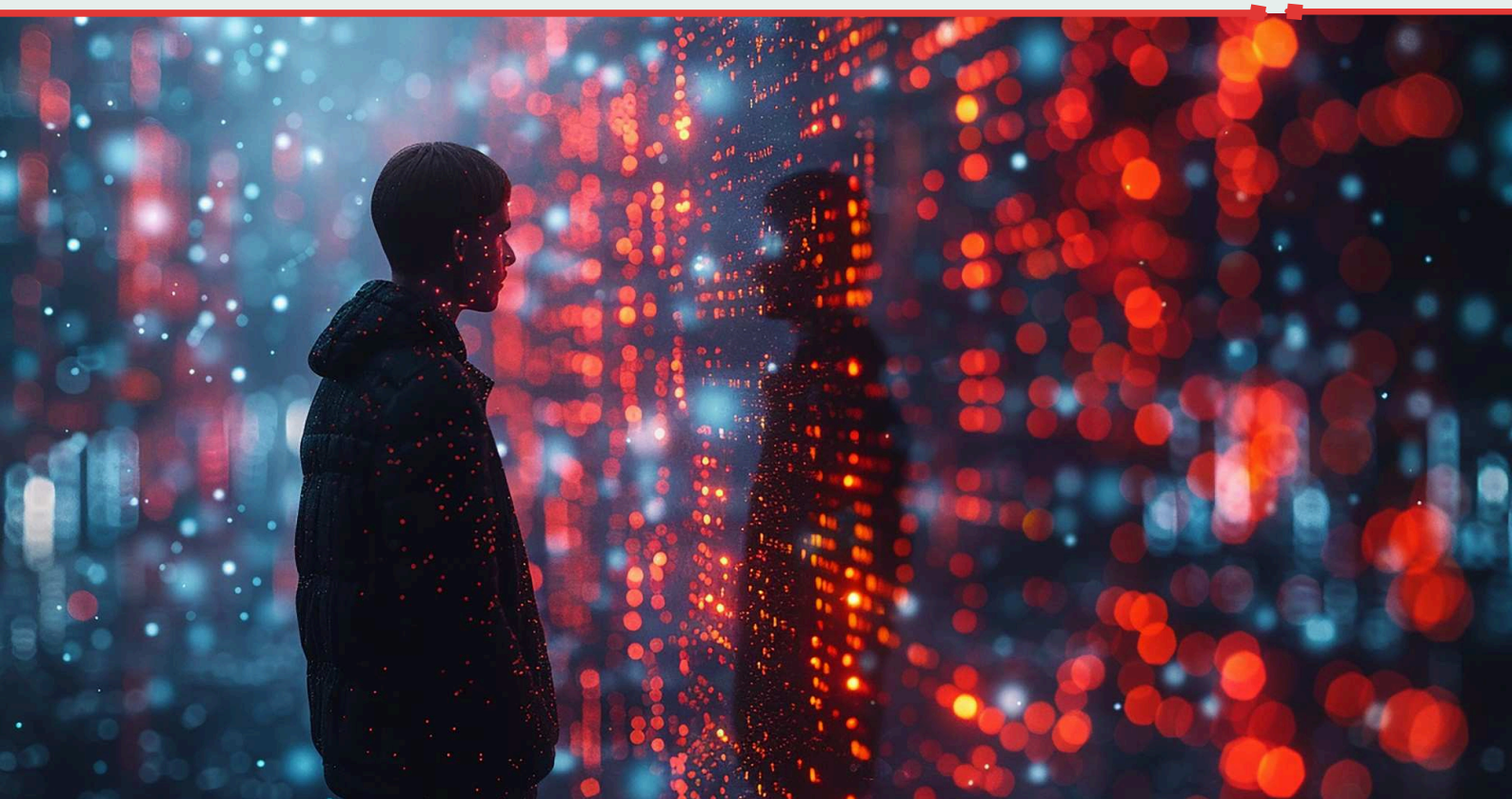
Ensuring ethical AI involves anticipating and mitigating potential negative consequences, like exacerbating inequality. Proactive measures that business leaders can take include mandating comprehensive risk assessments, playing a part in ongoing monitoring, and installing and reinforcing robust governance frameworks.

4. ACCOUNTABILITY IN AUTOMATION

Automation brings efficiency but also questions of accountability – not just to internal stakeholders but to the wider world and to the apparatus of government and NGOs that are seeking to regulate the risks and the ethics of AI.

As leaders, it will be important to not just remain aware of the evolving regulatory landscape, but also to welcome external structure and scrutiny. Legislations can establish standards for transparency, accountability, and safety in AI development and deployment - providing clear guidelines and helping bridge public trust in a way that can anchor AI technology projects in that wider cultural conversation. Collaborative efforts between policymakers, developers, and ethicists are already progressing, but it will be equally important for industry to part of these discussions and policy frameworks.

In the day-to-day, CEOs must advocate for and implement policies where accountability is not an afterthought but a foundational principle. Ethical AI practices must establish clear accountability frameworks, which involves comprehensible delineation of roles and responsibilities among developers, operators, and stakeholders. This includes implementing feedback loops, robust auditing processes, and avenues for redress in case of unintended consequences.



In an automated world, when errors occur, determining responsibility can become murky; business leaders have the opportunity, today, to stay ahead of government regulation and to remain on the right side of the social evolution by introducing ethical AI practices from the start.

5. PRIOTIZING ETHICAL OUTCOMES

Prioritizing ethical outcomes with AI necessitates deliberate consideration of societal impacts and values throughout the development lifecycle. Ethical AI practices involve actively seeking opportunities where AI can contribute to societal challenges—healthcare, environmental sustainability, and education, to name a few. It's about coordinating AI initiatives with broader societal needs and ethical outcomes, leveraging technology that will facilitate and accelerate ethical practices.

WHY STARTING WITH ETHICAL CONSIDERATIONS MAKES SENSE

Harnessing the power of AI in business is quickly becoming table stakes, leaving those who don't begin initiatives behind. Over the last year, you will no doubt have encountered investors, colleagues, customers, partners and other parties all looking to understand what your AI strategy is.

In spite of that drive for speed, however, ethical considerations must be the guardrails for sound decision making, otherwise today's exciting AI project risks becoming tomorrow's customer backlash, fine, or enforcement.

But there is also the in-house cultural side of things to consider. While rolling ahead with AI quickly might seem imperative, involving the right stakeholders in the ethical decision-making process can also enhance employee morale and productivity, promoting a culture of responsibility and. Starting with ethical expertise ensures that AI initiatives are not just technically sound but are also ethically responsible, sustainable, and in-step with corporate and societal values. Prioritizing ethics strengthens public and stakeholder trust, crucial for long-term reputation and customer loyalty.

The future of AI is not just about what technology *can* do; it's about what it *should* do. And as business leaders, we have a historic opportunity to influence both, on behalf of our businesses and on behalf of the people who contribute to and engage with them.

THE AI FASHION CONTENT REVOLUTION: IS YOUR BRAND READY?

EVEN EQUIPPED WITH POWERFUL GENERATIVE MODELS FOR TEXT, IMAGES, AND VIDEO, FASHION STILL FACES THE AGE-OLD CHALLENGE OF KNOWING WHAT IT WANTS TO SAY - AND HAVING THE DATA TO SUPPORT IT.

BY BRYCE QUILLIN, PHD & JESSICA QUILLIN, PHD, IT'S A WORKING TITLE

*Jessica Quillin PhD, Co-Founder and Principal of **It's A Working Title, LLC** is an experienced content strategist, published author, and the former Fashion Editor for Glass Magazine. She has an extensive background in fashion, luxury, and retail, including strategy consulting and magazine editorial work. Bryce Quillin PhD, Co-Founder and Principal of It's A Working Title, LLC is a retail economist, investor, and strategist. Over the past 15 years, he has served as a strategist and economics advisor to numerous luxury and fashion brands, chief economist for a number of major organizations and led efforts to develop AI/machine learning-based applications to guide market analyses and forecasting, including for the luxury industry.*

When Chat GPT hit the market in 2023, few fashion and luxury brands were prepared for the AI-everything frenzy that ensued. Many brands began launching their public AI experiments, like **Jacquemus's AI-generated handbag cars, and even AI-adjacent tech initiatives (or technology projects that had little, if anything, to do with AI) were rolled into the communication drive** - things like beauty's adoption of VR tools and Nordstrom's digital mirrors. Suddenly, the buzz was all about **Snap's AR filters**, digital twins, avatars, AR try-on mirrors like those of **Zero10**, and digital product creation tools like **CLO 3D**. Even though all of this tech has been evolving for decades and was not really "AI," it quickly became clear that having something to say about how you, as a brand, use technology was vital.

Like all hype cycles, the AI mélée has softened in 2024. Yet, now fashion and luxury brands are faced with the real challenge of figuring out the why, what, and how of taking advantage of this generation of AI tools in a way that makes business sense and that can be readily operationalized by existing teams. Of course, tech like the **DressX instant-makeover tool** has a lot of potential, but it is up to brands to decide where and how their consumer-facing innovation budgets should be spent.

Fashion and luxury brands' usual approach to innovation seems to be to rely upon external providers to do the work and to sort out and pilot best-fit implementation. But, AI content is different. Relying upon third-party companies and teams to experiment and produce AI content for fashion and luxury brands will not work in the long run, even for brand marketing.

AI needs structure, context, and specificity within content to work well at scale. This is not to say that AI cannot be used to bring meaning to unstructured content; but rather, if you want to train AI to learn your brand voice and meaningfully contribute to content creation, your content - from your critical product data to how your brand shows up across all the channels downstream - needs to be well-organized, consistent, de-duped, and properly tagged to work well.

For most fashion and luxury brand content the issue with AI comes down to simply a matter of content readiness. Most fashion and luxury brand content is a mess, siloed across teams with little collaboration, duplicative tools, and amazingly nonexistent content operations. Think AI is going to replace all your marketers, writers, and editors? Think again. Brands should be *deepening* their content teams, not replacing them.

The future of AI for fashion and luxury content needs to be about starting small and using tools that make sense for the brand and its products, teams, and resources. Brands should focus on small-scale, test-and-learn pilots to figure out the best use cases for AI for their business needs and audience.

Defining "AI" for Fashion and Luxury Content

To clarify, the term "AI" is thrown around a lot without definition and is used to cover a range of tech from machine learning to RAG (Retrieval-Augmented Generation) models. For this piece, we

are mainly talking about the army of generative AI tools, apps, and platforms—LLMs and RAG models galore—that are purported to "master your brand voice," "10X your content efficiency across channels," and "streamline your customer service operations" at scale as the marketers tell us.

Based on the marketing of these tools, at least, the future of AI content for fashion and luxury brand marketing, advertising, communications, customer service, and digital production creation is bright. However, it can be overwhelming and hard to know where to start.

Currently, there are AI content tools to help you with everything under the sun from ideating, proofreading, writing product and ad copy, taking notes during meetings, SEO/keyword generation and optimization, generating images, videos, animations, and art, structuring, planning, and organizing your social media posts, communicating and helping customers, developing websites and apps, and even auditing your website, marketing content, and customer data to assess gaps and determine opportunities.

Assessing the right AI tools for your brand is dizzying, even for practitioners who work with content every day. One thing, however, is clear: taking a plug-and-play approach to generative AI at scale can be a costly mistake for fashion and luxury brands for whom brand image is everything.

AI Content Readiness and Why It Matters

Any time a fashion or luxury brand executive approaches a team member to ask about using AI this-or-that for a specific content or marketing task, ask this question: Is our content ready?

Content readiness is a gauge of a brand's operational preparedness or maturity for content technologies or strategies. An assessment of content readiness for AI is a current state evaluation of how well-prepared a brand's content, content systems and tools, and content teams and operations are for the useful implementation of AI content tools.

Anyone can experiment with AI. That does not mean that the AI model will produce meaningful or quality outputs. Quite the contrary. Usually, it is "garbage in, garbage out." AI learns patterns and associations from the information on which they are trained. If the data are flawed or do not represent what they think they should, then the AI will learn and repeat those flaws in its outputs. AI relies upon the patterns and signals within the content used to train it. AI is dumb in the sense that it literally only does what it is told, but unpredictable in that it is not deterministic in the way computer programming is; it occupies an uncomfortable middle ground where training data heavily influences capabilities and outcomes, but where execution is fuzzy, making it essential to be clear about what you want to say before you deploy AI in service of saying it.

If your brand has content in multiple repositories or content management systems (CMSs) managed by different teams according to different or inconsistent brand and editorial standards and templates, for example, then implementing AI tools in wider organizational contexts presents an operational content challenge. Also, if you feed an AI model or tool completely unstructured, internally inconsistent content with potential duplications, version control issues, and overlapping taxonomies, then the AI will produce lower-quality content that will not meet your brand standards.

Look, automating many processes and lower-level content tasks can be a huge cost-cutter and time-saving measure for fashion and luxury brands, particularly given the impetus towards hyper-personalization for digital e-commerce experience. AI content tools have many, many use cases for fashion and luxury, such as fine-tuning loyalty programs, as **Levi Strauss & Co have done**, creating **personalized outfit styling ideas or virtual closets like Stylitics**, or **making predictive product recommendations like Amazon** has been doing for ages. Or even for being a **virtual partner for social media copy like Lively is doing with Attentive AI**.

Outside of fashion, **Klarna achieved success with an AI chatbot pilot** through a partnership with OpenAI. After the pilot, Klarna claims that its AI-powered chatbot's efficiency resulted in fewer errors, a 25% decrease in repeat inquiries, and a reduction in average call time from 11 to 2 minutes. They also claim that the chatbot is "doing the job of 700 workers" and will increase profits by $40 million in 2024. What Klarna is *not* saying is that the brand also has a robust, centralized content strategy with strong content operations and well-defined content types and templates to structure and define its repository of help content. And that, as much as the technology partnership, is determining its success.

How to Prepare Fashion and Luxury Content for AI

Truly meaningful, scalable AI content creation begins with getting your brand's content strategy and operations in order and cleaning up your content. AI content tools thrive upon consistent and repeatable content structures, systemic and granular guardrails, processes, and rules, and human oversight and attenuation.

Building on a **four-step model nicely captured by Enterprise Knowledge**, fashion and luxury brands interested in preparing their content for AI should follow four basic steps:

1. Model the knowledge or content domain.

Define or document how your content is interconnected in an ontology or system map to codify how people, tools, content, topics, and other concepts within your organization are related.

2. Clean and dedupe the content.

Content needs to be centralized into a content authoring platform and clean, with minimal content ROT (Redundant, Outdated, Trivial).

3. Add structure and standardization.

Content models and content types with reusable templates supporting your knowledge domain content map or ontology give AI consumable and semantically meaningful content.

4. Modularize the content.

Once content is structured and cleaned, break up and deconstruct the content into smaller sections based on the content model, ideally with a componentized design and stored in a content management system.

All of this said, there is no substitute for practice when it comes to new technologies like AI. Take the time to play around with different tools and assess their ease-of-use, utility, and intuitiveness. Make active use of built-in generative AI features on social media platforms like LinkedIn, Facebook, and TikTok to see how well you like them and how you may be able to apply them to specific contexts and functions within your fashion or luxury brand.

This piece builds on ideas originally aired in **Fashion Strategy Weekly.*

GETTING SERIOUS: FROM FUN AND FEAR TO FOUNDATIONS AND FINANCE

WHAT DOES THE NEAR FUTURE HOLD NOW THAT AI IS NO LONGER SEEN IN BINARY TERMS AS A SAVIOUR OR A THREAT, BUT MORE PRAGMATICALLY, AS A SPECTRUM OF SOLUTIONS? WILL THE CORE BUSINESS MODELS BALANCE OUT? AND WILL THE ARCHITECTURE SCALE TO DELIVER THE TRANSFORMATIVE APPLICATIONS THAT USERS, ORGANISATIONS, AND INVESTORS ARE ANTICIPATING?

BY BEN HANSON, EDITOR-IN-CHIEF, THE INTERLINE

Ben Hanson is the Editor-in-Chief of The Interline - a technology publication for fashion professionals, written by industry experts, and read by brands, retailers, and supply chain businesses around the world. Day to day, he leads a growing, multinational team to address the most pressing challenges affecting the fashion industry's fast-moving digital transformation. From supply chain transparency to digital fashion, The Interline tackles major industry questions through a technology lens.

In late 2023, about a year from the initial launch of ChatGPT, investors and analysts started to draw a line between generative AI as a novelty and AI as a serious business proposition. And that process of demarcation was not particularly kind to the first crop of solutions.

Writing last September, the team behind Sequoia Capital - who you would expect to be more optimistic about the general commercial viability of AI, given that they have backed close to 70 visible AI and machine learning companies and 24 more that are in "stealth mode" - had this to say:

"...EARLY SIGNS OF SUCCESS DON'T CHANGE THE REALITY THAT A LOT OF AI COMPANIES SIMPLY DO NOT HAVE PRODUCT-MARKET FIT OR A SUSTAINABLE COMPETITIVE ADVANTAGE, AND THAT THE OVERALL EBULLIENCE OF THE AI ECOSYSTEM IS UNSUSTAINABLE."

Really, though, this should be a surprise to no-one. And it should certainly surprise nobody in a role where AI-native solutions (or solutions that suddenly have new AI capabilities) are being pitched to them constantly. There are already far more AI products than the market can possibly sustain. There are more launching every week. And a shake-out that will leave many of them on the floor is inevitable.

From the perspective of a venture capital firm, though, what looks at first glance like doublethink is also pretty predictable. If you believe there's a huge amount of money in the AI banana stand in the long run, it makes sense to have as many hands in the pile as possible. Even if you recognise that most AI plays will fail, having a stake in the one or two that really take flight will counterbalance your losses and you, the party with the money, the connections, and the foresight will emerge with a net positive position.

And make no mistake, the consensus is that AI is going to generate a huge amount of money, and both financial backers and tech giants are moving accordingly. At the time I'm writing this, OpenAI is building to the release of the low-latency, natively multi-modal voice mode of GPT-4o, quietly sitting on Sora, its video generation model, and potentially getting ready to unveil a partnership with Apple. Microsoft's Build conference has recently made it clear that AI is the future of *that* company's software and hardware businesses. And just last week Google flipped the switch to make its generative AI "overviews" the default mode for web search, upending the internet in the process.

As big and bold as these moves might be, I don't think they meaningfully change the way we should be thinking about what AI is for, what it means to use it, and what it means to package and sell it.

Neither do I think that any of these new products and partnerships is going to do anything to reverse or slow the overall trajectory of AI, or reframe Sequoia's aggregate assessment of the first salvo of generative AI applications.

So everyone still believes that AI is going to change the world, even though concrete evidence of that transformation is still in short supply, and there have been a lot of halting attempts towards it.

The line that the investors at Sequoia have drawn, then, is between "Act One" and "Act Two" of generative AI, which I think is a useful framework for understanding where we stand.

The former was characterised by novel, fun, experimental use cases for AI; the latter will be defined by deeper applications where generative models are perhaps part of a wider solution that brings in context, data, reinforcement and more from other business systems, and potentially leans on different specialised sub-models as part of what's called a "Mixture of Experts" approach to both training and inference.

Now, I don't believe that these analysts - or anyone else for that matter - is expecting that the move towards these deeper applications of AI will lead to lighter, more unique, innovative use cases going away. If you page forward in this document to the technology vendor profiles and executive interviews that make up the next section, you'll see that both coexist now and will continue to do so - even if the next step in AI's journey is set to be more serious than the one that went before.

And without wishing to steal the march on our first AI market analysis (which you'll find at the end of this report, and which is focused on interpreting the information we found and were provided with this year) I want to look at what I see as the two tracks that will need to be navigated as part of that journey: one focused on commercial and market forces, and the other on architecture and capability.

Both will be winding, uncertain roads, so join me as I do some divination - thinking about where AI goes from here, and which commercial and technical barriers might make act two a harder sell than the first.

COMMERCIAL AND MARKET TRACK

We've written plenty, here and elsewhere, about how AI quickly went from being primarily a scientific, research, and academic concern to exploding as a consumer and enterprise software category. That change from narrow, domain-specific models that can outcompete human capability in very focused areas, to the big, unwieldy, inscrutable general purpose models of today is the defining AI story of our time.

But implicit in that transition from AI that plays Go and AI that predicts the three-dimensional structure of proteins, to AI can that sing, write poems, code, and make art is another shift: from judging AI purely on academic terms, to judging it by the same criteria as other personal and professional software.

Beyond research orgs and peer-reviewed publications, price, retention, acquisition, active user counts, IPO potential and more - these are the forces that are now steering the direction of AI.

Whatever your feelings about the rise of VCs as the controlling force in technology, there's little doubt that the relatively closed Silicon Valley tech investment circle has heavily influenced technology development and adoption - and these firms are now able to set the rules for what constitutes success.

And working from that rulebook, the existing batch of generative AI applications have set relatively poor benchmarks.

Looping back to Sequoia's market analysis again, for example, we can see that consumer-facing AI applications do not fare well in the fabled "stickiness," with one-month retention for ChatGPT mobile users (i.e. the share of total downloaders who continue to use the app a month later) sitting at 56% compared to TikTok, Instagram, and YouTube, which range from 69% to 85%. And ChatGPT is also the outlier here; the median one-month retention figure for top, AI-first companies is just over 40%.

This is not brilliant news from a product usage point of view, and it's underlined by comparing active users between AI apps and services, and the other platforms that compete for attention on people's smartphones. According to Sequoia again, only 14% of ChatGPT's heavily-promoted userbase is considered active, compared to between 64% and 85% for YouTube, Instagram, and WhatsApp.

So by the Valley's favourite metrics, generative AI tools - or at least the ones people keep on their phones - are seemingly fun to play with, but not compelling enough to come back to regularly.

Now, I think you can mount a fair argument that generative AI tools like image creators and chatbots should not really be judged this way. There are occasions, every day, for people to watch videos, send messages, and post photos, but comparatively few reasons to chat to an AI (outside of AI services that specifically offer everyday virtual companions) or have it create visuals for you day in and day out. And unlike social platforms, which prioritise engagement and advertising above all else, the ideal customer for a generative service is actually one that pays the monthly fee but doesn't actually query the model all that often.

Because this is where the heaviest commercial and market concern sits: the idea that the economics of generative AI are proving hard to balance. And the idea that for AI to change the world everyone has to use it, but having everyone using it might make it cost and resource-prohibitive to run.

Some parts of the AI cost / usage puzzle are solvable with mundane subscription licensing maths. If GPT3, for instance, cost X to train and commercialise - taking into account talent, compute, time, and marketing - then that model needs to be run for Y months, at a calibrated monthly price, across a userbase of Z size to recoup its costs and start making money.

This is the way profitability and growth are calculated for most SaaS and subscription applications, since - beyond hardware, energy, and the development of new features - they are static deployables with predictable ongoing overheads.

This is less applicable to generative AI, since the cost of inference is both significant and spiky. Every query I make to ChatGPT or Midjourney incurs an inference cost that's measured in terms of cloud compute and fractions of a cent, and that cost varies depending on the efficiency of the model, the type of query made, and the different modalities it might span. If I ask ChatGPT to answer a text query and then follow up with an image generation request, or a web search (both part of the multi-modal setup that model now has) the cost of inference will be slightly different each time, making predicting and influencing user behaviour an important consideration.

And while API calls to OpenAI's models are quite affordable, as an analysis from Andreesen Horowitz (again, hardly an unbiased actor in this whole affair) suggests, with margins for OpenAI of between 30% and 90% depending on the composition of 1,000 tokens served through GPT-3, OpenAI's own direct, paying customers, still face usage limits because, beyond these limits, the cost to permit a user to keep interacting with the model no longer makes sense.

This, remember, is also only confining ourselves to one already-deployed model. Whereas, since GPT-3 was deployed, OpenAI has had to train GPT-3.5, GPT-4, GPT-4o (the 'o' stands for 'omni'), and is now in the process of training GPT-5.

Each of the point releases of GPT-3 and GPT-4 brought with it a mixture of efficiency improvements and new capabilities, making their amortised costs difficult to parse, but according to Kevin Scott, CTO of Microsoft, the compute requirement and supercomputer infrastructure built for training GPT-5 constitute a giant "whale" compared to the "small shark" of GPT-3 - making it clear that pushing the capability window of generative AI forward is going to be a progressively more expensive task every time it needs to be done. And it needs to be done often.

So in brief, the cost of making AI better could dwarf all the revenue that frontier model companies like OpenAI, Anthropic, Mistral, and Google are making from enterprise and consumer customers. Which puts this entire software category into a familiar but uncomfortable market bracket: big ideas that don't make money today, but that have the potential to make avalanches of it in the future.

But there's also more to consider when we look at the cost side of the generative AI balance sheet. Companies like OpenAI are, right this minute, signing content licensing deals with online publishers like Vox Media and Axel Springer and The Atlantic, image services like Shutterstock, as well as with social platforms and communities like Stack Overflow and Reddit. And the only reason OpenAI isn't also pursuing similar deals with platforms like YouTube and Instagram is that Google and Meta, respectively, want to train their own models on that user-generated content.

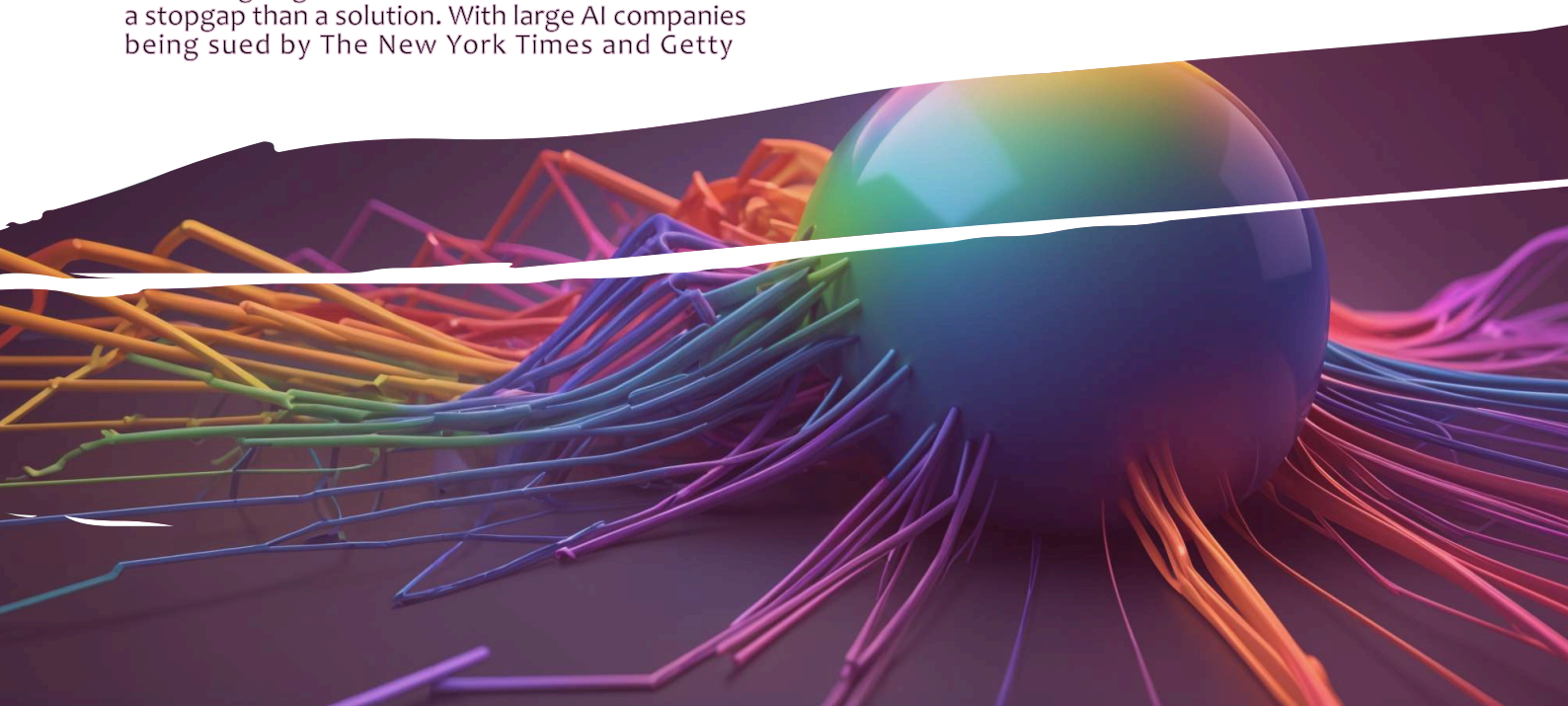
Individually, these licensing and technology agreements do not represent huge costs (Reddit signed a similar deal with Google for AI training purposes for "just" $60 million USD) but they are also definitely not free - and the volume of them will rise as major publishers and online businesses recognise that their competitors are being paid for content that the giant AI companies are largely scraping from them for free anyway.

Crucially, these content licensing agreements - which I fully expect to see the first fashion brand or retailer signing in the near future - are also more of a stopgap than a solution. With large AI companies being sued by The New York Times and Getty

Kevin Scott, chief technology officer and EVP of AI, Microsoft, on stage May 21 at Microsoft Build 2024 in Redmond, Washington. (Photo by Dan DeLong for Microsoft)

Kevin Scott, chief technology officer and EVP of AI, Microsoft, on stage with Sal Khan, founder and CEO, Khan Academy, May 21 at Microsoft Build 2024 in Redmond, Washington. (Photo by Dan DeLong for Microsoft)

Images, and at least one of those cases working its way to court, there is still a largely unanswered question hanging over the basic legality of generative AI. And the assumption is that the publishers, creators, and communities signing content agreements with OpenAI and others are doing so with the understanding that the precedent - if any - set in those copyright cases will either provide them with a much stronger legal footing to litigate or renegotiate in a couple of years' time, or a good collective bargaining position to renew their deals.



In essence, then, an ongoing stream of new content is not something AI companies can draw a line under as a static cost or a one-time expense.

And there is recent analysis predicting that the market for AI training data may be worth $30 billion USD annually. This is a neat new revenue stream for platforms that can sustain the user backlash, or that have fallen out of favour with users but that still hold treasure troves of photos or text, but also yet another cost for the creators of the frontier models - and the apps and services built directly on top of them.

(This is all obviously less of a concern for the start-ups and scale-ups that are building new applications on top of those foundations, but it remains important to be aware of, since you needn't actually run ChatGPT yourself to be affected by its fortunes.)

All of this, too, will be further influenced (directly and indirectly) by how the cultural backlash around AI develops. Our contributor, Aasia D'Vaz-Sterling wrote elsewhere in this report that AI is, in its simplest form, a technological revolution that's dragging a cultural evolution with it. And inherent in that realisation is the understanding that society is incredibly unpredictable.

We need only look at how long it has taken society to reckon with the harms and the benefits of social media to see how slowly and uncertainly etiquette, legislation, and culture develop. And I don't think it's hyperbolic to say that the change being ushered in by AI is potentially on another scale entirely to even the transformation brought about by user generated content and the algorithmic feed.

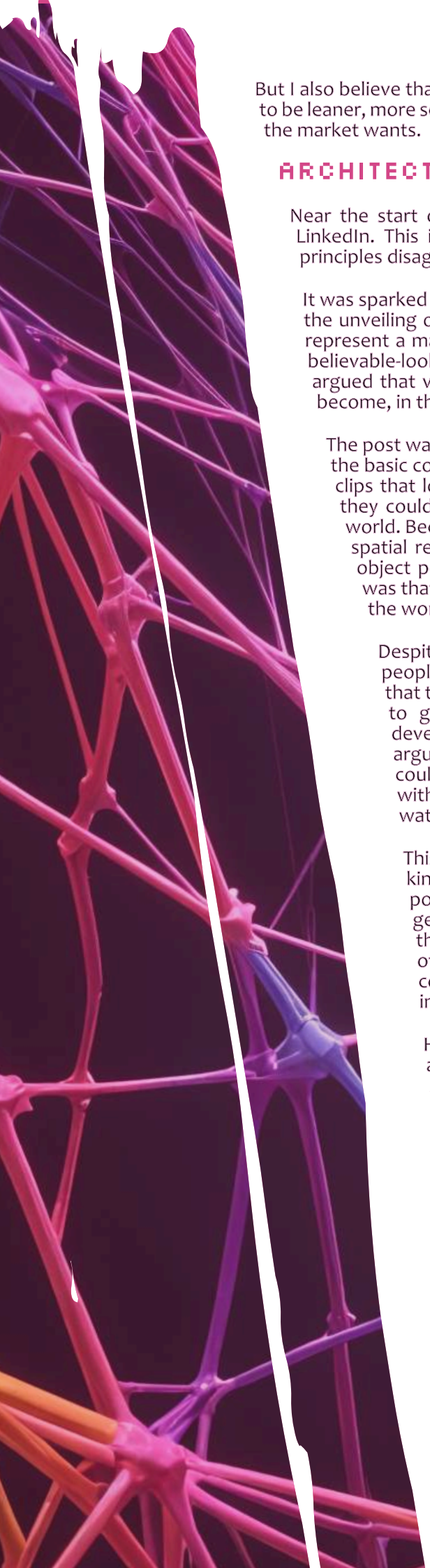
The timeline for sorting out what AI really means for work, relationships, creativity, fashion and other industries is going to be long - and while the world finds some equilibrium there, we will continue to hear (rightly, in my opinion) from people decrying the fact that's what's being sold in the interim owes a large amount of its value to the fact that it was trained, without permission, on essentially the aggregate creative output of the human race.

I also think it's easy, with a business hat on, to assume that this vocal crowd will go away, and that everyone will simply decide that training AI on public data was necessary to the building of something bigger. This, in my mind, is the wrong way for fashion organisations or other businesses to be thinking: we only need to look at Twitter (now X) losing a reported half of its users to see that social factors can heavily influence the success of software and services that are otherwise unchanged in terms of capabilities.

And as Slack and the overall re-tooling of enterprise software to look and behave more like consumer software has demonstrated, the trends that shape the apps and services we use in our personal lives go on to shape the ones we'll engage with willingly at work.

To attempt to tie a bow around a very complicated set of circumstances, then, AI is currently walking a very taut commercial and market tightrope. And no matter what new or existing models wind up being capable of over the next 12 to 24 months, ethics, legality, and pure money in versus money out are likely to be the more important considerations.

Now, do I, personally, think the AI industry is going to be able to successfully overcome all this? Probably. Individual companies are going to have extremely variable outcomes, simply because so much unavoidable uncertainty is baked into the essential fibres of the AI business, but on balance I believe this category is already simply too big to fail. Some of these market forces will, in effect, be steamrolled over because of scale.



But I also believe that if the future of AI is to be bigger and bolder, it's also going to need to be leaner, more sensitive, and much more aware of the practicalities of delivering what the market wants.

ARCHITECTURAL AND CAPABILITY TRACK

Near the start of this year, I found myself in a bit of a philosophical debate on LinkedIn. This is not normally my thing, but this was a very fundamental, first-principles disagreement on what constitutes intelligence.

It was sparked by a post from the OpenAI team that quietly followed in the wake of the unveiling of Sora, the still-unreleased video generation model that appears to represent a marked leap forward in the ability of generative AI systems to create believable-looking video outputs. In that post, some of OpenAI's researchers argued that video generation with this level of fidelity - allowed to scale - could become, in their own words, a "world simulator".

The post walks a weird line between technical jargon and over-simplification, but the basic contention is this: if a video generation model can consistently put out clips that look close enough to the real world to pass human inspection then they could, theoretically, be used to simulate parts of the whole of the real world. Because the outputs of Sora exhibit consistency with 3D perception and spatial representation as we know it, and because they can also showcase object permanence and interaction, the feeling amongst those researchers was that the model might have some emergent or inherent *understanding* of the world.

Despite it being overwhelmed by the clamour surrounding Sora itself, people still jumped loudly onto this idea as part of a growing sentiment that these large models, in their own lanes, aren't just a potential pathway to general machine intelligence - they're evidence that it's already developing. There were, for example, senior and experienced folks arguing that because Sora could output believable-looking liquids, and it could show objects floating on those liquids with behaviour consistent with reality, that meant that the model had an innate ability to simulate water.

This is something I disagree with. I also believe it represents a dangerous kind of magical thinking where AI is going to become more capable and powerful *just because*. And this has broader implications than just video generation, since it cuts to the heart of one of the biggest ideas in AI: that the applications and the architectures we have today are a series of stepping stones that will, inevitably, take us towards a more complete and more universal kind of AI, or the fabled artificial general intelligence, or AGI.

Here's my own take on this quandary. I am not a physicist or an astronomer, but I did spend a bit of time at school learning about the solar system. If you asked me to draw you the planets, in the right order and the right orbits, I might be able to do it correctly.

Importantly: I might be able to draw you the solar system correctly more than once. Maybe I'd get it right nine times. The question is: after that ninth time, would you trust me to plot a trajectory for a space shuttle? Because, after all, I don't really understand orbital mechanics - I've just seen a lot of drawings and renders of the solar system, and I've learned how to recreate them, or something like them. And as a consequence, on the tenth time I could get it wrong and not even know it.

This might be a glib analogy, but it says something serious about the core of how AI progresses from here. To my mind at least, being able to represent something accurately is not the same as understanding it. And we can apply the same principle to language, images, video and other modalities.

In fact people much smarter than I am have done exactly that. Writing back in 2020, Emily Bender of the University of Washington Department of Linguistics, in the US, and Alexander Koller, from the Department of Language Science and Technology at Saarland University, in Germany concocted the "intelligent octopus" analogy for language models - which has gained renewed attention, for obvious reasons, in 2023 and 2024.

In that paper, the authors compare language models to a smart octopus that has one tentacle attached to an undersea cable carrying inbound text communication to a country, and one carrying outbound. The octopus is able to detect the electrical signals moving the data (which represents words) through those cables, but having never left the ocean and, you know, *being an octopus*, it has no frame of reference for what those electrical signals actually mean, or if they carry meaning at all.

Nevertheless, the octopus keeps observing the signals, and over time it builds up a statistical model that allows it to predict to a very high degree of accuracy what signals follow others.

In practice, let's say one day an undersea cable gets cut (it doesn't matter which) and the person on the other end of it continues to converse with the octopus without knowing it. This leads to a scenario where a human being is carrying on a conversation that they firmly believe to be with another human being, even though the entity doing the replying is not human, has no innate understanding of language, and is consequently destined to, at some point, return text that no intelligent human would send.

This, in a nutshell, is the difference between an AI model that can output convincing text, images, or video, and that can be extremely useful as a tool in these contexts, and a genuine machine intelligence.

And, to be clear, we do not have any examples of the latter. Our brightest minds also do not agree whether it's even possible to create one.

As Bender and Koller put it:

"WITHOUT ACCESS TO A MEANS OF [HYPOTHESISING] AND TESTING THE UNDERLYING COMMUNICATIVE INTENTS, RECONSTRUCTING THEM FROM THE FORMS ALONE IS HOPELESS, AND [THE OCTOPUS'S] LANGUAGE USE WILL EVENTUALLY DIVERGE FROM THE LANGUAGE USE OF AN AGENT WHO CAN GROUND THEIR LANGUAGE IN COHERENT COMMUNICATIVE INTENTS"

As exciting as generative AI is today, we should take care to think about language and image models the same way. Simply because they can speak, draw, and write does not mean they grasp language, physics, or anything else.

As this also has deep practical implications, instead of being a fun philosophical exercise. This gulf between output and understanding is why transformer and diffusion transformer models make mistakes. What we commonly call "hallucinations" are not ephemeral dreams or any kind of "ghost in the machine". They are simple artefacts of a system that does a fantastic job at approximating intelligence but that does not actually possess it.

A more accurate name for hallucinations would be "incorrect inference". A model starts from one place and ends in another that, to an intelligent human observer or a much simpler database populated with *facts*, is unambiguously wrong. But to the model itself, running that inference, everything looks fine and logical because it has predicted the next most likely token without having an external reference frame to refer to in order to assess whether that token was "correct".

This same issue is also the root cause of the concern that pervasive adoption of AI in creative work has a chance of eroding or eliminating newness and invention. A model can synthesise novel outputs, but people - especially in the arts - hold deep reservations over whether it can create new works that are not based on permutations of its pre-existing training data.

For a lot of people in the AI community, though, these are cans that we can kick pretty far down the road. And I would actually tend to agree that answering the question of "how do we build intelligent systems, and what happens when we do?" is a tomorrow problem.

But I think we have a today problem when we consider the alternative: what happens if we don't or *can't* build intelligent systems? Because proceeding on the assumption that AI will continue to get progressively, or even exponentially, better on an endless curve towards genuine intelligence is destined to lead to AI initiatives that fall far short of their vision.

So when we think about what we, as fashion professionals, want to achieve with AI, we also need to be asking what will happen if current architectures end up becoming a long-term plateau (long enough, at least, that those commercial and market forces I've already mentioned begin to drag the sector down) or, worse, a dead-end?

I personally do not believe we *need* genuine and general artificial intelligence (we have come a long way already with non-intelligent systems) to accomplish a lot of what we want to achieve in fashion. And, to be clear, I do believe that generative AI represents a significant leap forward in the way we interact with computers and what those computers are capable of. I am not someone who sees the faults with current AI models as making the entire pursuit pointless.

I do, though, believe that we as an industry need to reckon with the downsides of what we have - capability wise - instead of assuming that the future will automatically solve them for us.

And for all the sci-fi talk about AGI, the real challenge of the current architectures remains inaccuracy and unreliability. The headline-grabbing stories about Google's "AI Overviews" recommending that users eat rocks, or put glue on their pizzas and petrol in their pasta, are funny but they belie the fundamental mistrust that people still have when it comes to interacting with AI models.

For fashion's purposes, it's easy to conceive of some low-stakes scenarios where these kinds of hallucinations only manage to create a PR problem for brands, such as inept style advice given by an eCommerce chatbot. But it's equally easy to imagine how hallucinations in sustainability data, for example, can create real liability.

I don't believe this to be an intractable problem. We only need to look at how quickly generative image models moved past "person with seven fingers" and stilled those easy counter-arguments. But it is one that, under the current AI architecture umbrella, is never going to be entirely solved.

Nevertheless, as you move into the next section of this report you're also going to find compelling answers to this and a lot of other questions - and you're going to see measurable progress from companies that have a clear and compelling ambition for what they believe AI is capable of doing in the here and now. And that includes both genuine departures from existing enterprise platforms, and natural evolutions of the same.

This is, ultimately, what I find the most compelling about the state of AI in fashion today. For all the commercial and technical friction, it really does feel as though we are currently in the "selling books on the internet" stage of AI's evolution. And just like the Cambrian explosion of new ideas that eventually came from that - Uber and Netflix and Slack and so on - I do genuinely believe we are going to see transformative apps and services in the future that we can't conceive of today, without needing to completely rearchitect the foundations we have to achieve them, or to bank on emergent properties that might never come.

It's a tired analogy, but back in the mid-to-late 90s, nobody really knew what the internet was going to be for. Then a lot of the people who thought they did wound up folding. And the eventual winners were the disrupters who came in and changed things, and the smart companies that played the middle of the field and saw the opportunity to add entirely new elements to their existing offers.

After spending seven years charting the progress of AI (see our 2017 AI Report for a blast from the past!) I don't see the AI era being any different. Just as I've spent several pages now analysing it all from the same commercial and technical vantage point as we would take on any enterprise software segment, the time is now upon us for software developers and customers to treat it the same way: as power and potential to be translated, through effort, into practicality.

It's an exciting time to be in technology for fashion. Just make sure you keep a keen eye on where it's headed.

Turn the page to explore AI solutions and new AI capabilities in existing platforms from key technology vendors, as well as detailed and exclusive interviews with key executives. Then finish your run through our first-ever AI Report with a look at our baseline analysis of the AI market for fashion.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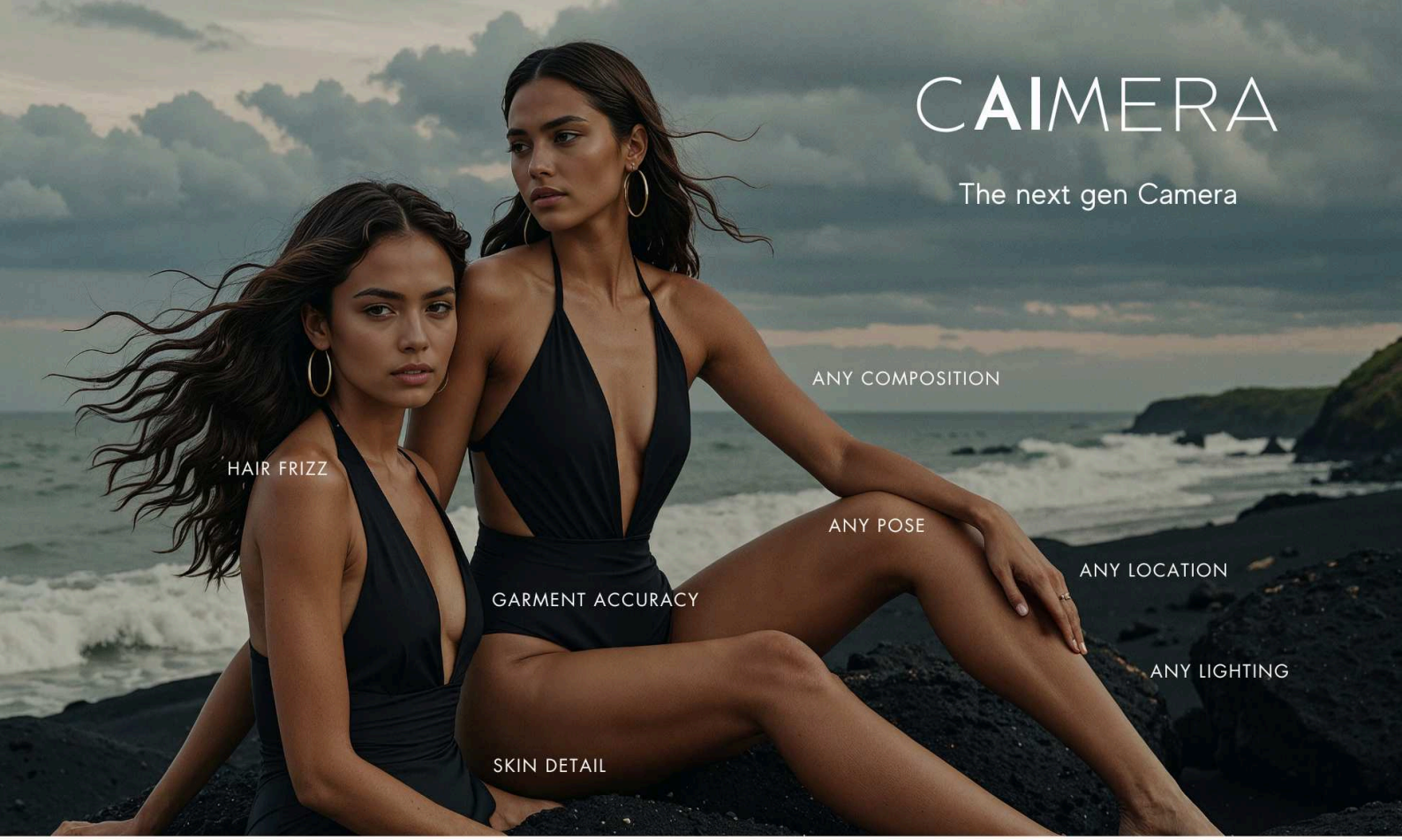

In 1989, the digital camera launched and the world experienced higher flexibility and lower costs. You could see images real time, shoot a lot, choose one. CAIMERA is about to bring the same transformation to the world of imagery.

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CAIMERA.AI

Caimera is of the only tools in the world to regenerate a complex garment in an AI image in any pose, any lighting, any body type with photo real quality.

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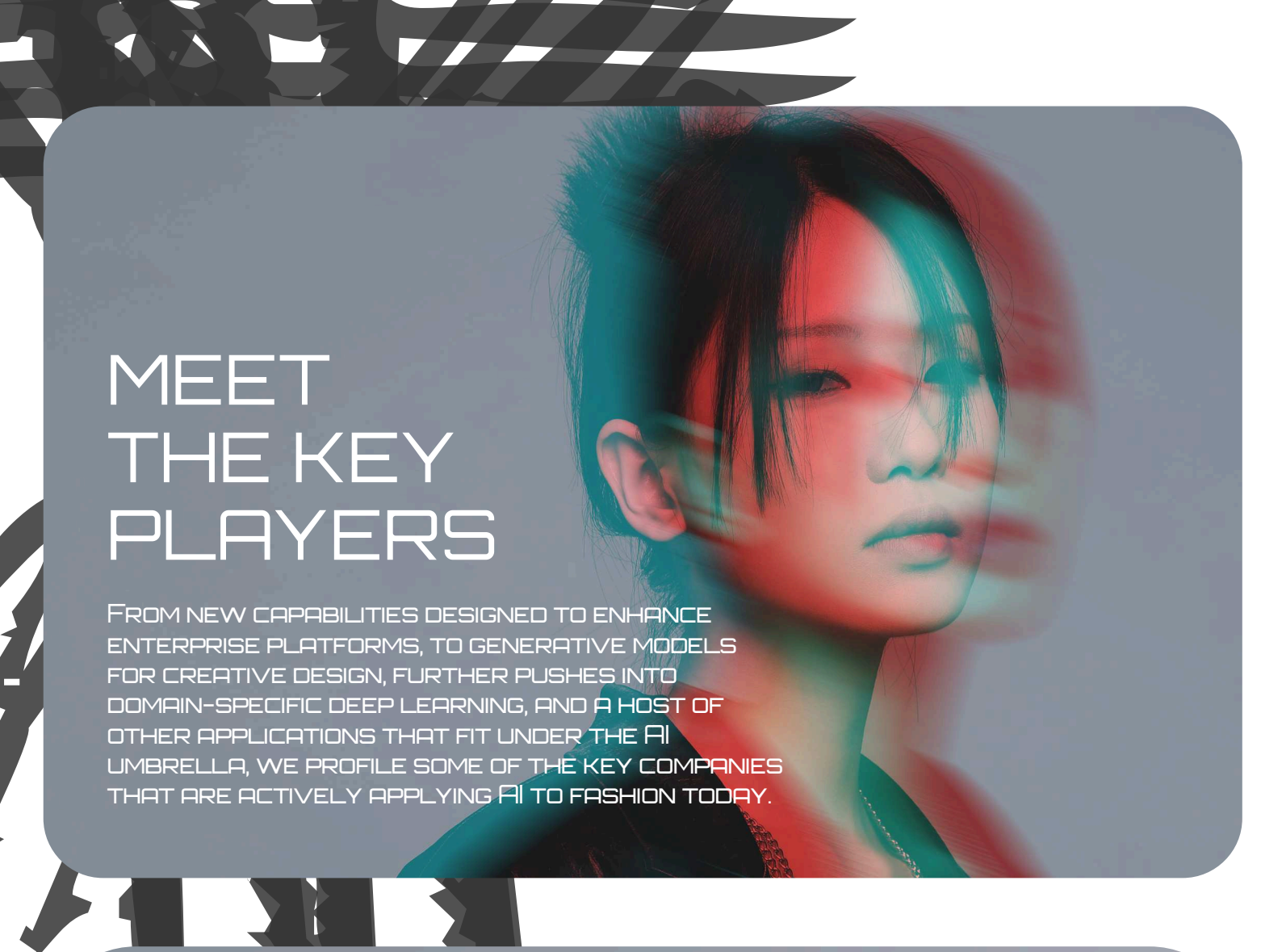


MEET THE KEY PLAYERS

FROM NEW CAPABILITIES DESIGNED TO ENHANCE ENTERPRISE PLATFORMS, TO GENERATIVE MODELS FOR CREATIVE DESIGN, FURTHER PUSHES INTO DOMAIN-SPECIFIC DEEP LEARNING, AND A HOST OF OTHER APPLICATIONS THAT FIT UNDER THE AI UMBRELLA, WE PROFILE SOME OF THE KEY COMPANIES THAT ARE ACTIVELY APPLYING AI TO FASHION TODAY.

Unlike previous deep-dive reports from The Interline, which have focused on transformations that are largely self-contained within our industry, AI is the hottest topic in fashion and in the wider world.

Mention digital product creation, or material traceability, to a passer-by on the street, and you would be met with a blank stare. Talk about AI to anyone, though, and you'll find an array of strong opinions, an incredibly wide spectrum of personal and professional use cases, and a generalised, culture-wide impression that generative AI in particular is the biggest recent development in consumer and enterprise technology.

In many ways, this creates a more difficult environment for fashion professionals and organisations to operate in. Because society as a whole is still reckoning with the scale of the disruption, and attempting to discern where AI fits into a landscape where content and media have already become commoditised - and the tools of creation thoroughly democratised - individual industries like fashion are attempting to hit a fast-moving target where rushing ahead can be seen as immoral, but falling behind the state of the art can feel like an existential threat.

This leaves decision-makers like you in a complicated position. Should you, and the organisation you work for, wait for the world to figure out what AI can really do and what it really means? Or should you take a proactive stance and begin putting together real proof of concepts to discover the answers for yourself? How many of society's hopes for AI are realistic? And how much of the fear around it is justified?

The answer will be no surprise to regular readers of The Interline, since it lies in pragmatism and grounded deployment. Whatever your vision for AI, we encourage you to prioritise return on investment in a meaningful timeframe - looking beyond the wide-open possibility space and the excitement of AI and focusing on applications that have firm anchors in either existing strategic priorities or in challenges that have not been successfully overcome in other ways.

And as we are starting to showcase in this first AI Report, there are certainly no shortage of solutions to choose between - both new, AI-native applications, and existing platforms and tools that have had well-thought-out AI capabilities added to them.

So, to aid in the process of identifying where AI could deliver value for you, the next section of this report contains detailed information about some of the key technology vendors and service providers who are either building entirely new AI solutions and applications, or adding demonstrable AI capabilities to their existing solutions - all of whom elected to support this report and help keep it free to read.

For each of these vendors, we asked the questions that we believe matter the most when brands like yours are looking to discover, shortlist, and work with new partners at the forefront of the next wave of enterprise technology. Each vendor contained in this section was asked to provide:

- **An overview of their solution**
- **A list of their headline customers**
- **An indication of their monthly active users (with a focus on their AI features where those features comprise part of a wider solution or portfolio)**
- **A breakdown of their pricing model**
- **A laundry list of their technology partnerships and integrations, and how these interact with their AI capabilities**

We also spent time with a senior executive from each company to better understand their ethos, their strategy, their roadmap, and how and where they believe AI will have the most measurable impact on fashion in the near and longer-term future.

Every vendor has also provided a point of contact, so if you see a solution or service you believe could add value to your AI strategy, more information is just a click away.

Please note that the information contained in the vendor profiles that follow this page remains the property of the vendors themselves - each of whom is a paying sponsor of this report. While we endeavour to check the data we are given, The Interline does not assume responsibility for the authenticity of customer engagements, user figures, or technology partnerships listed in these profiles, and the contents of any advertisements provided to us are solely created by the advertiser.

To find out more about a particular AI technology vendor or service provider, jump straight to their profile and executive interview using the links below.

More so than any other technology category, we encourage our readers to not just evaluate the full spectrum of standalone AI solutions (and additions of AI to existing platforms) at the feature and capability level, but to also consider the full scope of what constitutes AI.

While generative text, image, and video applications might have kickstarted the current wave of interest and adoption, the transformer and diffusion models that power them have roots in decades' worth of research and development in deep, domain-specific machine learning. And as exciting as the possibilities of focused generative AI and more general-purpose large models are, these represent the visible part of a large iceberg, and narrower applications of more traditional AI are likely to be just as much a part of this next wave of enterprise technology.

BOLD METRICS

www.boldmetrics.com

Founded: 2017

Bold Metrics' AI body data platform is a digital twin solution that assists apparel shoppers in finding their optimal size and fit, while concurrently aiding retailers and brands in boosting Average Order Value (AOV) and Conversion Rate (CVR), while decreasing returns. From just 4-6 simple shopper inputs, the Bold Metrics' generative AI technology accurately determines critical points of measure to create unique digital twins of shoppers with over 50 body data measurements. The technology combines shopper body data with brand-specific garment data, providing tailor-level accurate size recommendations that show how an item will fit across critical points of measure — allowing shoppers to choose their best size based on their personal fit preference.

Pricing model: Yearly SaaS model.

HEADLINE CUSTOMERS

Amsale	Helly Hansen	Retrofete
BlueDelta	Jaanuu, Inc	Sartoro
Burton	LT Apparel	Scuba.com
Canada Goose	Mac Duggal	SIMMS Fishing
Charles Tyrwhitt	Madhappy	State & Liberty
Columbia	Mens Wearhouse	SuitShop
DXM	Meshki	Sun Day Red
Eph Apparel	Mizzen + Main	Threadmark
Fire-Dex	New Balance	UpWest
girlfriend collective	PACT	Vuori
Halfdays	Patagonia	**plus many more.*
Haspel	PopLinen	

BOLD METRICS

www.boldmetrics.com

Founded: 2017

TECHNOLOGY PARTNERSHIPS, INCLUDING:

Bambuser	Parcel Lab	Spectrum
Endear	Particl	Stylitics
Loop Returns	Recurate	Volumental
Optoro	Ryder Commerce	*plus many more.

What role do you see your application playing in the future of AI for fashion?

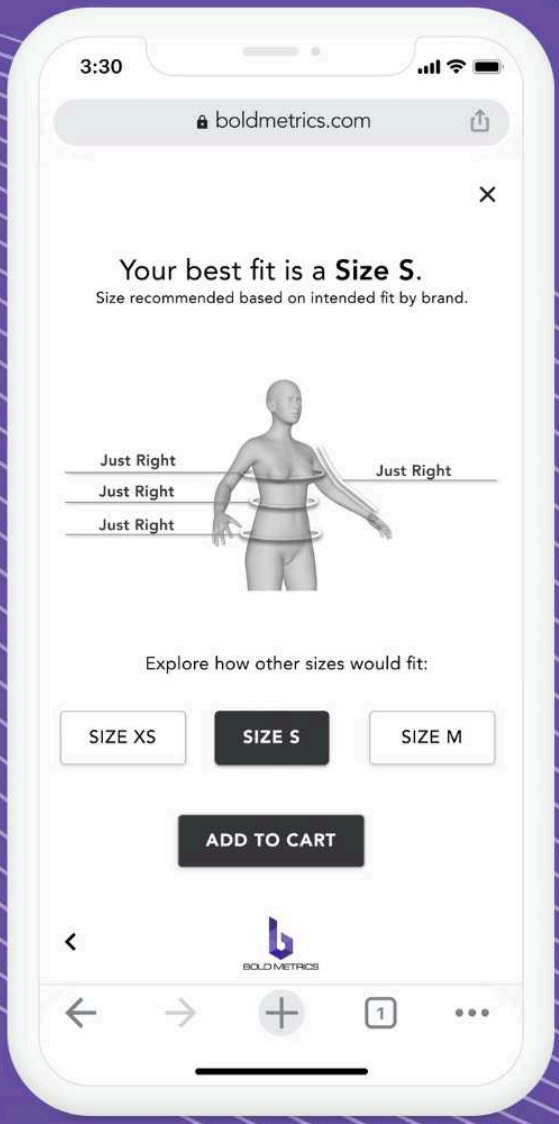
In today's rapidly evolving apparel landscape, technology is playing an increasingly pivotal role in how apparel brands approach size and fit. Bold Metrics digital twins and generative AI solutions help brands better understand and meet the needs of their customers.

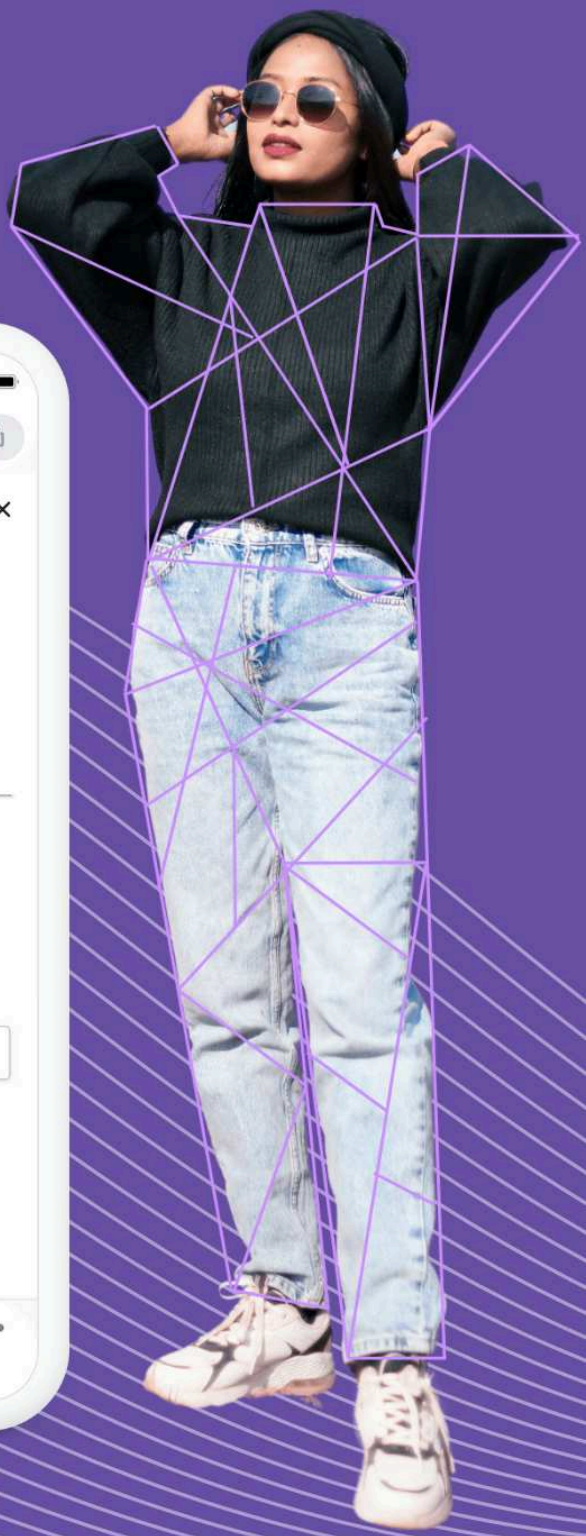
While size charts and brand comparison tools may serve as a starting point for consumers and brands navigating apparel sizing, they are often limited in their accuracy, standardization, and personalization. To overcome these limitations and provide a more seamless and personalized shopping experience, brands using Bold Metrics are going beyond simple size recommendations, unlocking the power of actual shopper body data to improve apparel design and reduce returns at their core. Pairing these data-driven body insights with more accurate and tailored sizing recommendations ultimately improve customer satisfaction and loyalty, elevating the apparel size and fit experience, and driving increased conversion and average order value.

CONTACT US

Unlock the Power of Body Data with AI Sizing Solutions

Discover Bold Metrics





BOLD METRICS

DAINA BURNES

CO-FOUNDER, BOLD METRICS

What's your working definition of AI? Does it differ from the public understanding, which is currently dominated by large language models and generative text-to-image models? And how does that definition manifest itself in your solution(s)?

Much of the recent popularity in consumer accessible AI applications is based on the context of natural language, text, or image-based prompts. AI also holds the power to analyze vast amounts of multi-dimensional quantitative data to extract information and predictive insights that hold the potential to drive actionable outcomes.

In the context of Bold Metrics, AI manifests itself in our size and fit solutions by accurately creating a shopper's digital twin – represented with more than 50 body measurements of that shopper – and providing garment-specific size recommendations tailored to that individual's body shape and fit preferences. Our AI-powered system considers a multitude of factors, including body measurements, garment specifications, and continuous machine learning on purchases, and returns behaviors to deliver personalized sizing guidance that enhances the shopping experience for consumers and drives tangible results for our clients. By harnessing AI's capabilities toward a practical application in the apparel industry, we're revolutionizing the way people shop for clothes and helping brands gain access to digital twin body measurement data at scale.

Beyond the technologies themselves, the current AI era has also opened up a wider willingness to challenge long-standing and traditional ways of working in almost every area of fashion. When we consider the tools the industry uses for sizing and fit - both in-house and consumer-facing - there definitely seems to be an opportunity for disruption. How are you deploying generative AI, and in concert with what other technology, to encourage creators and consumers to rethink fit and size?

Historically, size charts have been the traditional approach to assisting consumers with sizing, and while they offer an entry point for fit guidance, they are quite limited in utility as consumers typically do not know their detailed body measurements. Sizing tools that ask about one's size in other brands, require taking full body photos or using measuring tapes risk detracting from the experience, and present hurdles in the purchase process. Bold Metrics generative AI platform has overcome these limitations to provide a more personalized, accurate, adoptable, and adaptable sizing experience, leading to improved shopper confidence and reduced returns.

We deploy generative AI in a multitude of vectors, first with our digital twin technology – creating a "twin" of each shopper. From just 4-6 simple shopper input prompts, our generative AI technology accurately determines critical points of measure to create unique digital twins of shoppers with over 50 body data measurements. There is no requirement for a measuring tape or taking a full body picture/s of oneself, with our proprietary AI technology generating the digital twin directly from the survey prompts. The technology combines shopper body data with brand-specific garment data, providing tailor-level accurate size recommendations that show how an item will fit across critical points of measure — allowing shoppers to choose their best size based on their personal fit preference. The system continuously learns over time, with a built-in feedback loop system consisting of purchase and returns data associated with the digital twin data. By tracking user journeys and monitoring purchase and return behaviors, the system gathers valuable feedback to enhance future fit simulations. This continuous learning loop enables the technology to adapt and evolve based on practical application data from customers of a specific brand.

Ultimately, the growing dataset of consumer digital twins paired with garment data and purchasing behaviors allows creators to harness body data insights to design based on their actual shopper's body data instead of the generalized population studies or fit models that the industry typically accesses.

As we have seen throughout this report, another key use case for AI is extracting new insights and new value from both novel and pre-existing datasets. For direct-to-consumer brands and retailers, body and sizing data fits into both those categories: organizations already hold historic and aggregated information, but tools like Bold Metrics are also opening up new data streams and new links between datapoints. How do you see AI changing the data that's available to brands and retailers, and changing what they are able to do with that information?

Generative AI is bringing entirely new data sets to brands and retailers. Behind the scenes, anytime a consumer engages our solutions and responds to the survey prompts to receive a size recommendation, that consumer's digital twin body measurement data is being captured and related to their purchase and return behavior. This AI body capture creates the same detail of body shape and measurement data as though their customers had stepped into a highly accurate 3D body scanner, but without the cumbersome scan.

This 3D digital twin data is a game-changer for the apparel industry. Never before have brands and retailers had a practical way to collect this data at scale, short of installing physical scanners in stores (a solution that is neither scalable nor practical) the industry as a whole has been relatively blinded to their customer's real body measurement data and how it relates to their fit coverage across their demographics. The ability to break down customers' body measurements by product and purchase/returns can completely change the product design process, allowing for a data-driven quantification of their fits and size gradation systems. This has the power to greatly impact overall return rates with better-fitting products that enter the market in addition to a better capture of the overall market with more apt fits for diverse body shapes and sizes.

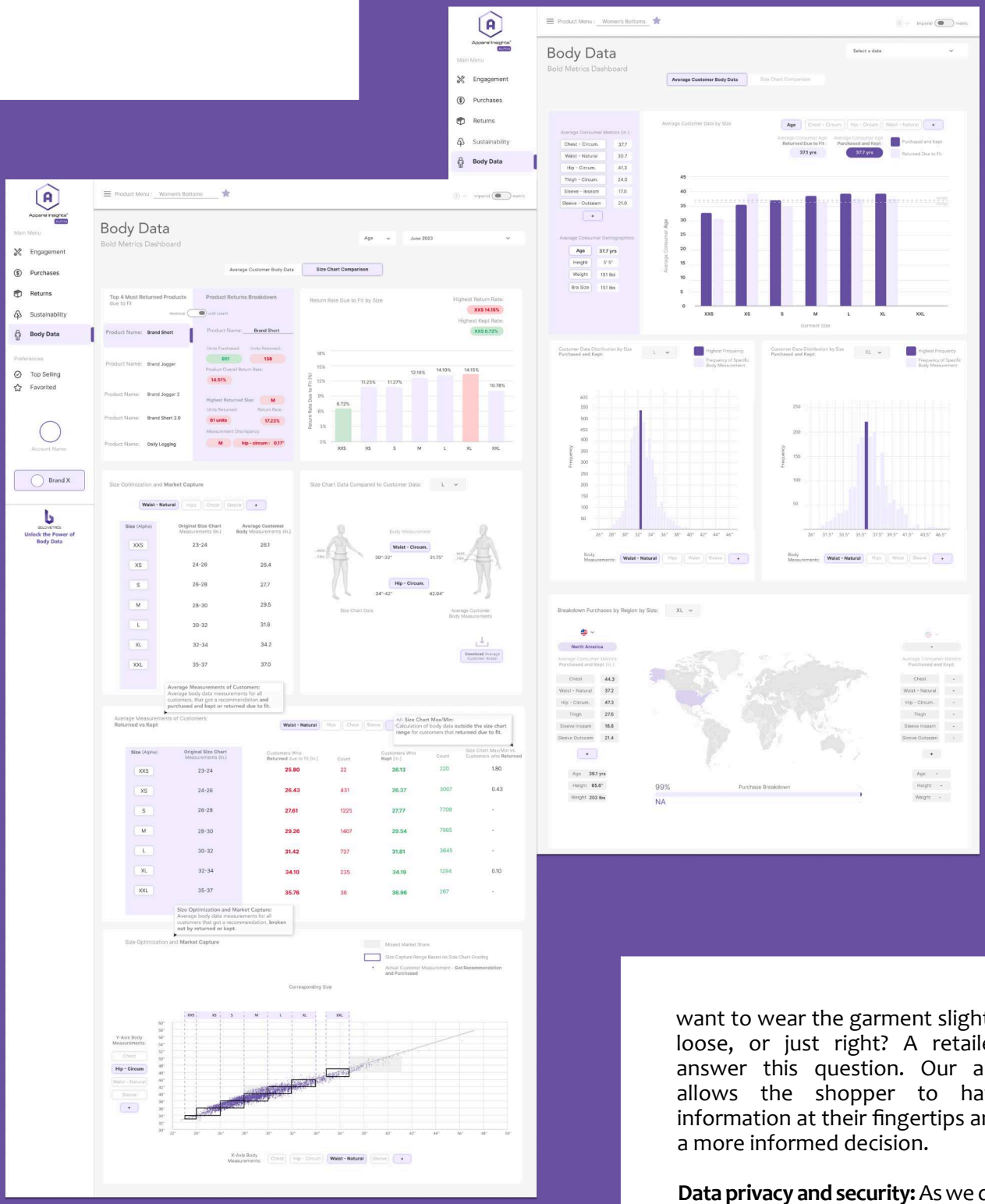
There is a drive within both AI and retail, right now, towards personalisation. For AI initiatives this means moving from off-the-shelf models to models that are trained on either a brand's DNA or a consumer's knowledge base and preferences. For retail, it means adapting offers, experiences, communications, and channels to meet the consumer. With Bold Metrics you're trying to tackle both - allowing consumers to shop with personal fit preferences in mind, and giving retailers access to this information, and also deploying AI in service of building an understanding of the extreme subjectivity of fit. How do you see this developing from here?

The convergence of AI and retail towards personalization represents an exciting frontier in the industry, and Bold Metrics is at the forefront of this movement. We're tackling both aspects by leveraging AI to empower consumers to shop with their personal fit preferences in mind while also providing retailers with valuable insights into customer body data and sizing needs.

Moving forward, we see this development evolving in several key ways:

Deeper Insights for Retailers: By harnessing AI to build a deeper understanding of the subjectivity of fit, we'll be able to provide retailers with actionable insights into consumer preferences and behavior. This includes identifying trends and patterns in sizing preferences across different demographics and geographies, enabling retailers to optimize their product offerings and strategies accordingly.

The power of preference: Allowing consumers to purchase based on their personal fit preferences will becoming increasingly important as demand for personalized experiences grows. Does the individual



want to wear the garment slightly snug, loose, or just right? A retailer can't answer this question. Our approach allows the shopper to have this information at their fingertips and make a more informed decision.

Data privacy and security: As we deploy AI to collect and analyze increasingly granular data about consumer preferences and behavior, we'll also need to prioritize data privacy and security. There's no registration, no storage of sensitive information — no personally identifiable information (PII) data is required by our technology. We prioritize data privacy and security, taking a very strict approach to never store or collect any PII.

Overall, we envision a future where AI-powered personalization transforms the retail experience, enabling consumers to shop with confidence and retailers to better understand and meet the needs of their customers. At Bold Metrics, we're excited to continue driving innovation in this space and shaping the future of retail with our AI-driven size and fit technology solutions.

For a lot of organisations, the biggest unanswered questions in AI all swirl around return on investment, which is either uncertain or difficult to measure in a lot of use cases. That may not be the case here, though, since fit is at the root of more than 75% of all apparel returns, so if an AI solution can replace the guesswork, averaging, and uncertainty that both retailers and consumers experience then it can potentially have a real and quantifiable bottom-line impact. How is that impact going to be realised?

Fortunately, our ROI is very measurable and realized by our clients. When it comes to fit and sizing, there are three dominant KPIs we measure where our clients experience a direct ROI: Returns decrease, conversions lift and average order value increase.

Being that 75% of all apparel returns are due to fit, and with rises in bracketing behavior due to poor size communication, brands should consider generative AI as a way to combat returns. By providing consumers with accurate sizing recommendations tailored to their individual preferences and body shapes, brands can significantly reduce return rates due to consumer error in purchasing the wrong size or engaging in bracketing behavior. This reduction in returns directly translates to cost savings for retailers, as they incur fewer expenses associated with processing returns and restocking inventory. On average, we drive an 18% reduction in fit-related returns when consumers follow our sizing recommendations.

Accurate and personalized size recommendations give shoppers purchase confidence in addition to enhancing the overall shopping experience. The ease of the Bold Metrics user experience has been proven to aid in the purchase process, as measured by conversion lifts and the propensity of customers to increase their overall order value. On average we drive an average 232% increase in conversion when shoppers engage our solution/s. With that increased purchase confidence, we also measure increased purchase quantities by consumers, with a 32% mean increase in average order value.

The combination of realized impact associated with increase conversion rate, average order value and reduced return rates for shoppers that engage our solutions, brands and retailers can quantify a meaningful ROI that is typically tens of multiples above their investment in the system.

What do you see as the near-term future of AI - both within your solution(s) and in general? Do you believe it will be a transformative class of technologies the way people expect?

The near-term future of AI holds immense promise, both within our platform at Bold Metrics and in general across industries. We believe that AI will continue to be a transformative class of technologies, reshaping the way we work, live, and interact with technology.

Within Bold Metrics, we see AI playing a central role in further enhancing the accuracy and effectiveness of our size and fit technology solutions. This is in addition to actionable insights that can be leveraged throughout a retail organization such as in technical design, merchandizing, targeted marketing, and other optimizations that can be realized on the data that the Bold Metrics AI system generates. We're continually innovating and leveraging AI to provide even more personalized and seamless shopping experiences for consumers while delivering actionable insights and quantifiable ROI for retailers.

In general, we anticipate AI becoming increasingly integrated into everyday life, driving efficiencies, improving decision-making processes, and unlocking new opportunities across various sectors. From healthcare and finance to transportation and entertainment, AI will revolutionize industries by automating tasks, analyzing data at scale, and augmenting human capabilities.

While there are undoubtedly challenges and ethical considerations to navigate, such as data privacy and algorithmic bias, we believe that the potential benefits of AI far outweigh the risks. By fostering collaboration, innovation, and responsible AI development practices, we can harness the transformative power of AI to address some of the world's most pressing challenges and create a more inclusive and sustainable future for all.

Overall, we're optimistic about the near-term future of AI and its potential to drive positive change and innovation, both within Bold Metrics and beyond. As AI continues to evolve and mature, we're excited to be at the forefront of this technological revolution and to contribute to its transformative impact on society.

CentricSoftware®

www.centricsoftware.com

Founded: 2004

Centric Software provides solutions embedded with cutting-edge AI technology to solve the strategic and operational challenges our customers face.

Layers of complexity plague the fashion world like relentless product variety, more channels, locations, currencies and local preferences, making it incredibly challenging to bring the right products to market on time, efficiently and for maximum margins.

Achieving this is now beyond the capabilities of human effort alone. Access to data is a piece of the puzzle as only high-quality, comprehensive data can unlock the crucial insights required for making informed decisions. But it's still not enough. Fashion brands, retailers and manufacturers need AI tools to automate a range of decisions that impact retail activities from design to development, sourcing, planning, merchandising, pricing, allocating, replenishing and re-ordering thousands of product SKUs. These decisions are made both pre-season and once the selling season starts.

By embracing AI, we empower brands, retailers and manufacturers to thrive in today's fiercely competitive and ever-changing marketplace.

HEADLINE CUSTOMERS

Abercrombie & Fitch
Arc'teryx
Arena
ASICS
Benetton
Bestseller
C&A
Clarks
DIOR
Ecco
Esprit
Everlane
Fila
Guess
Helly Hansen
Lacoste
LVMH
Mango
Mavi
Michael Kors
Mugler Fashion
Neiman Marcus
Petit Bateau
PVH
S.Oliver
Saint Laurent
Sephora
Swarovski
The Gap, Inc
The Reformation
Tory Burch
Tous
Triumph
Under Armour
Volcom
Wolverine Worldwide
Zadig&Voltaire

CentricSoftware®

www.centricsoftware.com

Founded: 2004

What role do you see your application playing in the future of AI for fashion?

AI already plays a pivotal role at Centric Software as it is embedded within our technology solutions. AI helps to streamline, automate and accelerate numerous tasks and efficiently handles the complexities of the fashion industry. This enables teams to do more with less resources to effectively bring the right products to market, at optimal prices in the ideal locations to maximize sales, increase margins and drive growth.

Some immediate benefits of our AI solutions include the ability to:

- Gain real-time insights on product performance to drive pre-season decision-making.
- Leverage bestsellers to kickstart collections with carryover items for maximum efficiency.
- Update past products based on attributes such as colors, trends, materials, sustainable scores and more.
- Optimize the overall assortment for increased shopping basket & sell-through.
- Better predict demand, reduce markdowns and control your entire in-season product lifecycle pricing for maximum sales and margins.
- Reduce inventory with fast and smart allocation and replenishment decisions.

All of these then lead to real ROI, including:

- 15% increase in margins
- 60% reduction in time to market
- 30% decrease in inventory
- 50% improvement in productivity
- 18% increase in revenues

CONTACT US

AI Boosted
Planning — PLM — Pricing & Inventory

Benefits

Boost margins

Speed time to market

Get the product right

www.centricsoftware.com

CentricSoftware

Scan the QR code to find out more

RAVI RANGAN

CTO, CENTRIC SOFTWARE

What's your working definition of AI? Does it differ from the public understanding, which is currently dominated by large language models and generative text-to-image models? And how does that definition manifest itself in your solution(s) and services for fashion?

At Centric Software, our definition of AI includes decision support and at-scale decision execution automation enabled by multiple types of AI and Machine Learning (ML) as well as knowledge management. Centric AI use cases are market-driven by our Customer Advisory Board and innovation partners to support their business strategies and business process driven scenarios with an eye towards usability, transparency, explainability and control.

We see AI as another option in the toolbox of problem-solving technologies for our customers. Throwing AI at a problem is not a solution in itself. If you don't have the right training data, if you let AI operate without sufficient human-assisted guardrails, or if you don't have the right expertise to apply it properly with business adoption change management considerations in mind, it won't live up to its potential. Data is a particularly crucial element of this. An algorithm can be set up to address the problem you are trying to solve - such as coming up with an ideal price point for a product. But if you don't feed it with enough accurate, up-to-date data with the right contextual nuances, AI will generate less than ideal, even wrong, results. For supervised learning, humans need to guide the process and monitor the outcomes of machine learning until the algorithm has learned enough to take over some functions, and then manage by exception.

Centric's solutions incorporate AI tools that have been developed over the last 5-10 years, beginning long before the current AI buzz. We have assembled a team of global industry experts that understand exactly how to apply AI to solve specific challenges, rather than offering a one-size-fits-all solution. Just as our development of PLM has been guided by the process dynamics and data management patterns intrinsic to the fashion and FMCG industry, our strategy for AI solutions emphasizes the need to align with the various ways our customers work in a surgical manner as we seek to bring transformative benefits.

We see AI as a crucial part of a 'right aisle' (as opposed to 'endless aisle') retail strategy that aims to only develop and bring to market products that consumers really want, rather than offering broad assortments that have 'something for everyone'; the need to optimize revenue, margins, brand identity and the like remain paramount.

Our AI tools are designed to discover and take into account 'influence factors' that affect decisions such as pricing, product and assortment management. These might be anomalies in historical data due to one-off disruptions (think pandemic sales figures, for instance), or seasonal pricing fluctuations. With over 20 years of expertise in fashion and retail, we know what those influence factors are and how they can distort the picture, and how to tease them out through the rigor of a data science methodology. These factors have to be built into AI algorithms in order to give your teams an accurate reflection of what has happened in the past (with context), and how best to proceed in the future, with transparent rationalization of decisions and recommendations that inspire confidence and accelerate adoption.

You mentioned a need there for precise alignment between customers' specific challenges and applications of AI. Do brands and retailers have a clear idea of what they want to use AI to achieve today, or more of a general vision for what they'd like to accomplish in the future?

The problems our customers want to solve with AI are the problems that fashion and retail businesses struggle with in general. Overstocking; poor sales; slow time to market; loss of margins due to discounting; pricing competitively; optimizing assortments; getting inventory to the right place at the right time… these are all common challenges for fashion brands and retailers. Our focus is on our customer base and their processes first, with AI as a means to an end. We work hand-in-hand with our customers to examine these problems and figure out how technology can be best applied in each scenario. Rather than saying 'AI can fix this', we ask whether AI has a role in fixing this, and how. In addition, we have to also consider customer adoption challenges (e.g. adoption resistance) and incorporate method steps that validate and inspire confidence in the recommendations made by AI as well as the overall business results.

Given that Centric has a lot of different pieces in its portfolio of solutions, all arrayed in a way that's intended to address the different go-to-market processes as a single workflow, how have you approached integrating AI into that journey? Do you look at it as something with broad applicability (and broad ROI potential) across the entire lifecycle, or are the use cases narrower and more focused?

AI has a role to play from pre-season planning, to in-season execution, to post-season analysis. We infuse AI into many stages of the product lifecycle, using AI at specific points in the process where it can do more for decision-making, analysis and execution than teams can do using other technologies and manual systems, especially when scale effects are prevalent. AI can detect patterns that humans cannot see, crunch numbers in vast amounts of data, and pull together historical, current and future-focused (e.g. customer intent) data to make suggestions.

There needs to be a measurable impact if you decide to invest in AI. We don't encourage customers to use AI just for the sake of using the newest, hottest thing. Very few AI technologies have shown hard ROI to-date.

AI has been incorporated into our market-leading PLM solution in the form of material compatibility driven product structure (BOM) validation and image search tools for many years, and delivers ROI for customers through all of our solutions, including:

- Centric Planning™ is an innovative, cloud-native, AI solution delivering end-to-end planning capabilities to maximize retail and wholesale business performance resulting in a 110% increase in margin.
- Centric Pricing & Inventory™ leverages AI to drive margins and boost revenues by up to 18% via price and inventory optimization from pre-season to in-season to season completion.
- Centric Market Intelligence™ is an AI-driven platform giving insights into consumer trends, competitor offers and pricing to boost competitivity and get closer to the consumer, with a proven 12% increase in average initial price point.
- Centric PLM: takes advantage of AI in several ways and globally delivers a dramatic reduction in time to market by up to 60%, reduced COGS by up to 15% and improved productivity by up to 50%.

"AI is certainly a technology of the future. It will never completely replace people, especially when it comes to curating assortments."

Wöhrl, German fashion brand and retailer and Centric Software customer

> **"Thanks to Centric's AI automation tools, the markdowns happen sooner and in smaller increments. This results in a flatter reduction curve and, in the end, a better margin in terms of the entire lifecycle of the product. In many cases, we also get better turnover."**
>
> LSAG, largest shoe manufacturer in central Europe and Centric software customer

With AI being positioned as the start of a new wave of enterprise technology, a lot of organisations are thinking deeply about their technology ecosystems in general, and how ready the different pieces are for a future that could look very different. In that context, what do you believe makes Centric stand out as a futureproof partner in AI and beyond?

Centric is distinguished from competitors by our decades of fashion and retail experience and commitment to customer success, encapsulated in our 'Best Customers, Best Solutions, Best Team' ethos. We're also unique in our delivery of solutions using Centric's Agile Deployment℠ methodology that cuts right through pre-season, in-season and post-season processes, broadening the definition of Product Lifecycle Management far beyond its traditional development boundary to encompass sourcing, merchandise planning and pricing, stock and market trend analysis, for instance.

We've developed an end-to-end solution suite that connects the dots from product concept to sourcing right through to replenishment at retail. We're very focused on creating integrated processes and seamless data flows that eliminate silos and barriers between teams. This relentless focus on seamless business concurrency and continuity, along with the ability to easily integrate Centric solutions with other business systems, is a true differentiator for our customers.

Our acquisition of AI-driven tools such as StyleSage (now Centric Market Intelligence) and aifora (now Centric Pricing & Inventory) have added immense value to our product offering. From enhanced competitive analysis to dynamic pricing and basket analysis, our customers are now able to make faster, more accurate and more profitable decisions with the assistance of AI.

We're also strongly focused on the visual element of data. We recognize that teams need data to be represented in different ways and have developed highly visual collaborative tools that merge 'left-brain' and 'right-brain' orientations. Our solutions are data based, but visually presented; or presented in quantitative structures and formats for those who are more analytically oriented.

What do you see as the near-term future of AI - both within your solution(s) and services, and in general? Do you believe it will be a transformative class of technologies the way people expect?

In terms of our solutions, the near-term future for AI lies in capabilities that we already have in place - but we will be continuously refining and developing those in response to specific customer needs and priorities. Ultimately, we want to build more services around AI that meet our customer process requirements and enable them to be more creative, efficient, sustainable and profitable. It comes back to solving their biggest challenges. The FMCG domain lies at the heart of the Centric DNA, and we expect to pragmatically apply AI as we expand the continuity of processes and the coverage of use cases across our domain.

We have some very specific initiatives but of course are not at liberty to disclose them just yet!

Looking at the bigger picture, it's easy to say that a class of technologies will be 'transformative' but harder to apply and accomplish than transformation in the context of a specific organization. A company has to have the wherewithal and motivation to go through that journey. However, we believe that AI has the potential to be transformative in that it makes it possible to ask very strategic questions and answer them at scale in a way that simply wouldn't be possible with human brainpower alone because there are too many variables and too much information and dimensions to process. This can lead to changes in processes and strategy that you never anticipated, because the option wasn't previously there. We do also believe that AI will lead to new job roles, new areas of expertise and new opportunities for people while also reducing non-value-added work and wasted time and relieving users of mundane activities, thus freeing them up to focus on more important things.

To really make transformation happen and realize the potential of AI, businesses need top-down leadership with bottom-up adoption. Any technology that you inject with that transformative mindset, whether AI-powered or otherwise, will fundamentally change the trajectory of your business.

heuritech

www.heuritech.com

Founded: 2013

Heuritech quantifies and predicts consumer demand with the largest dataset on fashion and the most accurate forecasting model in the world.

Created in 2013 by two PhDs in Machine Learning, Heuritech possesses an AI-based visual recognition technology applied to big data panels and a forecasting model allowing apparel brands to quantify and predict what people wear.

For what? To help fashion & sportswear companies, retailers and manufacturers produce only what people want. Leading to a balanced collection assortment adapted to regional market specificities and reduced overstock.

Heuritech's solution allows for smoother communication and collaboration between different teams by fostering a data-driven mindset and transforming traditional decision-making. With a cutting-edge artificial intelligence approach, Heuritech supports brands, retailers and manufacturers in their digital transformation so they can dedicate themselves to what's most important: creating, analysing, allocating and selling.

Heuritech currently has 3 solutions:

- **Market Insights:** an easy-to-use SaaS platform enabling to quantify the adoption of prints, colors, fabrics, shapes & product attributes in each market for next season
- **Market Insights API:** an API providing weekly data points on each of those product attributes with up to 6 year historical data and 1 year forecast
- **Bespoke reports & projects:** event monitoring, key location monitoring, bespoke data flows & APIs

Heuritech analyses millions of images to give brands unbiased quantitative data on the evolutions of consumer preferences. Using Market Insights data, brands can analyze the predicted visibility growth of shapes, colors, prints, and fabrics and their forecasted market share.

Most recently, Heuritech included a product ranking for iconic models of bags and shoes enabling clients to track their iconic product's performance against competitors.

Pricing model:

Heuritech pricing model depends on the scope:

- the universes (Women RTW, Men RTW, Women Shoes or Men Shoes)
- the categories (Outerwear & Tops, Dresses & Skirts, Pants & Shorts, All Shoes)
- the geographies (Europe, France, the United Kingdom, the US, the Middle East, India, China, South Korea, Japan, Brazil, Taiwan, Thailand, Singapore, Malaysia, Philippines and Indonesia)
- the number of users
- the amount of support needed

Pricing is adapted to clients requests and needs. It can be from 15k€/year to hundreds of thousands of €.

HEADLINE CUSTOMERS

Heuritech serves the world's biggest sportswear, luxury & mass market brands such as:

Adidas

Louis Vuitton

Moncler

New Balance

Prada

Heuritech also works with retailers such as Chalhoub and most recently with small to medium-sized brands & manufacturers.

heuritech

www.heuritech.com

Founded: 2013

Active users worldwide, across the following regions:

51%	EMEA	15%	APAC
32%	North America	2%	LATAM

TECHNOLOGY PARTNERSHIPS:

Heuritech focus is on their proprietary platform, as well as their versatile API, that enables seamless integration of their data into any AI system or application.

What role do you see your application playing in the future of AI for fashion?

In the near future, fashion is grappling with major challenges, notably sustainability and the pace at which trends come and go. Heuritech's AI steps in as a practical tool in this context. By analyzing huge amounts of data from social media, it's able to predict what the next big trends will be with a good degree of accuracy. This means brands can plan their production to meet actual demand, helping to cut down on the massive waste problem the industry is currently facing.

The rapid change in consumer tastes is another area where Heuritech can make a difference. Its technology lets brands stay ahead of the curve, ensuring they remain relevant. It also paves the way for more personalized offerings, as brands can better understand and anticipate what specific consumers are looking for.

On the operational side, managing inventory becomes less of a guessing game. Heuritech's predictions help brands produce and stock what's likely to sell, which not only lessens environmental impact but also makes financial sense.

So, Heuritech's AI isn't just about keeping up with fashion trends. It's about offering tangible solutions to some of the most pressing issues the industry faces, from reducing waste to improving how brands connect with consumers.

CONTACT US

heuritech

AI powered insights to back your intuitions

JULIE PONT

FASHION & CREATIVE DIRECTOR, HEURITECH

What's your working definition of AI? Does it differ from the public understanding, which is currently dominated by large language models and generative text-to-image models? And how does that definition manifest itself in your solutions?

At Heuritech, we have been working with deep learning technology based on image recognition for over 10 years. AI helps us generate big data, but it differs from the AIs that are currently generating buzz. We use visual recognition to monitor fashion trends and market movements on social networks at a scale that is unattainable for humans. Our technology can recognize over 2,000 details of clothing and fashion accessories, and it does this across about 3 million images per day. In addition to this, we apply another type of algorithm that allows us to anticipate the behavior of trends in the future, currently up to a limit of one year, with 90% accuracy

As a company that has used computer vision and deep learning models behind the scenes for quite a while, Heuritech has a unique perspective on not just how AI can help people make better, more data-driven decisions, but also how far those deeper applications of AI have already transformed the way people in fashion interact with technology. What has that experience taught you about how the maturity curve for this new wave of AI is likely to progress?

The most challenging part of the journey seems to have already been overcome. A decade ago, few non-specialists were interested in AI, and even fewer in its application to fashion. Generative AIs, in particular, have completely changed the game because they provided a tangible, B2C use case. The evangelization by companies that have been operating in the AI space for a longer time has undoubtedly had a positive impact on the perception of these new uses. However, I believe this new wave of AI is likely to progress more quickly and may also saturate the professional and media landscape more rapidly. It's crucial to be vigilant and avoid overwhelming the public to prevent a backlash and unrealistic expectations about the concrete contributions of these technologies. The more people talk about a topic without truly being experts, the more shape-shifting the topic becomes. This calls for a balanced approach in discussing AI's capabilities and its realistic benefits.

Heuritech is also an interesting case study because you are already seeing how different teams - from designers to management - are working with the output of AI. In your experience of working with clients, how do those different teams benefit from AI individually and collectively? And how do you work with them to build trust in it?

The key is primarily to have a deep understanding of the industries for which AI is designed. Industry experts are needed to truly meet needs and especially to anticipate the recurring and natural questions of a product or collection development process. If the data resulting from the AI's action makes sense to the teams, 80% of the job is done. The challenge is to teach them to make sense of unique data even though the backgrounds are very different among a designer, a merchandiser, a buyer, a marketer, or a communicator. Heuritech's unique feature is that we bet on the fact that a single platform equipped with easily understandable and actionable data is the key to fruitful and smooth cross-team collaboration. Our efforts are entirely dedicated to this goal.

Contact with a team of hybrid fashion and data profiles is also a crucial point of reassurance for the client. And we created those jobs and profiles internally. Speaking the same technical language, whether in fashion or sportswear, establishes a trust link that allows us to take them further in analysis and thus in the use of data because they are on familiar ground... except that we add an extra layer of technology!

There is a lot of concern at the moment around the relationship between AI and creativity - with designers and a wide spectrum of other job roles fearing that AI could replace them. How do you believe individuals, and the industry as a whole, should be thinking about and preparing for the near future?

I believe that AI will not replace anyone (and I am confronted daily with its limitations), but I do think that people trained in using AI as a tool to optimize their human performance will replace those who do not get on board with this technological revolution. I think that in a few years, not knowing or even not being able to create a prompt could be as disabling as not knowing how to search for information on the Internet today. This may sound elitist and daunting, but I believe, on the contrary, that we have the power to act with a focus on education and access to training and information about AI to avoid the pitfalls experienced during the internet revolution, which left entire generations behind. With this experience, we can make AI a real opportunity to enhance our human capabilities. I sincerely believe that AI is the perfect tool to enhance our uniqueness as human beings, our creativity, our inventiveness, our spontaneity, our mental flexibility. I also think that all actions or productions that are exempt from AI could soon be overvalued, like some crafts, and bring real creativity back to the forefront, relegating the tepid uniformity we sometimes face due to a lack of creative daring.

Pinstripes Trend Detail & Forecasted Growth

Obviously there is a serious rush towards AI applications and solutions at the moment, and every business is figuring out how to effectively ride what feels like the next major wave of enterprise technology. But it's equally important to recognise the current limitations of AI, and to acknowledge that there is not likely to be a "one size fits all" approach to it. How can brands and retailers find that pragmatic middle ground?

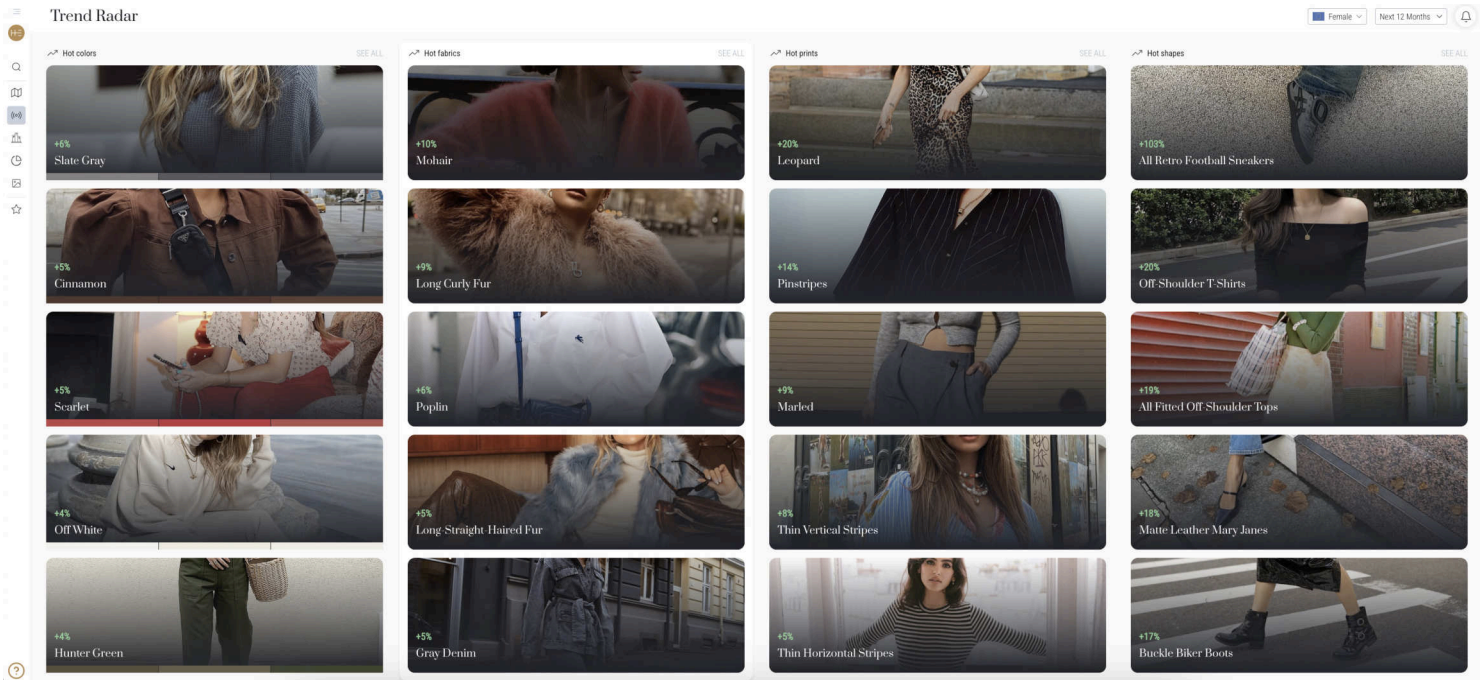
One should always be wary of the reflex 'I was told I had to do something for the good of my company, so I do it without questioning and without really understanding.' There are three keys to using AI sensibly and thoughtfully:

- What is my real need? Where do I feel a need for optimization?
- What type of AI is suited to my need?
- Which experts are truly capable of advising me or developing the solution I need or recommending a company whose business it is?
- The key is to research, take interest, and connect with the right actors.

AI is only useful if it meets a specific need and is managed by people who have the most accurate understanding of that need. If you want to train AI in image recognition for the world of decoration, find experts in decoration capable of guiding the training of said AI by engineers. If you do not have a sufficient budget to internalize, turn to a company that has the vertical that matches your offer or need. There are infinite possibilities in AI, and anyone who claims to have all the solutions to your problems with a single AI is either lying... or a genius.

What do you see as the near-term future of AI? Do you believe it will be a transformative class of technologies the way people expect? And what does the roadmap to value look like?

Difficult question, even for a trend forecaster! There is no magic crystal ball, but I think we are moving towards more concrete applications, greater simplification of models, and their wider distribution. I believe AI is becoming the norm for many professional processes across all job categories. I'm far from an expert, but on a more technical level, it seems to me that there is an increasing number of open-source programs and that the public is becoming more mature about the subject. I also think that popular BtoC applications will shift from recreational to increasingly utilitarian uses (even though our everyday objects are already equipped with AI). Finally, even though I use AI daily and have been passionate about the subject for many years, I think we are going to see a backlash against AI. More and more people are going to seek a return to more concrete, more authentic, human-first things, because we are in a period of searching for meaning and essentiality from which AI sometimes distances us.



Heuritech Market Insights Trend Radar (EU, next 12 months)

Hyland

www.hyland.com

Founded: 1991

Hyland provides intelligent content solutions that empower our customers to transform the way they work and deliver exceptional experiences to those they serve. Our solutions capture, process and manage high volumes of diverse content in order to improve, accelerate and automate operational decisions and workflows.

Note the concept of "intelligent content solutions." We feel that "intelligent content solutions" is the best way of describing our solutions, which are rooted in content, but are very sophisticated and utilized in complex operations. It also alludes to the role that artificial intelligence plays in our current and future strategy.

Hyland provides AI capabilities as part of our Nuxeo Platform for digital asset management (DAM), which is a cloud-native, highly scalable asset management solution. The solution leverages native automation technologies to provide process efficiencies, enable unique operational logic and optimize user activities across the digital content supply chain. Hyland also provides product asset management (PAM) to optimize assets as the "product representation or pertinent commodity" of the end-to-end supply chain.

Pricing model:

Our current AI licensing model is based on the concept of processing credits. A credit is a unit of measure by which the AI service capacity is quantified (i.e. the number of training hours, the number of prediction requests and the models that are made available).

Hyland's Nuxeo Platform offers two ways for companies to enrich and optimize their DAM processes through AI:

- Generic AI: Connect to a broad set of public AI services for common use cases (general classification, enrichment, OCR, speech-to-text, etc.) where commodity ML models provide generic services. This includes targeted models (e.g. transcription, OCR) and large-language models.

- Business-specific AI: Train machine learning models on your content and data to get highly relevant insights and enrichments that enable specific business use cases across defined domains. Custom models deliver more meaningful outcomes for the business.

HEADLINE CUSTOMERS

Electronic Arts

lululemon

Mad Engine Global

PVH

TBWA Worldwide

VF Corporation

Warner Bros Consumer Product Goods

Hyland

www.hyland.com

Founded: 1991

Active users worldwide, across the following regions:

60% North America
30% EMEA
<5% LATAM
<5% APAC

TECHNOLOGY PARTNERSHIPS:

Cloud vendors:

- AWS suite of services (recognition, transcribe, translate, comprehend etc.)
- Google suite (vision etc)

OpenAI/Dall-E (connector) - 2022

Loci.ai (connector) - 2023

Naker.io (professional affiliate) - 2024

Composable Prompts (API layer, prompt construction) - 2023

What role do you see your application playing in the future of AI for fashion?

The future of AI is extremely exciting and it will absolutely be a transformative class of technologies. The promise of benefits is tremendous even if a small percentage of those promises can only be recognized in the short term. Organizations need to look not at the "if" but the "how" and begin experimentation with iteration as the new normal.

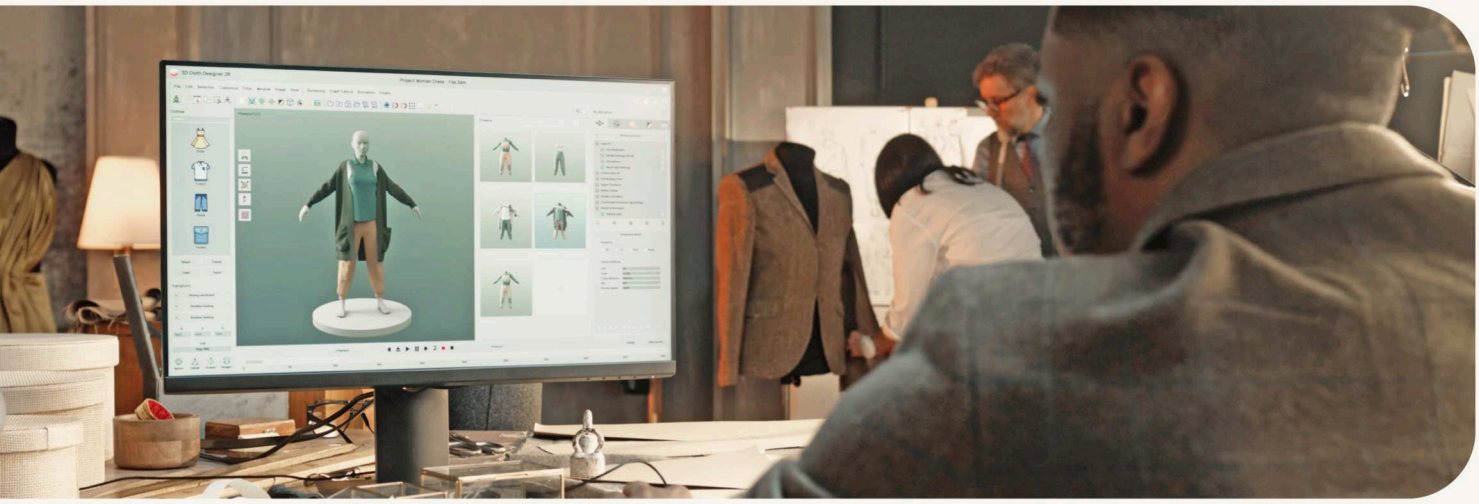
The ability to process huge volumes of data and create relationship correlations between those diverse data points is game changing. Humans are not equipped to do that on their own, but a co-existence between human and non-human intelligence will persist regardless of the technology advancements that follow.

There is a fear that people will lose their jobs with the adoption of AI. There is a possibility that AI will replace the need for certain job functions, but there will always be a need for a "human in the loop."

For the fashion industry, there isn't an immediate benefit statement however key focus areas can be targeted. Sustainability is one that immediately comes to mind. Most of the sustainability data is supplier or partner provided, however AI has the opportunity to collect data and intelligence that isn't sole sourced. Beyond sustainability, Hyland believes our native AI capabilities and integrations offer efficiency, cycle-time acceleration and error reduction at each stage of the concept-to-consumer value chain. This will improve product quality, time to market, achieve sustainability goals and facilitate employee satisfaction and retention. AI demands experimentation to produce human-like performance and garner authenticity. These demands require configurability and foundational frameworks that distinguish the Nuxeo platform. AI driven user experience must deliver a high-quality visualization to support judgement and maintain the transparency and data accessibility needed to surface the insights required to optimize the use of these AI components.

CONTACT US

Hyland™



Transform your enterprise digital content supply chain

Accelerate concept to consumer

Make content actionable

Automate your go-to-market

Ensure data-driven decisions

Augment with AI and ML

Reduce redundancy

Visit hyland.com/nuxeo/dam →

CHAD MALLEY

GLOBAL DIRECTOR - DIGITAL ASSET MANAGEMENT PRACTICE, HYLAND SOFTWARE

What's your working definition of AI? Does it differ from the public understanding, which is currently dominated by large language models and generative text-to-image models? And how does that definition manifest itself in your solution(s)?

Our working definition of AI is a set of services to augment human analysis, decision making and help mitigate skilled resources from performing repetitive tasks. Our definition doesn't differ from most of the public opinion other than our acknowledgement that these services are not "magic." They don't just work autonomously and can't be seen only as a convenience answer to staff shortages and the opportunity to skip foundational steps in advancing operational strategies.

Our view of AI use cases can be categorized in (3) main segments: data enrichment and content classification; content creation and creative inspiration; information discovery and analysis recommendations (contextual insights and AI-generated advice). Large language models (LLMs) can be a component across each of these segments, but we also find clients benefit from leveraging custom-trained and multimodal models that are vectored not just on text but a wide variety of inputs including images and audio.

As a vendor, we are bringing offerings to market that leverage a combination of LLMs and custom trained models to maximize the use and reuse of converted prompts for content enrichment and process management.

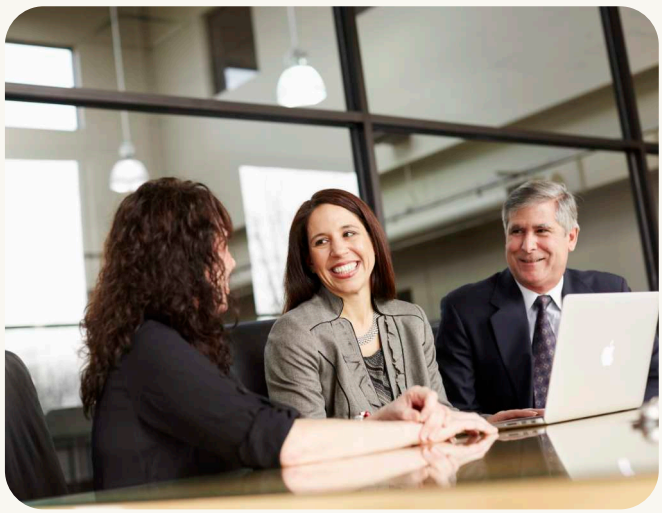
One of the first obstacles for any AI initiative is making a sound business case and justifying the investment required. Where AI is concerned, that investment is both upfront capital (for setup, sponsorship, training and more) and ongoing operational expenditures across compute, governance, monitoring, optimisation, safety and more. Where do you believe the cost of all this will sit? Should the fashion businesses be building dedicated AI teams, or do you believe we are at the point of having turnkey AI applications that can be deployed by existing teams without that bespoke support?

When it comes to citing the value of AI, we hear a lot about soft metrics. We're told that the majority of Fortune 500 companies, for instance, have employees using the major cloud-based language models to improve productivity and efficiency - but we don't get the same level of insight into how this supports those companies' strategic objectives. How do you believe fashion brands can deploy AI in a way that's locked into both corporate strategy and a measurable ROI?

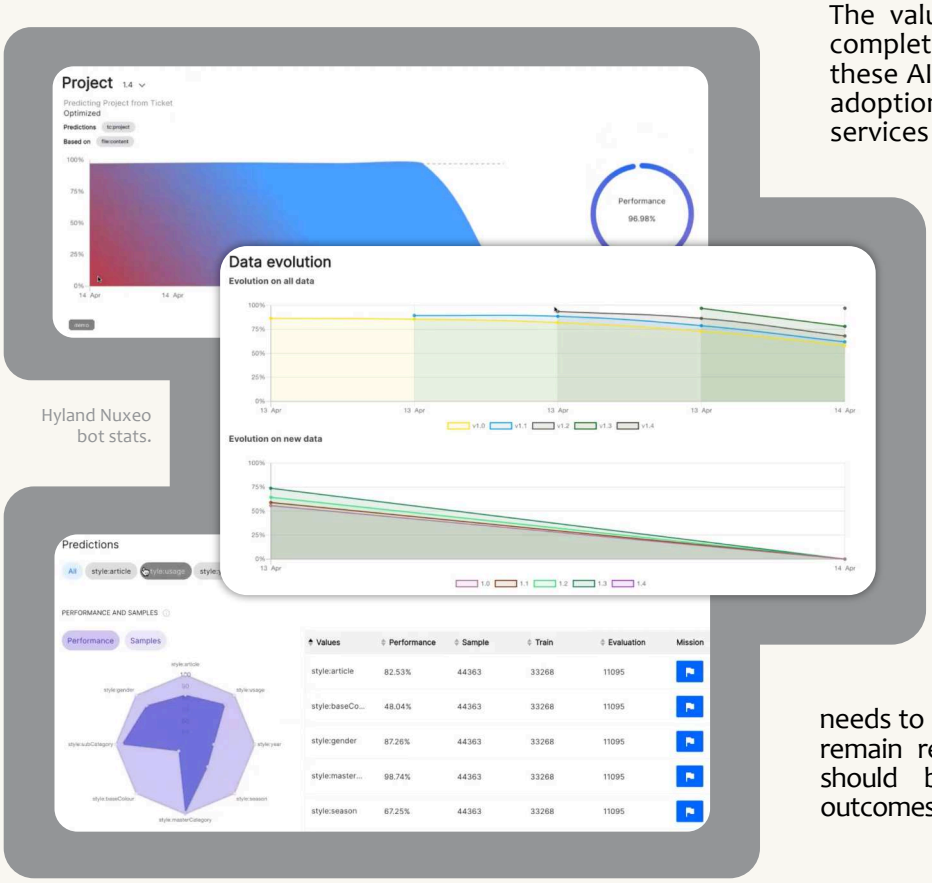
The soft ROI / KPI metrics can be attributed to the minimized adoption of AI services across an enterprise. The truth is that most organizations are at the very forefront of introducing these practices into their production operations. The measurement of effectiveness or performance is subjective and not completely tangible in many situations.

Fashion brands can deploy AI services that map to both corporate strategies and measurable ROI by taking a deliberate approach to the application of AI. Start the experimentation in the areas of the business that are most inefficient or are the most resource intensive. Leveraging technology to perform and augment those activities will inevitably provide cost savings and begin to produce benefits that can be quantified in justification summaries that align to the broader corporate objectives.

That being said, we think this is a major hurdle to the current adoption of AI services at scale. Many AI project explorations do not have a "sound" business case initially. The fashion industry has a history of experimentation. The development of AI does not introduce a change to that perspective. Unfortunately, we are not a point of having turnkey-AI applications that have proven value across multiple lines of business. The KPIs or ROI metrics for AI are circumstantial and organizationally dependent, so stewardship will and should be varied from organization to organization.



There's also the opposite side to consider: people might reasonably argue that, especially with generative AI being such a new class of technology, it's going to take time and experimentation to find the real use cases, and that hard metrics might be difficult to come by. And for many organisations there is also a very real time imperative; everyone is afraid of being left behind if AI proves to be as transformative as some people think it might, and if they fail to put together a coherent AI strategy here and now. Is there a balance to be found between fashion's desire to experiment and the need to prioritise budgets in a difficult economic environment?



Hyland Nuxeo bot stats.

The value vs. time & budget argument is completely justified. The maturity state of these AI services is not at a point where the adoption and /or the application of the AI services is obvious. There is a definite balance between being prepared and planning for what's next vs. simply playing the "me-too" game and chasing the latest trend without substantiation of its impact on your corporate objectives and market share ambitions. The crawl->walk -> run methodology remains the practical approach despite the promise of skipping foundational steps because of advancements in compute and processing intelligence.

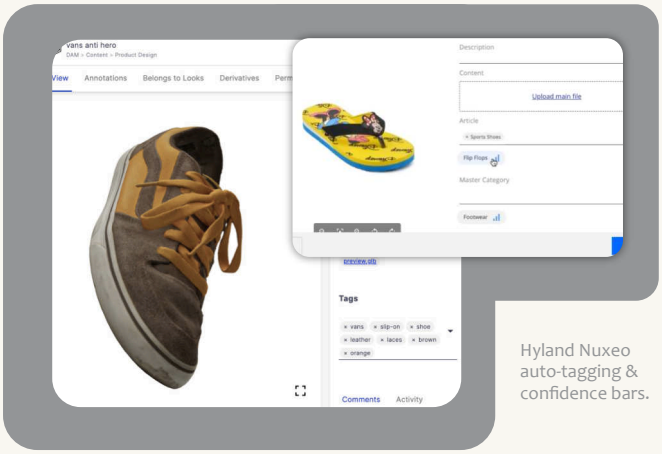
Anyone would struggle to say the adoption of AI isn't inevitable. However, the speed of adoption and the prioritization of budget needs to be reasoned beyond the aspiration to remain relevant. The use of any technology should be measured based on expected outcomes not because your peers are using it too.

What do you see as being the key legal, ethical, and governance concerns that readers need to understand and get ahead of? People are familiar with some of the potential legal risks and ingrained biases of using off-the-shelf generative models for images, for example, but there are also models that are copyright-compliant or trained on more diverse datasets, so it is not necessarily as simple as swearing off pretrained models entirely. So, what is the right approach to understanding and tackling these considerations? And how can brands put the right governance frameworks in place to allow people to interrogate the output of AI models and improve them once they are in place?

We believe organizations should experiment but plan for success. What that means is that governance and compliance should be contemplated upfront and not after the fact. Understanding data sources and having process safeguards in place as the models are promoted into production is critical. Part of those safeguards is maintaining quality control standards and ensuring human oversight at designated points in the workflow.

Organizations need to appreciate the adoption of AI services is not fundamentally different than adopting any other enterprise technology. Onboarding these services requires dedicated staff, project sponsorship and training & change management protocols.

Besides regulatory compliance and ethical standards, there are other judgement considerations that need to be contemplated before completely outsourcing tasks and decisions to machines. Authenticity is a big one for fashion brands. How confident are you that a machine can properly make decisions that reflect your brand standards and the authenticity of your brand voice and product vision?



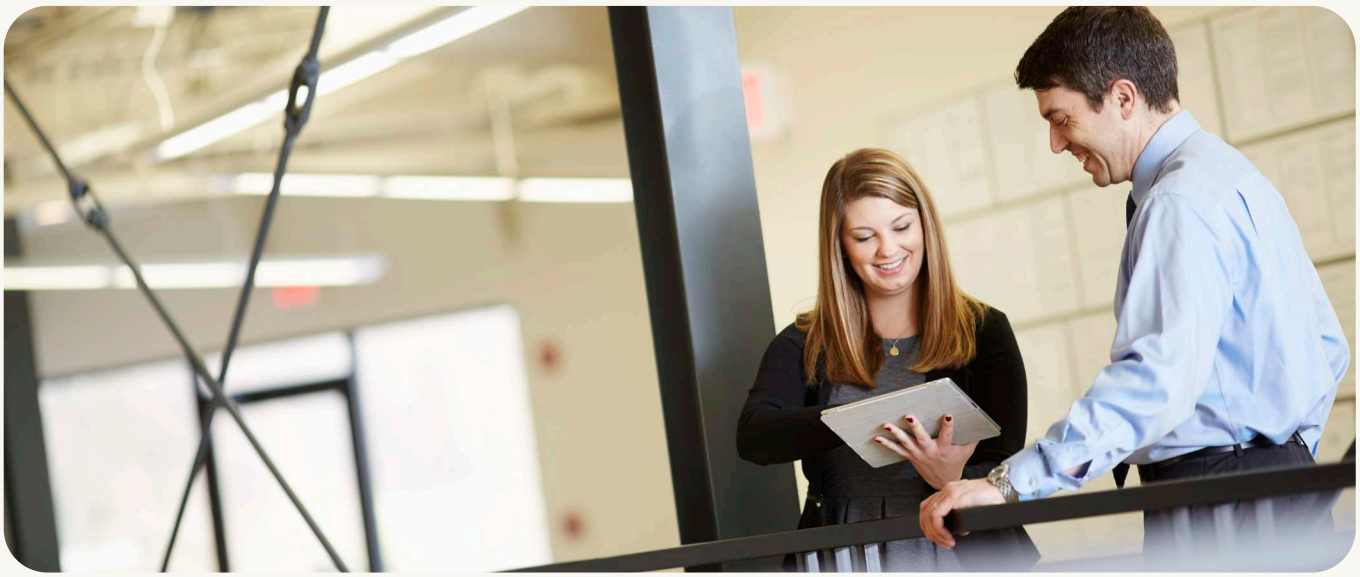
Hyland Nuxeo auto-tagging & confidence bars.

What do you see as the near-term future of AI - both within your solution(s) and in general? Do you believe it will be a transformative class of technologies the way people expect?

The future of AI is extremely exciting and it will absolutely be a transformative class of technologies. The promise of benefits is tremendous even if a small percentage of those promises can only be recognized in the short term. Organizations need to look not at the "if" but the "how" and begin experimentation with iteration as the new normal.

The ability to process huge volumes of data and create relationship correlations between those diverse data points is game changing. Humans are not equipped to do that on their own, but a co-existence between human and non-human intelligence will persist regardless of the technology advancements that follow.

There is a fear that people will lose their jobs with the adoption of AI. There is a possibility that AI will replace the need for certain job functions, but there will always be a need for a "human in the loop."



imki augmented creativity

www.imki.com

Founded: 2020

imki is a company at the intersection of technology and the creative arts, that provides its customers with tailor-made AI expertise.

Through customized generative AI solutions, imki empowers luxury houses and Fashion Brands to enhance their design processes, assertiveness, and customer experiences. With a commitment to French savoir-faire and CSR consciousness, imki drives efficiency and avant-garde solutions, positioning itself as a leader in transforming ideas into reality.

In essence, imki is more than just a tech company; it's a visionary force driving the evolution of creativity and innovation in the Luxury and Fashion industry. With its unique blend of technology, craftsmanship, and responsibility, imki stands poised to lead the way towards a more vibrant, stylish, and sustainable future.

Pricing model:

imki solutions are tailor-made and subscription based.

We provide Augmented Creative solutions based on AI that integrate brand identity, trends, and manufacturing processes.

imki customers are mainstream, premium and luxury brands but also manufacturers and retailers.

HEADLINE CUSTOMERS

Industrial partners include:

Ciel Textile

Kipas Textiles

Taypa

Brands include:

Ba&sh

Jules

The Kooples

**plus many more iconic, global brands.*

imki augmented creativity

www.imki.com

Founded: 2020

Active users worldwide, across the following regions:

10% North America
80% EMEA
10% APAC

TECHNOLOGY PARTNERSHIPS:

HUB IA, Icube - Strasbourg University, Nvidia

What role do you see your application playing in the future of AI for fashion?

The fashion industry is on the cusp of a revolution driven by AI. Imagine slashing your creative cycles in half while simultaneously unlocking your team's boundless creative potential – all within the secure confines of your brand identity. This isn't a fantasy – AI can generate entire collections comprised entirely of digital product images, allowing you to validate every design before a single physical sample is produced. This translates to dramatic cost savings on prototypes and salesman samples. But the benefits go beyond the bottom line. AI can empower your sales teams to co-create or validate designs, ensuring each product resonates strongly with your target audience. This not only increases the "hit rate" of your offerings but also minimizes environmental impact by reducing waste from unnecessary samples. In essence, AI offers a future where fashion is more sustainable, efficient, and customer-centric – a future where creativity flourishes and brands win.

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imki
augmented
creativity
Unleash your creativity with our
Augmented Creative AI.

FRÉDÉRIC ROSE

CEO, IMKI

FAÏÇAL SELKA

CIO, IMKI

What's your working definition of AI? Does it differ from the public understanding, which is currently dominated by large language models and generative text-to-image models? And how does that definition manifest itself in your solution(s)?

Faïçal: Artificial intelligence is the theory and development of computer systems trained to simulate human intelligence. The major two types of AI that are driving these changes are generative and predictive AI, both rely on ingesting a large amount of labeled training data. On one hand, predictive AI analyzes the data for correlations and patterns to suggest outcomes and make predictions about future state. On the other hand, generative AI uses a variety of techniques, including deep learning to create new content, such as text, images, or music similar to the trained data. Both brings a range of advantages within business use cases, at imki, we specialize in custom generative AI with the aim of augmenting creative processes, particularly fashion.

Frédéric: In the vast theater of artificial intelligence, two main players captivate the audience: on one hand, the generalist AI, like a digital Swiss army knife, which ventures through a wide range of creative tasks. MidJourney is the perfect embodiment of this, a pre-teen artist who, with casual ease, juggles styles and forms without ever anchoring itself in a genre.

On the other hand, in contrast, imki creates generative AIs specialized in creative crafts that excel in excellence and focused mastery. Meticulously sculpted, they dedicate their existence to a precise domain, surpassing their generalist counterparts, deepening nuances and refining details with surgical precision. Like a maestro in his niche, each specialized AI controls his art with a virtuosity all its own.

How do you believe fashion can take advantage of this next wave of enterprise technology without compromising on its artistic heritage and cultural legacy? What is it going to look like to train custom-built, fashion-specific AI models that honour the industry's history of *savoir-faire* but also tap into new possibilities - both in your domestic market and globally?

Frédéric: At the heart of digital innovation, generative artificial intelligences transform the heritage of luxury brands into modern visions. These systems, true technological guardians, create a link between the past and future possibilities.

These AIs explore brand archives to extract patterns, styles and ideas, often too complex for human analysis. By interpreting this data, they propose designs that respect heritage while adding a touch of modernity.

Thanks to their ability to analyze and synthesize vast quantities of historical and current data, these AIs manage to enhance patterns and trends that often escape human analysis. In so doing, they generate designs that combine tradition and innovation, subtly incorporating classic elements with resolutely modern concepts. Their expertise enables products to be precisely customized to meet consumer expectations, while respecting the essence of the brand. These digital tools, veritable bridges between past and future, enhance heritage while adapting it to the needs of the present.

Some organisations and individuals - maybe justifiably - are weary of hearing about new technologies that seem to offer a vast possibility space, but then fail to measure up to the hype. Perhaps the best recent examples of that were the pushes into web3 and the metaverse, which did not translate well into value. What parallels, if any, do you see between those and the way that AI is being pitched and positioned today? And what do you see as the quickest way to demonstrate that AI is capable of delivering a real, meaningful return today, as well as in the longer term?

Frédéric: Web 3 and the metaverse are certainly innovative technological advances, rethinking the way we interact with the digital world and augmenting our virtual reality with new dimensions of connection and decentralized ownership. However, these technologies are not in the same revolutionary league as generative AIs.

Generative AIs represent a genuine revolution, not only technological, but also cultural and social. They fundamentally transform content creation, product design and even the personalization of experiences, adapting their production in real time to meet the specific desires and needs of individuals.

Paving the way for a new era of creativity and personalized interaction on a global scale.

If we buy into the transformative vision for AI on the scale Frédéric has just described, within fashion and across society, then it follows that we need to approach it carefully and responsibly - in a way that's accessible and intelligible for everyone. We've already established that we need industry-specific models, so it doesn't feel like we'll reach that point by just putting new tools into people's hands and walking away. What do you see as being the necessary steps to demystify and democratise AI, and to make sure that everyone in fashion (both creators and consumers) can understand its potential, its limits, and where it can best be deployed?

Faïçal: The key points to integrate new technological solutions to operational processes, is to have a good understanding of user needs and a right scope definition of the application. That why it's advisable to encourage collaboration between AI specialists and fashion professionals. Additionally, educational resources targeted at different fashion roles are crucial. Executives need to understand AI's potential impact on efficiency, personalization, and cost savings. Designers can benefit from how AI inspires design, analyzes trends to be consumer focus, and optimizes production. At imki we have brought together within the team specialists in AI, machine learning, data science and also fashion specialists such as designer, stylist and garment maker. By fostering collaboration and clear communication, we can empower the fashion industry to leverage AI effectively.

For a lot of readers, "AI" is synonymous with the big, off-the-shelf models - both proprietary and open-source. What are the potential legal and creative risks, to brands, of using something like Stable Diffusion or Midjourney versus your approach? And how do you tackle combining both the artistic and technical components of a brand without creating a different kind of risk: the risk of replacing people rather than augmenting their skills?

Faïçal: On the shelf generative models train on massive datasets, which make them good to spark creativity and can be a great source for designers, but there are potential downsides to be considered and not only *limited to legal risk but limited in terms of usage*. The specific outputs of these models are hard to predict which can make it difficult to achieve a brand's specific visual identity and be in balance with trends. At imki, we focus on building custom models trained on data specific to a brand. This mitigates legal risks and allows for much greater control over the creative direction.

AI can handle repetitive tasks, freeing up designer's time for more strategic and creative work by helping them to visualize concepts. By combining the best of human creativity and AI's ability to process information and generate variations, brands can achieve a unique visual identity, streamline their design workflow and be more consumer centric. At the end we are providing solutions for brands to augment the creative process, while providing a level of trust and security.

What do you see as the near-term future of AI - both within your solution(s) and in general? Do you believe it will be a transformative class of technologies the way people expect?

Faïçal: Looking forward, I believe in the booming of low/no-code solution allowing user to build custom generative AI models. Users can fine-tune the behavior of generative AI models by providing specific instructions or feeding them relevant data examples. This enables the creation of highly customized AI models tailored to specific needs.

We direct our research effort to create truly original generated AI models. For this purpose, we need to train them with data rich in diversity and context. Unlike tasks with clear solutions, artistic quality is subjective and influenced by popular trends. Capturing these aspects requires high-dimensional datasets that go beyond simple patterns; hence how to select and prepare data for creative applications will be key to future developments at imki.

Frédéric: In the short term, the future of AI looks very promising and likely to transform many sectors. It will continue to be integrated into a variety of fields, improving efficiency, personalization and decision-making.

As far as imki is concerned, the short-term future of AI looks particularly revolutionary.
Thanks to imki, AI-assisted design, designers will be able to experiment with innovative shapes, textures and patterns faster and more ecologically.

By optimizing supply chains and predicting trends, AI could also help minimize waste and improve sustainability in the fashion industry. In short, AI is poised to become an indispensable tool in fashion design, transforming both the creation and consumption of fashion.

Overall, AI is set to be a transformative technology, meeting and exceeding expectations by solving complex problems and opening up new avenues of innovation.

KALYPSO
A ROCKWELL AUTOMATION BUSINESS

www.kalypso.com

Since 2004, Kalypso has been a trusted advisor to retail product leaders inside many of the world's most notable brands. And for more than a decade, we have earned a reputation as pioneers of digital transformation, applied data science and Product Lifecycle Intelligence (PLI) in our industry.

Kalypso's global team of strategists, data scientists and technologists excel in "delivering difficult digital." We leverage the latest virtualization, automation and advanced analytics capabilities, combined with two decades of change management expertise, to drive transformative business outcomes throughout your entire product lifecycle—from concept to customer.

Our data science practice specializes in interpreting business needs and applying cutting-edge analytics techniques to transform diverse sets of product, process and customer data into predictive and prescriptive insights. We call this Product Lifecyle Intelligence.

We challenge conventional approaches like stand-alone proofs-of-concept or foundations-first thinking. Instead, we collaborate with clients to establish a self-sustaining analytics program that fosters significant value creation through continuous identification of use cases, development of solutions and scaled operationalization.

KALYPSO'S ADVANCED ANALYTICS SERVICES:

CONSULTING

- Data Science Strategy & Road Mapping
- Value Realization & Business Case Development
- Data Governance & Stewardship
- Analytics Translation & Human-Centered Design
- Implementation & Scaled Operationalization
- Organizational Change Management & Workforce Training

DATA SCIENCE AND IOT

- Exploratory Data Analysis Studies
- Data Engineering & Architecture
- AI/ML Model Development
- Integrated AI Co-Pilots & Advisors

ENTERPRISE TECHNOLOGY

- Data Pipeline, API & UI Development
- AI-Enabling Enterprise Architecture
- Industrial-Scale Digital Twins for Product & Production Optimization

APPLICATION MANAGED SERVICES

- Machine Learning Operations
- Application Management
- Cloud Infrastructure & Hosting

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Which AI solutions do you work with, and in what capacity?

We at Kalypso: A Rockwell Automation Business always put our clients and their desired results first - as a result, we bring an informed perspective and a solution-agnostic, open-architecture approach to serving them. Since no two client ecosystems or opportunities are the same, having the flexibility to choose the best suite of solutions for the job is essential.

Kalypsonians are experienced in deploying off-the-shelf software, leveraging open-source models, developing bespoke glass-box solutions and partnering with market leaders like Microsoft, NVIDIA and AWS to solve seemingly impossible challenges and deliver transformative results for our clients.

And in the world of industrial intelligence, our parent company, Rockwell Automation, has applied a century of innovation to provide a comprehensive solution for modern industrial needs from data collection, management and analysis to visualization, process design and more with its FactoryTalk™ software.

HEADLINE CUSTOMERS:

We help apply AI across the product lifecycle:

- To discover new opportunities
- To create winning innovations
- To make product efficiently
- To move the right product to the right customer at the right time

We respect the confidentiality of our clients, but have included a few anonymized examples of recent client engagements below. Full case studies are available upon request. Please reach out to Hadley.bauer@rockwellautomation.com to schedule time to walk through the approach and results of our top case studies. Our team would love to share our stories with you.

GLOBAL FOOTWEAR AND APPAREL BRAND

Reduced Product Line Volatility with Digital Advisors

- 85% accuracy rate in forecasting dropped styles, significantly enhancing the ability to anticipate and mitigate line volatility

MULTINATIONAL GENERAL MERCHANDISER

Enabled Simulation for Robotic Warehouse Optimization

- 13% throughput increase
- 84% reduction in the impact on an error on throughput
- $1 million+ projected hardware cost savings per site

LEADING HARD GOODS RETAILER

Enhanced Customer Experience and Product Insights with Digital Advisors

- 97% returns classification accuracy rate
- 100-fold increase in complaint processing speed for rapid resolution of product issues

GLOBAL LEADER IN PERSONAL CARE

Sped Up Approvals with Real-Time User Guidance

- 20% reduction in BOM rework and approval times, streamlining development of new products
- 50,000+ fewer data quality issues annually by addressing errors before they impact production

KALYPSO
A ROCKWELL AUTOMATION BUSINESS

www.kalypso.com

In no more than 250 words, please tell us how you define 'Artificial Intelligence' for Fashion, and what role you see application(s) of AI playing in the near-term future of fashion

Although the retail footwear & apparel industry has lagged others in the adoption of many digital capabilities (e.g., 3D digital product creation, production automation), our clients are experts in distilling consumer behaviour, culture and trends to deliver craveable products through multimodal channels of influence. They are vanguards of leveraging data science to market product to the masses. However, until recently, few have endeavoured to turn that capability inward to transform their own product design, development, assortment and production processes. But no more.

The omnipresence of artificial intelligence (AI) in every aspect of life and business, along with the accessibility of GenAI solutions like Midjourney, Dall-e and Adobe Firefly, have poised our industry for another explosive evolution of digital transformation. Last year, 86% of product leaders in our industry reported plans to immediately invest in internally-facing AI capabilities.

Today many of Kalypso's clients are rapidly deploying Product Lifecycle Intelligence (PLI) capabilities in novel ways across product and supply chain functions. They are applying the latest in advanced analytics to foster design creativity and collaboration, augment expert intuition, streamline repetitive tasks, drive operational efficiencies, improve responsiveness to fast-moving trends and drive confidence in key product, assortment and investment decisions.

These brands are capturing millions of dollars in value and unlocking previously inaccessible ways of working that position them to outpace and outperform competitors who choose to sit on the sidelines.

AI PROCESS AREAS COVERED:

Kalypso has proven experience enabling and unlocking AI solutions at scale that bring predictive, prescriptive, and generative AI capabilities to every stage of the end-to-end product lifecycle inside our retail, footwear & apparel clientele. We thrive in delivering difficult digital. Common use cases include:

DISCOVER

- Always-On Trend Monitoring
- Competitive Analysis
- Line Plan Optimization
- New Material or Innovation Simulation

MAKE

- Quality Test Simulation
- Prescriptive Vendor Allocation & Network Rebalancing
- Automated Industrial Engineering & Optimization

CREATE

- Suggestive & Generative Design
- Design Sustainability Optimization
- Design-to-Cost Analysis
- Voice of Consumer Preference & Market Testing

MOVE

- Demand Sensing & Inventory Optimization
- DC Workforce & Line Optimization
- Analysis of Real-Time Consumer Feedback

CONTACT US

We apply AI across the product lifecycle

- To discover new opportunities
- To create winning innovations
- To make product efficiently
- To move the right product

Learn More:

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CHELSEA BARNES

SENIOR MANAGER, KALYPSO

What's your working definition of AI? Does it differ from the public understanding, which is currently dominated by large language models and generative text-to-image models?

Many think of artificial intelligence (AI) as machines performing tasks like humans – think perception, learning and problem-solving. This absolutely includes capabilities like large language models and generative AI, but our definition at Kalypso extends much broader to include expert systems that automate routine tasks, to predictive models and advanced neural networks that enhance decision making.

The rise in generative AI and large language models has helped bring AI into the mainstream, making it much more real and tangible. On the flip side, the popularity of these models, and the human-like outputs they generate, can lead to the misconception that a large language model (LLM) can solve all problems.

While an LLM can be an excellent research assistant, editor and trip planner, it falls short when you're looking for more deterministic outputs like forecasting, anomaly detection and outcome optimization.

These technologies are valuable tools in the broader data science toolkit. When you're looking to implement AI, the key is to begin by first pinpointing the problem at hand. Then, choose the AI tool that best addresses the specific challenge. It's all about matching the *right* AI capability with the *right* problem, not starting with a technology and asking what problems it can solve.

There are currently a wide array of possibilities for AI, and little agreement on how to pin that potential down to discrete use cases. How do you approach categorising AI use cases across the different stages of the product lifecycle into segments such as Automation, Assistance, Make, Move, and Sell? And in your opinion, how far are we on the journey to having ready-made applications in each of those areas?

The first thing I'd recommend for pinning down the potential of AI is to start with the business problems to solve. Here's a typical list of questions I go through to define and qualify the business use case:

- What challenge do we face?
  (Articulate the problem statement)
- Who does the problem affect?
  (Identify the target personas)
- How does the problem affect them?
  (Assess the potential value)
- What are the consequences if we ignore the problem?
  (Determine the urgency)
- How will our world look different if we solve the problem?
  (Define success)

Once we've pinpointed the high-value problems to solve, we can categorize them by type of AI solution needed – to automate, assist, optimize or generate – and define the product lifecycle stage it impacts – discover, create, make, move. With that solution description in hand, you can begin assessing if there's a tool to meet your need or if you require something custom.

In terms of ready-made applications, there's huge variability across different segments of the product lifecycle. Areas that have long been data rich and address "commodity" (common) problems, like targeted advertising optimization and inventory management, are more likely to have ready-made solutions available. In contrast, domains heavy in propietary processes or unique brand characteristics often require bespoke solutions. The upfront investment may be higher in those scenarios, but they also offer significant upside in competitive differentiation.

One of the cornerstone themes of this report is the need for brands and retailers to better understand the inner workings of AI, and to use that knowledge to formulate strategies for change management. There are two significant barriers to building that understanding, though: fear that AI will replace, rather than augment, human talent; and a lack of transparency and openness into how models are trained and how they operate. How do you encourage clients to try and overcome these?

Absolutely, there's inherent distrust around AI and overcoming that distrust is critical to driving adoption and realizing its value.

The three things I recommend for increasing AI adoption are the following:

1. **Educate and communicate.** Build your organization's "AI literacy" through things like optional trainings or AI community forums. Communicate goals, "what's in it for me" benefits and progress around AI initiatives.

2. **Take a human-centered approach.** Involve users in problem definition, iterate with on solution development together and focus on user-friendly, well-integrated design so AI tools are approachable and easy to use.

3. **Prioritize explainability.** Opt for algorithms that offer transparency over opaque, "black box" models. Lean on "analytics translators" who can interpret model output into actionable insights for users. For example, what data or context could be added to an AI's recommendation to help users make informed decision?

To the last point, this is also why we're very selective about where Generative AI solutions are used. These are typically black box models, where even their developers can't fully explain why they act the way they do, including oddities such as performing better when praised or acting "lazier" in the month of December. It underscores the importance of choosing the solutions that fit specific needs and keeping humans in the loop to ensure responsible usage and control.

There may be some limited crossover between today's AI applications and traditional BI tools, but drawing parallels between the two - or conceptualising AI as just a newer version of business intelligence - runs the risk of selling the possibilities short. Can you explain where you draw the line between what you call retrospective analytics (which covers traditional BI capabilities) and the new set of advanced analytics, which includes pattern recognition, deep learning, computer vision and so on? At an enterprise level, how do these differ? And where does generative AI fit into the picture?

Traditional business intelligence (BI) tools are retrospective in nature. They analyze past data to give us reports and dashboards that help understand our current state – great for status checks and comparisons.

AI and advanced analytics, on the other hand, are proactive. They use historical data to predict future events and recommend actions. In other words:

BI, including descriptive and diagnostic analytics, tells you *what's happening* and *why*.

AI, including predictive and prescriptive analytics, forecasts what *will* happen next and *suggest* how to respond.

These two analytical approaches often complement each other at the enterprise level. For instance, BI can highlight the areas that need the most improvement, where AI can be put in place to drive action towards meeting those improvement targets.

I think of generative AI sliding pretty seamlessly into that mix. It could simplify key performance indicator (KPI) reporting through natural language prompts, especially when it comes to creating customized dashboards or doing ad hoc queries. And generative AI can also be a great asset in achieving KPI improvements, especially for productivity-focused goals.

Each type of analytics has a strategic place within the enterprise ecosystem, and when used together, companies see the most benefit.

When we talk about enterprise AI here, it's clear that we're often talking about new ways of extracting additional value and creating new experiences from existing data. And some brands will be concerned about the demands this is going to place on data governance practices that are still under development, or on data sources that are still siloed or fragmented. How justifiable is that worry? How can brands start to get their data prepared for AI and advanced analytics? And, thinking further down the line, how can they start to actually use AI to streamline this process in the future?

Concerns about data governance and fragmented data are legitimate as brands look to leverage AI. However, waiting for perfect conditions means potentially never starting.

I'd recommend three new ways to tackle that challenge – starting now and looking ahead.

1. **Start with what you have.** Many companies are surprised by how much they can achieve with their existing data. Prioritize use cases that strike the value potential vs. complexity balance, choosing ones that can be achieved with current data sources.

2. **Accelerate data cleanup with data science.** Traditional data cleansing processes are highly manual and very time-consuming. The new way to approach those tasks is aided by AI. Machine learning algorithms that can be used to help sort, organize, and cleanse data in a much more automated (and often higher quality) way.

3. **Leverage LLMs for unstructured data.** LLMs are particularly useful for extracting value from unstructured data – data sources that were previously off-limits for many analytics efforts. Now, analyzing rich information stores, like transcriptions from customer service interactions or e-commerce product descriptions, is easily facilitated with these powerful language models.

What do you see as the near-term future of AI? Do you believe it will be a transformative class of technologies the way people expect? And what does the roadmap to value look like?

Over the past few decades, tools leveraged in the fashion industry have evolved rapidly. New technology is reshaping how brands operate and bring product to market. Today, the industry works in a combination of old-world tools (draping, sketching, excel planning) and advanced tools (vector tools, 3D design, visual assortments) that are all poised for explosive evolution once again with the integration of AI. This is what I see as the near-term future of AI – enhancing and streamlining existing tools and workflows.

However, as AI technology continues to advance, it's absolutely on a trajectory to transform the way we work, especially in creative fields and industries that rely heavy on intellectual capital.

Each brand's roadmap will be unique, but most successful strategies will find a balance between embracing risk – leaning into the paradigm shifts offered by AI – and maintaining a realistic perspective grounded in what truly drives their business. This balanced approach will equip brands to harness AI not just for incremental improvements, but for transformative changes that redefine their creative and operational processes.

LECTRA

www.lectra.com

Founded: 1973

As a major player in the fashion industry, Lectra provides industrial intelligence solutions - software, cutting equipment, data analysis solutions and associated services - that facilitate the digital transformation of the companies it serves. In doing so, Lectra helps its customers push boundaries and unlock their potential.

At Lectra, innovation is about transforming customer processes by leveraging advanced technologies to optimise and automate production workflows. With the integration of the Internet of Things (IoT), Big Data analytics, and artificial intelligence (AI), our Industry 4.0 solutions enable fashion players to engage with their customers in new and meaningful ways. Among Lectra's portfolio covering the value chain, three solutions have AI capabilities: Retviews, a highly specialised market intelligence tool, and TextileGenesis, a secure platform tailored for the fashion and textile industry to ensure the traceability of sustainable materials from textile fibre to the end consumer. And start of 2024, Lectra acquired Lauchmetrics, a world-renowned technology company to measure effectively brand performance.

AI has emerged as one of the most transformative technologies of our time, with the potential to reshape business processes. Since its founding, Lectra has been driving market-transforming innovation. Today, we are accelerating our customers' transition to Industry 4.0 and revolutionising the way they do business. Innovation is a key component of competitiveness, and AI will continue to play an important role as we offer customers a competitive edge through increasingly connected, innovative solutions.

Pricing model:

All of Lectra's software solutions are sold in SaaS mode. Lectra works with all types of companies in the fashion market, where the group has had a presence for over 50 years. Lectra's customers are mainstream, high-end and luxury consumer brands, companies specialising in manufacturing garments for third parties or for their own brands as well as distributors.

HEADLINE CUSTOMERS

Retviews:

Bally

Balmain

DIESEL

Jacquemus

Maison Margiela

Pinko

TextileGenesis:

Bestseller

M&S

LECTRA

www.lectra.com

Founded: 1973

Active users worldwide:

2,900+ Customers having subscribed to one or several Lectra offers in SaaS mode (31/12/2023)

Over 120+ brands trust TextileGenesis. Currently, more than 8,000 supply chain roles from more than 70 countries are using the platform to enable their supply chains to become more traceable, for more than 800 million units.

With insights from 5000 global ecommerce websites, around 5500 monthly active users in 22 countries gain details thanks to Retviews on products, fabrics, size availability, and international prices, aiding in avoiding overproduction thus reducing the carbon footprint.

TECHNOLOGY PARTNERSHIPS:

As an Industry 4.0 pionneer, Lectra is the ideal strategic partner to accompany its customers in their technological transformation and exploit their full potential. Hence, the Group has been developing a powerful fashion partnership ecosystem. For example, TextileGenesis drives industry-wide scalability through strategic global partnerships, such as with Good Cashmere Standard & Forest Stewardship Council.

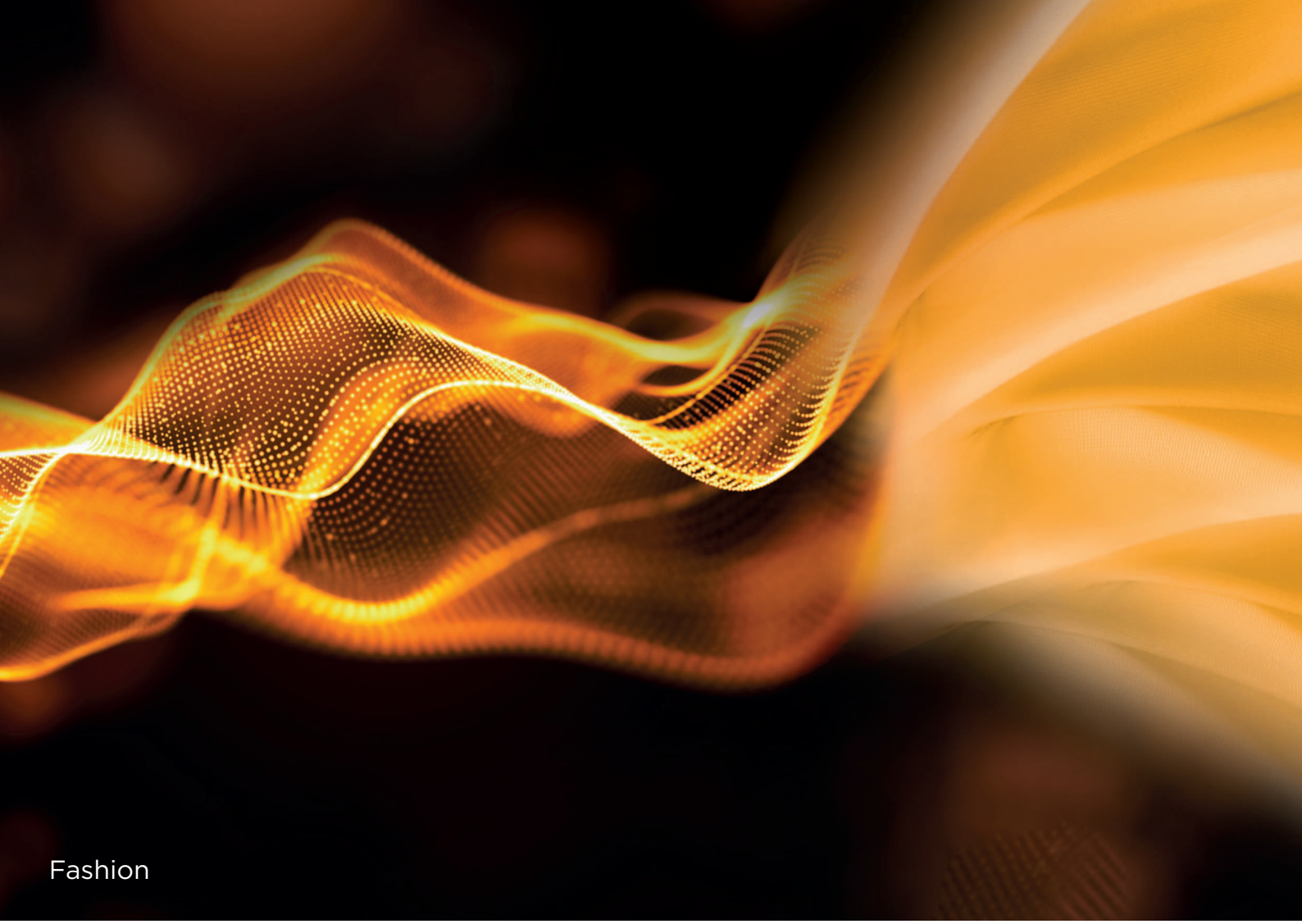
What role do you see your application playing in the future of AI for fashion?

Lectra's teams are working with customers on a daily basis to identify the business processes that could benefit most from AI. Created in 2018, our Innovation Lab explores disruptive innovations such as generative AI in an open innovation approach.

For the near-term future, our goal remains the same: to collaborate with all stakeholders to increase productivity, streamline operational flows and limit waste to remain competitive in the marketplace. A growing number of companies want to take advantage of the phenomenal potential of data, and Lectra is there to support them.

Hence, Lectra acquired Launchmetrics recently, an innovative cloud-based SaaS platform using the same AI technology as Retviews. The solution enables brands to orchestrate the launch of their brand campaigns, precisely measure their effectiveness, and maximize their return on investment.

CONTACT US



PUSHING BOUNDARIES

TOGETHER TO UNLOCK YOUR POTENTIAL

Innovation thrives when boldness and technological leadership come together. At Lectra, we lead the way to stand at the forefront of Industry 4.0, helping fashion customers pave a new way forward in a changing industry.

Lectra is uniquely positioned to support fashion players in accelerating their digital transformation, from product development to intelligent cutting, from collection management to marketing, and from e-commerce to traceability.

Our commitment is about shaping a sustainable future where technology fuels aspiration and passion drives excellence.

To learn more, visit **lectra.com**

LECTRA

We pioneer. You lead.

François Gonnot

PRODUCT MARKETING DIRECTOR, LECTRA

What's your working definition of AI? Does it differ from the public understanding, which is currently dominated by large language models and generative text-to-image models? And how does that definition manifest itself in your solution(s)?

Artificial intelligence, or AI, is technology that enables machines to simulate human intelligence and problem-solving capabilities. It does so by enabling computers and digital devices to learn, read, write, create and analyse. At Lectra, a select number of our innovative solutions use AI technology for data analytics for improved decision-making, which differs from the creation of new content from existing data (generative AI).

AI-powered data analytics are revolutionising the way Lectra's fashion customers process product data, analyse market trends and satisfy consumer demand. Using AI to gather, measure and model data leads to the discovery of valuable insights. Informed decision-making enables greater business agility for faster adaptation to changing market demands.

As a company that has covered the extended fashion value chain for a long time, across equipment, software, and services, how important do you believe information and intelligence are to protecting, transforming, and optimising that value chain today?

Lectra strives to facilitate informed decision-making for customers while helping to continuously improve their operations. As an Industry 4.0 pioneer, Lectra believes in the power of the cloud, big data and artificial intelligence to connect the upstream and downstream production processes. Brands can take advantage of this abundance of data to push boundaries and unlock their potential.

AI is revolutionising the fashion industry and Lectra is paving the way by offering brands a powerful ecosystem of software solutions. Each solution is purpose-designed to manage a specific activity of the fashion value chain, in complement to a range of other activities. Lectra aims to connect these different solutions by harnessing the power of AI to control and analyse the flow of data generated by the related activities.

By combining technological expertise in data analytics and applied AI, the group seeks to drive innovation and introduce pioneering new services that enable customers to continuously improve their operations throughout the value chain. Today, fashion value chain modelling is possible. AI can help track the entire lifecycle of a garment, from raw material sourcing to manufacturing and distribution. This kind of transparency allows consumers to understand the social and environmental footprint of the products they buy. It also enables companies to meet the growing burden of compliance requirements while supporting their CSR efforts.

Competitive landscape mapping is another way that automated data modelling can help companies optimise their value chain. Image and text recognition technologies can be harnessed to provide an accurate picture of competitor offerings and pinpoint valuable market insight in real time using automated data analytics. This kind of data-driven competitor analysis enables companies to make confident decisions and gain a competitive edge.

There are two parts of the Lectra portfolio that really demonstrate just how important that extended connectivity and visibility are in the current climate. Retviews is home to a huge amount of market insight and competitive intelligence, and TextileGenesis is focused on providing full transparency from fibre to finished product. Determining what products to bring to market, and tracking the extended journey of those products are both top strategic priorities for fashion today, which makes those solutions important sources of critical data. Tell us how these two solutions in particular fit into Lectra's vision for connecting new parts of the value chain and maximising the value of the data they provide?

Retviews' AI-driven retail data analytics enable fashion companies to uncover valuable insights and accelerate their decision-making process. Lectra's fashion market intelligence solution uses powerful AI technology to track retail market data and the competitor landscape in real time. AI can monitor fashion assortments, price positioning and evolution across global markets, as well as individual product characteristics—such as garment type, stock levels, colours and fabric pattern recognition—faster and more accurately than a human being. By automating competitive benchmarking, fashion brands can quickly identify gaps in competitor practices and adjust their pricing strategy.

Lectra's traceability solution, TextileGenesis, enables fashion brands and fibre producers to digitally map the supply chain, from the fibre to the finished garment. TextileGenesis' rule-based AI engine powers granular traceability modelling that addresses both ends of the textile value chain, as well as networks of partners for certification. The company issues digital tokens to trace and manage textile products, whilst the solution's technology platform guarantees the exchange and tracking of reliable, secure data.

A big part of making effective use of AI is having a central hub in the technology ecosystem that can bring together information and intelligence, from design to sale, and make it accessible, usable, and ready to translate into action. For most brands, it's logical for that central location to be the place where key product data is already held, and where the people most active in planning, design, product development, and sourcing live, day-to-day. How do you see Kubix Link filling that role, and how does AI come into the picture?

Kubix Link is Lectra's unique, purpose-built suite of fashion PLM, PIM, and DAM solutions. It is a cloud-based collaborative platform that helps brands streamline collection management and product development covering the entire design-to-sale process. The suite is fully compatible with our AI-enabled Retviews and TextileGenesis solutions. When used in tandem with these two AI-powered technologies, Kubix Link becomes the engine at the centre of fashion data collection, analytics, mapping, and analysis.

The suite features interoperability with Retviews and TextileGenesis, as well as widely used applications such as Adobe Illustrator, Photoshop and MS Excel. Deployed together with Kubix Link, Retviews' automated benchmarking places emerging trends and market opportunities at the heart of the collection planning and product development processes, whilst TextileGenesis' powerful AI-enabled capabilities enable reliable, secure supply chain tracking.

For a lot of brands, AI strategies will be competing for investment with other top-level objectives like sustainability, profitability, supply chain diversification and risk, 3D, and more. Do you see AI, and the whole-value-chain data needed to drive it in fashion, as a separate area to those, or as a way of supporting them all?

Our vision of AI-enabled business will empower companies to harness the power of data analytics to quickly meet changing requirements, boost profitability and generate greater value. The AI embedded in our solutions improves production processes, both in terms of performance and efficiency. This helps reduce material consumption and related environmental impacts. Responsible use of AI can also make a positive social change in the face of a new technological horizon. AI can help customers process CSR-related data and identify areas for improvement; create new products that are both environmentally friendly and socially responsible; and provide the hard data to demonstrate accountability.

The current regulatory environment is setting higher standards in supply chain management, especially in the areas of transparency and traceability. This will require fashion industry players to rethink the way products are developed, manufactured and distributed. By using AI technologies to offer ever more connected and innovative solutions, Lectra is accelerating customers' transition to Industry 4.0, which delivers the visibility, control and decision support to meet future challenges.

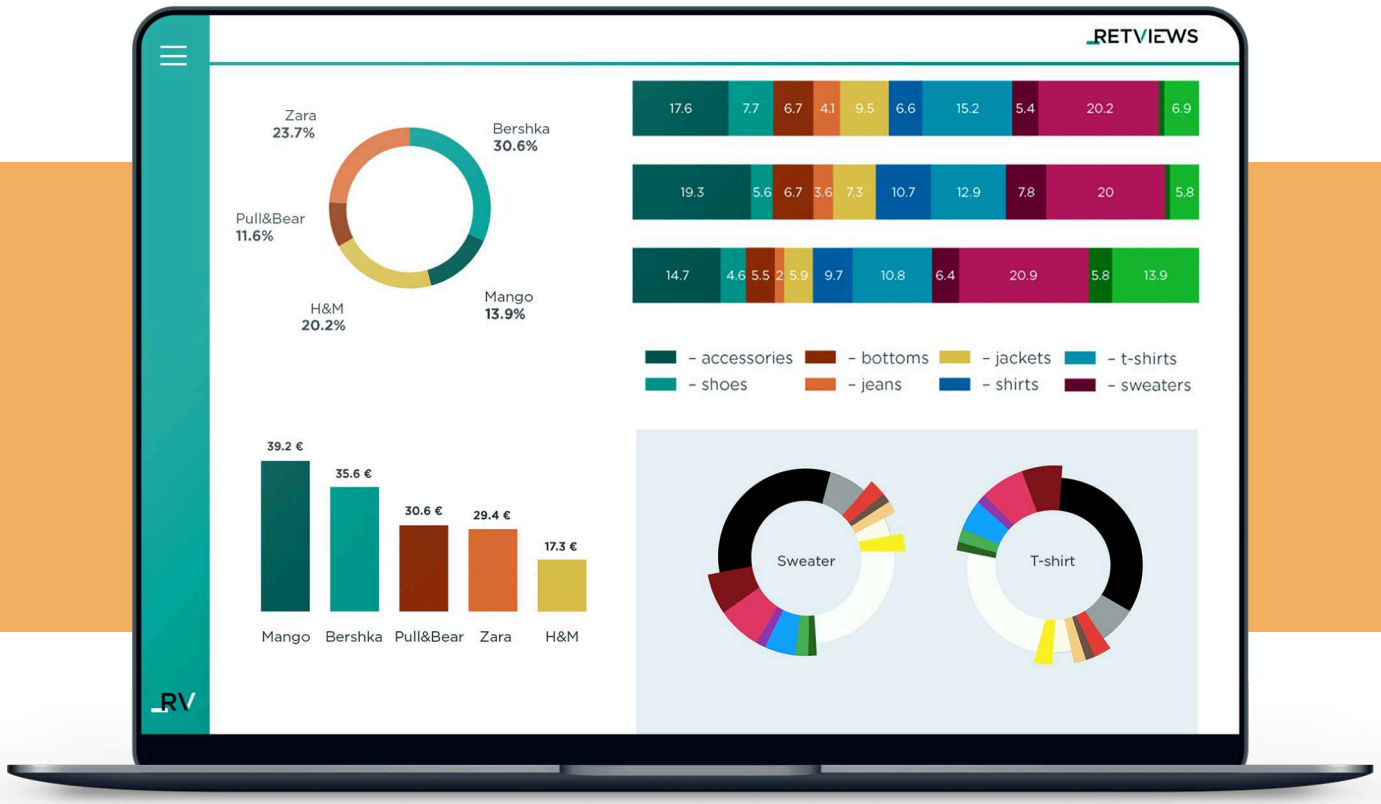
What do you see as the near-term future of AI - both within your solution(s) and in general? Do you believe it will be a transformative class of technologies the way people expect?

In the near term, our goal remains the same—to bring together people from across the value chain to increase productivity, streamline workflows and reduce waste. Our innovation, product marketing and R&D teams work with customers on a daily basis to identify the business processes that could benefit most from AI's fast time to insight.

With the acquisition of Launchmetrics and the addition of the brand performance suite into our portfolio, our group is expanding its presence across the fashion value chain. We aim to consolidate our knowledge in fashion, capitalising on Launchmetrics' significant AI expertise.

A growing number of companies want to take advantage of the phenomenal potential of data, and Lectra is ready to support them. Areas of focus include the automation of low value-added tasks, and faster decision-making in complex business environments. We are also exploring the potential of generative AI, a promising technology that must nonetheless be exploited with precaution and restraint.

Lectra is actively expanding its fashion technology portfolio, acquiring new expertise in areas beyond its core competencies. Innovation, collaboration and agility are essential to remaining competitive in the marketplace, and Lectra will continue to develop relevant solutions to rise to customer challenges.



Lectra Retviews.

NewArc.ai

n e w a r c . a i

Founded: 2022

NewArc.ai empowers designers to turn their sketches into high-quality, photorealistic images in seconds (sketch-to-image generation). This instant transformation allows them to effectively visualize and communicate their ideas to clients and teammates. We started in November 2022 and are now currently serving more than 1,300 customers primarily from the US and Europe, ranging from individual freelancers to professionals at well-known brands.

NewArc.ai's mission is to streamline the design process, making it simple and efficient for designers. By focusing on ease of use, we empower designers to focus on product creation and innovation without the need to master complicated visualization software. Our tool not only speeds up the design workflow, but also has a positive impact on sustainability by reducing the reliance on physical samples, which helps cut down waste in the fashion and footwear industries.

We are extremely grateful to our users, who are passionate about sharing their experiences and recommending our platform, which allowed NewArc.ai to rapidly grow solely through word of mouth. Their feedback is key to our continuous improvement and commitment to serving designers globally.

Pricing model:

NewArc.ai offers a subscription-based pricing model with options for both monthly and annual payments. Customers can choose between plans with limited image generations, ideal for freelancers, or unlimited plans suitable for larger companies. Annual subscriptions for multiple users come with discounts.

Universities, schools, and online courses get free access to support learning and innovation in design.

New customers can test our service with a number of free image generations upon registration. Live online demos are also available to showcase NewArc.ai capabilities.

HEADLINE CUSTOMERS

Designers using NewArc.ai work at companies including names like:

Adidas

Decathlon

Fossil

Marc O'Polo

On

Puma

Salomon

Skechers

Strellson

Tommy Hilfiger

Under Armour

NewArc.ai

newarc.ai

Founded: 2022

More than 1,300 paying customers, across the following regions:

48%	North America	35%	EMEA
8%	LATAM	9%	APAC

What role do you see your application playing in the future of AI for fashion?

NewArc.ai is on track to transform the fashion design process by enabling faster idea generation and visualization. Our tool quickly turns sketches into high-quality, photorealistic images, helping designers to explore and refine their ideas without the usual time-consuming steps involved in creating detailed illustrations.

This capability not only saves time but also supports better decision making by allowing designers to visualize multiple design options quickly. This is particularly valuable in fashion, where market trends move fast and being first can make a big difference.

NewArc.ai also contributes to sustainability in fashion. By replacing physical samples with digital images, our platform significantly reduces waste. Designers can present their ideas using images that look as real as actual photoshoots, eliminating the need for sample production which often results in unused materials.

In the future, we aim to evolve our platform to support real-time collaboration directly within NewArc.ai, streamlining the way designers work with clients and partners.

We also plan to integrate emerging technologies such as 3D modeling and virtual fittings, which will complement and extend the capabilities of our core offering.

CONTACT US

NewArc.ai

Turn sketches into images in seconds

IVAN VOLCHENSKOV

CO-FOUNDER, NEWARC.AI

What's your working definition of AI? Does it differ from the public understanding, which is currently dominated by large language models and generative text-to-image models? And how does that definition manifest itself in your solution(s)?

My definition of AI is centered on its role as a transformative tool that elevates ideas over traditional hard skills such as manual painting, writing or using complex graphic editors. AI allows individuals to express and communicate their creative visions without spending hundreds of hours mastering these skills. This democratization of creative expression makes AI a great equalizer, giving more people the opportunity to bring their ideas to life, regardless of their background or technical skills.

But while AI opens up new possibilities, success in this new era still requires a deep understanding of your field. Think of it as becoming an "art director" in whatever field you're working in, whether it's fashion design, footwear design, product design, or any other creative industry. Having access to AI tools like the ones we're developing at NewArc.ai doesn't replace the need for a solid grounding in the principles of good design and aesthetics. You can have the best tools, but without the right knowledge and vision, the result may not reach its potential.

At NewArc.ai, we empower designers, from freelancers to established brands, with an AI-powered tool that turns sketches into high-quality, photorealistic images in seconds. This not only streamlines the design process by eliminating time-consuming manual work, but also increases creative freedom by allowing designers to quickly explore and test more ideas. In addition, our technology reduces the reliance on physical samples, promoting sustainability and improving communication with clients and teams. By focusing on the creative aspect of design, NewArc.ai helps designers maximize their potential.

Over the last decade, a lot has been asked of designers when it comes to learning specialised skills and new tools in order to bring their ideas to life - and communicate them to other stakeholders - more quickly. How do you think about the way that progress in design has become something of a productivity and technology treadmill? And can AI provide an alternative pathway to shortening the distance between idea and visualisation?

In recent years, the fashion and footwear industries have become increasingly more fast-paced. Designers are expected to produce more designs in less time, a demand that can be quite exhausting and potentially stifling for creative

professionals. This push for productivity often results in sacrificing the creative, artistic part of the designer's job, leading to designer burnout – and lack of fresh ideas, which can be very harmful to the world of fashion and footwear.

Historically, tools like Procreate, Illustrator, Photoshop, CLO, and Browzwear have been instrumental in helping designers become more efficient. However, mastering these tools involves a significant learning curve and the visualization process can still consume many hours. Now, in the AI era, we're seeing a shift. A wave of new startups, alongside established software developers integrating AI features, are aiming to reduce the burden of tedious tasks, allowing designers to focus more on the creative aspects of product creation.

At NewArc.ai, our approach focuses on two critical stages of product creation: ideation and presentation.

Ideation: Traditionally, designers generate numerous sketches but only a few are developed into more detailed illustrations due to the time-intensive nature of the process. With NewArc.ai, every sketch can be instantly transformed into a photorealistic image, enabling designers to explore and evaluate a broader range of ideas more efficiently.

Presentation: The traditional approach often requires hours to create compelling images to present ideas to stakeholders. With NewArc.ai, this process can be dramatically shortened. Designers can quickly generate multiple images from a single sketch, select the one that best aligns with their vision, and make necessary adjustments like adding logos or tweaking colors, all within an hour.

Early in the AI era, many designers were concerned about whether AI was a threat or an ally. It's now clear that AI is a powerful tool that streamlines workflows, enhances creativity, enables more extensive idea testing, reduces tedious labor, and improves communication with clients and teams. AI is not just about keeping pace with technological advancements; it's about giving designers the space and tools to truly innovate.

Generative AI is a fascinating example of a new class of technologies creating a level playing field: for the same small monthly fee, anyone at home can use the same large, cloud-hosted models that workers at the world's biggest enterprises do. This universality is part of what drove ChatGPT adoption so quickly. I's also a cornerstone of the philosophy behind NewArc, where the real beneficiary of AI adoption is the individual designer - whether they work alone or as part of a team.

Credit: Erica Horne, CAD for Fashion

The democratization of technology through SaaS models has shifted the landscape for businesses and individuals. This shift started with making enterprise-grade software accessible to solopreneurs many years ago. But unlike traditional software, AI's potential to enhance lives and careers is enormous, which is why it's crucial that these capabilities are available to everyone, not just a select few.

At NewArc.ai, we embody this philosophy by making our AI tools accessible to a wide range of users, from hobbyists to professional designers working for major brands worldwide. We believe the real winners are the entire apparel and footwear industries, as well as the end consumers.

In practice, this democratization is likely to play out in several powerful ways over the next few years:

1. Enhanced Creativity and Innovation: With tools like NewArc.ai, more individuals can bring their unique ideas to life without the barrier of needing traditional, often expensive, design training. This will lead to a surge in creativity and a diversity of concepts entering the market.

2. Increased Market Competition: As more designers gain the ability to produce high-quality designs quickly, competition will increase. This, in turn, will drive improvements in both product quality and cost-efficiency, benefiting consumers.

3. Global Market Access: Designers from any part of the world will be able to create products that appeal to global audiences, fostering cultural exchange and economic growth through a more integrated market.

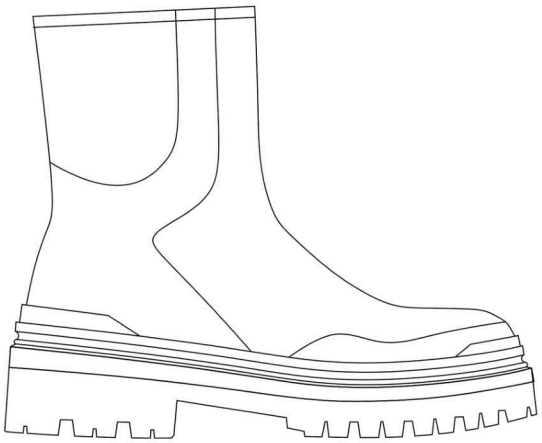
4. Sustainability: By reducing the need for physical samples, AI tools will decrease waste and carbon emissions, contributing to a more sustainable fashion industry.

5. Economic Resilience: Broad access to AI prevents a concentration of power and resources within a few large corporations, enhancing the overall economic resilience.

In summary, as AI tools become more universally accessible, they will empower more individuals and businesses, leading to a more diverse, sustainable, and competitive market. It's a historical transformation that NewArc.ai is proud to be part of.

Fashion is one of your leading categories, but NewArc.ai also caters to other sectors like automotive and industrial design. What parallels are you seeing in AI adoption across those different industries, and what sector-agnostic best practices are emerging? And how do you approach creating AI applications that have the deep domain capabilities necessary for fashion?

The adoption of AI is now a key strategy in virtually every industry, as companies explore how it can add value to their operations.



Credit: Bryan Cioffi, (Meg/Bryan) Design Agency

At NewArc.ai, we know that design processes in fashion, footwear, automotive or industrial design often start with a sketch. This common starting point allows our service to be useful to designers in these sectors.

Our platform focuses on quickly transforming initial sketches into photorealistic images, which is particularly valuable when designers need to communicate their ideas to stakeholders. The ability to visualize a concept as a life-like image can significantly improve communication and speed up decision-making. This is becoming a standard expectation across industries - soon the presentation of a hand-drawn sketch may surprise stakeholders used to more refined photo-like visuals.

Despite these similarities, the need for deep domain expertise remains critical. At NewArc.ai, while we offer solutions that meet the basic needs of various design-focused industries, we invest considerable effort in understanding and addressing the specific needs of apparel and footwear designers. We engage directly with our users, gathering extensive feedback through emails and phone calls to guide our product development. This user-centric approach ensures that our AI not only supports general design tasks, but also excels at the nuanced demands of the fashion industry.

What does it mean, from your perspective, to prepare the next generation of designers for a very different world to the one that traditional education might lead them to expect? We struggled to get much in the way of concrete commitments from universities and institutions in the research phase of this report, so tell us

Credit: Erica Horne, CAD for Fashion

how NewArc.ai is partnering with education and working to support new talent through grassroots programmes.

Preparing the next generation of designers for a rapidly evolving industry means equipping them with cutting-edge tools and technologies that reflect current professional standards. Traditional educational curricula often lag behind the technological advancements, leading students to seek out modern solutions independently.

At NewArc.ai, we recognized this gap early on. Interestingly, it was initially students who introduced our AI-driven design tool to their educators, reversing the typical learning dynamic. This led us to launch a program in the spring of 2024 to provide NewArc.ai for free to educational institutions, including universities, schools, and design courses.

We've committed to supporting institutions such as SCAD, FIT, Macromedia, Iowa State University, and other early adopters who understand the necessity of incorporating AI into their programs.

These partnerships are not just about providing access to our tools but also about actively collaborating with educators to develop curricula that include AI. By doing so, we help bridge the gap between academic preparation and industry expectations, ensuring that graduates are not only competitive but also pioneers in their fields.

The pace at which universities adopt these technologies varies, but the direction is clear: integrating AI into design education is inevitable.

What do you see as the near-term future of AI - both within your solution(s) and in general? Do you believe it will be a transformative class of technologies the way people expect?

Recent advances in AI are not just incremental; they represent a fundamental shift similar to the invention of electricity. This is a bold comparison, but I believe that in ten years' time we will look back on this time as a turning point in the evolution of technology.

The integration of AI into different services is accelerating, and the technology itself is becoming increasingly sophisticated. In the near term, we can expect businesses to continue to embed AI into their frameworks, leading to a proliferation of new applications that were previously unimaginable. The pace at which the distant future is becoming the present is faster than ever, and the next few years are critical as AI becomes an integral part of our daily professional and personal lives.

At NewArc.ai, our focus remains on refining our AI-driven tools to ensure they are the leading solutions in the market for fashion and footwear designers. We aim not only to keep pace with developments in AI, but to set the standard for them, ensuring that our tools are as innovative and effective as the designers who use them.

TRIF
STUDIO

PROMPT: View of a side sneaker. Premium.
Luxury. Silver glitter material.
Shot on a granite podium.

Credit: Ilinca Trif, Trif.Studio

ptc

www.ptc.com

Founded: 1985

PTC's FlexPLM solution is designed specifically for retail, footwear, apparel, fashion, and consumer products companies to enable them to manage their entire product development lifecycle, from planning to design and development, through the supply chain, all the way to market. FlexPLM supports everything from design to specifications to sourcing and costing, including supply chain collaboration, compliance, and sustainability. It provides brands and retailers with the power to create amazing products with speed and efficiency and to ensure those products get to market, just-in-time, to be on-trend.

And in response to customer and market demands, PTC recently announced the availability of Flex Insights – a low-code platform with AI capability designed to help brands and retailers connect data across enterprise systems and unlock the power of their data to drive faster and better decision-making during planning and product development.

Flex Insights extends the industry-leading capabilities and feature-rich functionality of PTC's FlexPLM platform, and is available through simple, visual, easy to use and intuitive apps focused on addressing top use-cases and challenges, including, but not limited to, critical path management, compliance tracking, visual line planning and sustainability analytics. Personalization features improve the user experience and put real-time data, imagery, and actionable insights at user's fingertips.

Additional AI capabilities include:

- Optimization of designs and sourcing through machine learning to analyze customers' datasets and provide alternative materials, sources, and construction methods to more efficiently design and sample products.
- Optimization of data entry via large language models to streamline the input process of vast amounts of product information, including specifications, pricing, and inventory details to significantly reduce manual effort, minimize errors, and expedite the product development cycle.
- Generative product specifications based on characteristics of the design and historically successful products.
- In addition, PTC's Flex Connect supports analytics through an end-to-end integration of data.

Furthermore, users can easily build configurable reports aligned to specific business needs, and schedule automated reports using PTC's FlexPLM embedded Query Builder tool.

PTC has made strategic acquisitions to enhance our IoT & AI portfolio with disruptive technologies. Our strategic acquisitions are successfully integrated and leveraged to deliver market-leading solutions to our customers.

HEADLINE CUSTOMERS

PTC's customers are the world's most successful and well-known brands and retailers, many of whom consistently top industry lists of the most AI-driven organizations, such as:

Burberry
Disney
Dr. Martens
Home Depot
Levi's
Lowe's
Lululemon
Mammut
Marks & Spencer
New Balance
Nike
Patagonia
Primark
Ralph Lauren
Reebok
The North Face

ptc

www.ptc.com

Founded: 1985

PTC retail has 1,500 unique retail customer brands using its solutions, representing more than 300,000 active users. The breakdown of users by region is as follows:

Internal users:		External users:	
50%	North America	5%	North America
5%	LATAM	10%	LATAM
35%	EMEA	5%	EMEA
10%	APAC	80%	APAC

TECHNOLOGY PARTNERSHIPS, INCLUDING:

Adobe, Assyst, Browzwear, CLO, DMIx, First Insight, Inspectorio, Made2Flow, MakerSights, Material Exchange, Microsoft Azure, Nexgen Packaging, Oracle, RomansCad, SAP, SEDDI, Texbase, Textile Exchange, Trade Beyond, TrusTrace, VibeIQ, Visulon, Vntana, WalkMe, Worldly

What role do you see your application playing in the future of AI for fashion?

PTC's AI roadmap strategically prioritizes the valuable, responsible, and scalable incorporation of AI features and use cases, including Gen AI, to meet the needs of our retail customers.

We have committed numerous R&D resources to identifying, assessing, and testing the top persona-based use cases across design, development, and merchandising retail domains to ensure AI incorporation is valuable. Given that AI relies on data, FlexPLM already provides efficient data traceability from its capacity to handle complexity at scale, making it a strong choice solution for customers seeking data organization to leverage AI effectively.

We are laying the foundation to safeguard our customers' data, ensuring that AI does not compromise privacy, compliance standards, legal frameworks, or security to ensure AI incorporation is responsible. Our customers appreciate our purposeful and secure approach to new AI features, and future technologies like Gen AI.

Further, PTC has the best partnerships in place such as with Microsoft Azure to ensure we enable scalable AI use cases for retail end users and to help us pursue smart enhancement efforts in the field of AI and future technologies.

PTC will continue to make AI-focused investments within FlexPLM and the rest of our digital thread portfolio.

CONTACT US


ptc
Power To Create
Seamlessly integrate planning and product data across enterprise systems and leverage cutting-edge AI capabilities to automate processes and drive faster decision-making.
ptc® flex plm
See why we've been ranked #1 Retail PLM solution
#PowerToCreate / ptc.com

refabric

www.refabric.com

Founded: 2023

Refabric is an AI-powered software providing end-to-end fashion solutions, from accelerating the concept-to-collection process to automating production and enhancing online retail. We're leading the fashion industry into a creative, efficient, and sustainable new era driven by digital innovation.

The fashion design process is fraught with challenges: time constraints that can stifle creativity, the balance between past successes and future trends, the difficulty in visualising designs before production, and the constant need for fresh inspiration. Refabric addresses these pain points head-on, offering a suite of AI-powered tools designed to empower fashion brands and professionals to effortlessly overcome these obstacles.

When it comes to our customers pain points, we address:

- Time Constraints: Our AI-driven solutions significantly reduce the time required to move from trend analysis to final product, helping designers meet tight deadlines without compromising on creativity or quality.
- Trend Integration with Past Successes: We enable brands to seamlessly blend popular elements from past collections with emerging trends, ensuring relevance and market appeal.
- Design Visualisation: Our platform offers advanced visualisation tools, allowing designers to see and refine their creations in detailed 3D before moving to sample production. This not only minimises waste but also enhances the overall design process.
- Innovation and Inspiration: Refabric provides access to a vast, constantly updated library of trends, patterns, and design elements, fueling creativity and innovation within teams.
- Digitalization and Sustainability in the Product Life Cycle: We champion the digital transformation of all phases of the product life cycle, promoting internal collaboration, efficiency, and eco-friendly practices, from design to e-commerce.

HEADLINE CUSTOMERS

Refabric caters to:

- Freelance Fashion Designers & Individual Designers: Solo fashion creators looking for innovative tools to enhance their design journey and bring their visions to life.
- Design Studio: Established design studios seeking advanced tools and features.
- Premium Studio: High-end studios aiming for top-tier fashion design solutions.
- Enterprise: Large-scale fashion enterprises that require a customizable solution and dedicated support.

refabric

www.refabric.com

Founded: 2023

Pricing model:

Refabric's business model is predicated on a scalable and flexible subscription-based service that caters to a diverse clientele within the fashion industry. Our pricing structure is meticulously crafted to reflect the varied usage patterns and feature requirements of our customers, ensuring that each client only pays for the services they need. We offer different solution packs, each with a range of customizable features tailored to user preferences. The pricing of these packages is tiered based on usage level and the specific tools activated, enabling a personalised approach that scales with the size and demands of the business. By combining this flexible pricing strategy with our robust suite of AI-driven tools, Refabric delivers value that is both accessible and aligned with the evolving needs of our clients, propelling them towards a future where fashion is as sustainable as it is innovative.

ACTIVE USERS WORLDWIDE:

We are pleased to report that our subscriber base has grown to over 15,000 individuals, complemented by a strong customer base of more than 250 paying clients who significantly contribute to the sustainability and growth of our services.

What role do you see your application playing in the future of AI for fashion?

Refabric addresses universal fashion struggles, including long concept-to-customer timelines, intricate production processes that foster waste rather than efficiency, and the challenge of delivering relevance to increasingly expectant consumers.

Refabric combats sustainability challenges in the fashion industry by enabling realistic visualisation of collection pieces on AI models, which facilitates the identification and elimination of unwanted styles before production. Through this proactive approach, Refabric streamlines prototype production and enhances resource efficiency, thereby minimising waste.

CONTACT US

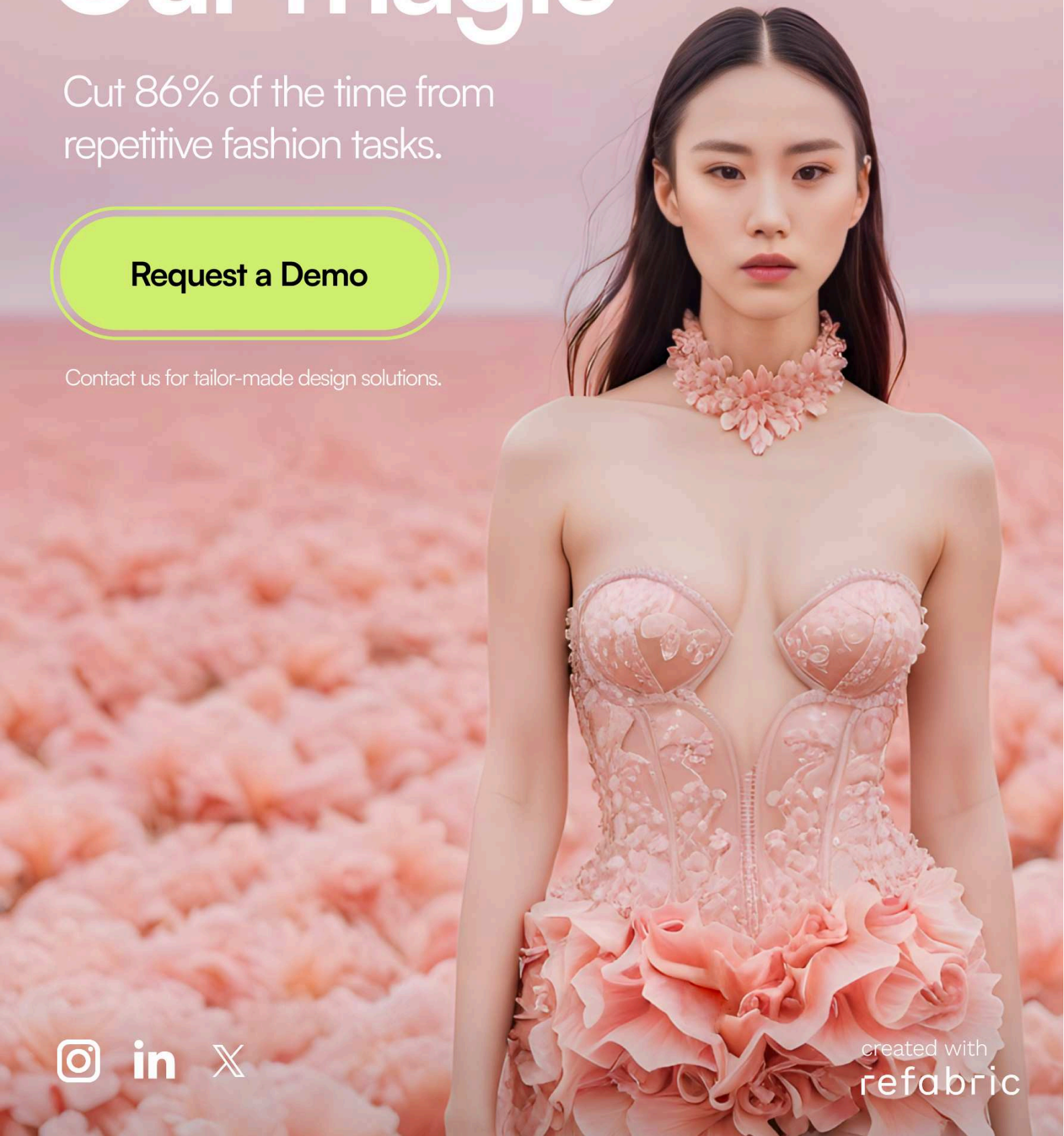
refabric

Your creativity, Our magic

Cut 86% of the time from repetitive fashion tasks.

Request a Demo

Contact us for tailor-made design solutions.



created with refabric

BEGUM DOGRU OZTEKIN

CO-FOUNDER & CEO, REFABRIC

What's your working definition of AI? Does it differ from the public understanding, which is currently dominated by large language models and generative text-to-image models? And how does that definition manifest itself in your solution(s)?

Refabric sets itself apart primarily through its specialization in the field of fashion. We meticulously train our model using thousands of contemporary fashion visuals, closely tracking the annual global fashion calendar and enhancing our model with pertinent visual and real-time data sourced from trend-setting social media accounts. Additionally, we provide comprehensive instruction on fabric details, texture, prints, characteristics, and color codes. As a result, our fashion-savvy software effectively addresses the commercial requirements of fashion brands and designers. While general AI platforms generate imagery to stimulate creativity, our focus is on the development of more feasible designs. Brands are conducting tailored training sessions with Refabric aimed at aligning the model with their unique identities and incorporating current data, thereby harmonizing their collections with future trends. Moreover, all design inputs and outputs occur within a fully personalized and private environment dedicated to the brand or individual. This emphasis on customization and exclusivity represents another notable distinction from mainstream artificial intelligence solutions in the market.

What do you see as the primary challenges facing creative designers today? Where does the current workflow - from gathering inspiration to actually proposing a style - break down? How can an AI design assistant help?

Initially, I would like to address the issue of limited inspiration sources, as all designers face constraints imposed by the same pool of inspiration and resources available to them. It is precisely at this juncture that we intervene, providing an inexhaustible wellspring of inspiration. Furthermore, we streamline all manual procedures and facilitate their alignment with designers' unique brand DNA. We reduce time lost during the sampling process (pertaining to fabric, color, pattern, and accessories) through the visual modifications we offer.

The fashion design process is fraught with challenges: time constraints that stifle creativity, the struggle to balance past successes with future trends, the difficulties in visualizing designs before production, and the ever-present need for fresh inspiration. Refabric addresses these pain points head-on, offering a suite of AI-powered tools designed to empower fashion brands and professionals to overcome these obstacles effortlessly.

Our Solutions: A Comprehensive Approach:

- **Design Solutions:** Our AI fashion tools enable designers to rapidly generate diverse, on-trend design options, significantly reducing the time from concept to collection.
- **Production Solutions:** We transform written prompts into detailed 3D designs, streamline the transition from sketch to product, and automate pattern creation, making production readiness more efficient than ever.
- **Marketing Content Solutions:** Refabric introduces AI Fashion Photography and Models, revolutionizing brand imagery with an intelligent blend of art and technology.
- **E-commerce Solutions:** Our platform enhances online retail experiences through intelligent automation and AI, turning product data into engaging, personalized shopping journeys.

From your perspective, what does it mean to incorporate AI into the real product lifecycle - not just as a creative design aid, but as an integral piece of the extended journey of technical design, development, engineering, fit, material selection and so on? What will it take to anchor AI in concrete disciplines like patternmaking and material optimisation?

Thanks to our system, individuals across stages of the production life cycle, from design conception to the retail process, including fashion designers, manufacturers, merchandisers, marketers, buyers, and others, can utilize the same platform to manage their tasks seamlessly. This encompasses a broad spectrum of functions, ranging from product design to sales and marketing. Consequently, the entire workflow operates with enhanced efficiency and sustainability. During the design phase, cost calculations are made based on selected fabrics, and collaborative efforts with buying and merchandising teams are coordinated. In terms of driving efficiency and fostering innovation, I believe that AI will soon become integral to disciplines such as patternmaking and material optimization. Technological advancements in these areas are progressing rapidly.

Additionally, I would like to elucidate the conveniences provided by Refabric through several points:

- **Trend Analysis and Forecasting:** Real-time market trend analysis and future predictions from runways, social media blogs, celebrity trends, and more.
- **Private AI Training:** Customizes AI with the brand's past data, fabrics, mood boards, attributes, and color palettes.
- **Image-to-Design:** Converts images into editable design elements.
- **Sketch-to-Design:** Transforms hand-drawn, technical-drawn, and sketches into digital designs.
- **Prompt-to-Design:** Generates design concepts based on textual descriptions.
- **Team Collaboration:** Enhance productivity with tools that facilitate real-time collaboration across design teams.
- **Prints Creations:** Designs and creates custom prints for fabrics and garments.
- **Color Code Integration:** Incorporate precise color codes to ensure consistency and accuracy in design palettes.
- **Attribute integration:** Seamlessly combine sketch elements from an extensive library to perfect your design.
- **Prompt-to-3D:** Transform written prompts into detailed 3D designs, bringing concepts to life.
- **Print Implementation:** Directly apply prints onto designs for an instant preview of the finished look.
- **Pattern Block Creation:** Automatically generate pattern blocks from designs for streamlined production readiness.
- **Lookbook/Linesheet Photo Shooting:** Display clothing on a diverse model portfolio that embodies your brand's style.

Thinking one step higher, do you see a role for AI in the backend and operational side of fashion? What challenges in the extended value chain, from CSR to costing, do you believe AI might be able to address?

The fashion industry stands at a critical juncture, marked by projected market value growth and an increasing emphasis on sustainable and digital innovations. According to "The State of Fashion 2024" report by McKinsey, an overwhelming 73% of fashion executives have identified generative AI as a priority, indicating a clear and decisive shift towards technologies that promise to fundamentally redefine fashion design and production.

The potential of generative AI in fashion is immense, with projections indicating that applications of this technology could contribute up to 25% of the industry's future value. This shift represents more than just an enhancement of existing processes; it signifies the pioneering of new realms of creativity, efficiency, and sustainability. Refabric stands at the vanguard of this transformation, offering solutions and a new vision for the fashion industry.

Refabric is at the forefront of revolutionizing the fashion industry by advancing the digitalization of the product life cycle, emphasizing sustainability and innovation. Our commitment to integrating AI into every stage of fashion's PLC ensures a future where design, production, and consumption are seamlessly aligned with eco-friendly practices. The sampling process reduces costs associated with labor and production. By engaging in on-demand manufacturing, production is tailored to items guaranteed to be sold, thereby eliminating excess inventory. Additionally, a more profitable collection emerges by combining past data with emerging trends. Refabric isn't just predicting the future of fashion; we are actively building it, leading the industry towards a digitally enhanced and sustainable horizon.

Whether we look at the entire value chain or just a narrow segment of it, why do you think that now is the time to implement a different approach? Do you believe AI is mature enough for all these different personas across the product lifecycle to put their trust in?

I strongly believe that now is the opportunity for deeper involvement in the fashion and textile life cycle, with each passing day proving its increasing significance. Particularly, AI technology stands ready to revolutionize the manufacturing sector, offering optimization of production processes, enhancement of product quality, and minimization of waste. Through predictive maintenance, AI can anticipate machinery failures before they occur, thereby reducing downtime and maintenance costs. Moreover, AI-powered analytics can streamline supply chain management, forecast market trends, and facilitate more informed decision-making.

Simultaneously, machine learning algorithms hold the potential to significantly enhance quality control. By analyzing real-time data from the manufacturing process, AI systems can pinpoint defects or inconsistencies that may elude human inspectors, ensuring heightened product quality and customer satisfaction. Furthermore, automation driven by AI can undertake repetitive tasks, liberating human workers for more intricate and creative endeavors. This not only boosts productivity but also fosters innovation.

Hence, it is imperative for manufacturers, designers, and fashion brands to embrace integration with AI technologies, as it represents not just a necessity but a pathway to sustainable growth and competitive advantage in the industry.

What do you see as the near-term future of AI - both within your solution(s) and in general? Do you believe it will be a transformative class of technologies the way people expect?

We are rapidly progressing towards a real and significant transformation in the fashion workflow. AI technology is vastly different from what we have known so far. It holds immense potential to change how we operate on a daily basis, how we create, market, and sell our products. We are in communication with fashion retailers, manufacturing brands, and institutions both globally and locally. Everyone we speak to has high expectations and excitement for AI technology. They are eager to integrate the compact package of solutions we offer, from design to manufacturing, e-commerce to marketing, because, ultimately, everyone's goal is to improve the workflow. There is significant demand, and we are doing our best to meet it.

retraced

www.retraced.com

Founded: 2019

Retraced enables fashion and textile companies to digitize and trace their supply chains, efficiently manage compliance data, and achieve greater transparency, from raw materials to finished products.

With this advanced platform focused on supplier data collection, all stakeholders in textile and fashion supply chains can connect and collaborate seamlessly. Using its traceability and digital product passports features Retraced empowers fashion brands and consumers to make informed decisions for a more responsible future.

Retraced leverages AI as a first step to more sustainable supply chains in fashion

Retraced utilizes state-of-the-art AI algorithms to analyze audit documents, extract key data points, and provide an applicable corrective and preventive action plan in real time. This significantly reduces the time and effort required for analyzing factory audits, allowing fashion companies to focus on driving sustainability, social impact, and pushing transparency.

By integrating AI into their platform, Retraced GmbH is taking the next step in supporting the often small CSR teams of large fashion and textile brands in their journey towards more sustainability and compliance.

“This is just the beginning of our journey with AI. Moving forward, our vision for the Retraced platform extends beyond audit processing. We're pioneering the extraction of data to offer comprehensive ESG (Environmental, Social & Governance) risk assessments, automatically updating risk scorecards for companies. It's about leveraging AI to help brands and suppliers to create a more sustainable future faster and more efficiently.” - Philipp Mayer, CPO & Co-Founder of Retraced

Currently, Retraced brings together over 10,000 suppliers and collaborates with hundreds of fashion brands, including: Victoria's Secret, Mara Hoffman, Desigual, Calzedonia, Marc O'Polo, Brownie, and many others. For more information, visit www.retraced.com.

HEADLINE CUSTOMERS

Alexander Wang	Desigual	S.Oliver
Brownie	Mara Hoffman	Vaude
Calzedonia	Marc O'Polo	Victoria's Secret
Carhartt	Pangaia	*plus many more.*

retraced

www.retraced.com

Founded: 2019

Pricing model:

Annual contract / 2 years contract pricing based on modules and company volume.

Active users worldwide:

+10,000 active suppliers

+150 brands

Retraced audit management, enhanced by AI, is now available in beta version for the brands Retraced collaborates with.

What role do you see your application playing in the future of AI for fashion?

"This is just the beginning of our journey with AI. Moving forward, our vision for the Retraced platform extends beyond audit processing. We're pioneering the extraction of data to offer comprehensive ESG (Environmental, Social & Governance) risk assessments, automatically updating risk scorecards for companies. It's about leveraging AI to help brands and suppliers to create a more sustainable future faster and more efficiently."

Philipp Mayer, CPO & Co-Founder of Retraced

"Adopting AI to intelligently process and distill insights from audits represents the logical first step in Retraced's journey towards transforming supply chain compliance and sustainability practices, highlighting the importance of AI and supply chain integration."

Peter Merkert, CTO & Co-Founder of Retraced

CONTACT US

retraced AI

Meet AI-enhanced supply chain transparency

Retraced AI automates audit management for more sustainability

Unlock AI-powered supplier risk insights with Retraced! Get clear insights into supplier risks, actionable suggestions to work on corrective and preventive actions (CAPA), and ensure you meet legal requirements from EU & global laws. Protect your brand from risks and drive change in the fashion industry.

Say goodbye to lengthy audits with our AI-powered automation!

BOOK YOUR DEMO NOW

PHILIPP MAYER

CPO & CO-FOUNDER, RETRACED

What's your working definition of AI? Does it differ from the public understanding, which is currently dominated by large language models and generative text-to-image models? And how does that definition manifest itself in your solution(s)?

At Retraced, we see AI as technology taking on tasks traditionally handled by humans. In the past, these tasks exceeded the capabilities of available technology. However, with advancements in AI, we now can process and analyze vast amounts of data more effectively than ever before.

This shift allows AI to outperform humans in certain tasks. It all begins with extracting data from various sources, whether it's from PDFs, images, or other documents. Previously, humans manually extracted this data, such as copying information from an audit report into another system. Then, the data needed to be carefully evaluated to derive actionable insights.

Today, AI streamlines this three-step process by seamlessly handling data extraction, evaluation, and even suggesting next steps.

While there's understandably a lot of focus on how generative models might impact the creative side of fashion, there is still a huge amount of value to be extracted from using AI to automate tasks that are either too large-scale, too time-consuming, or too risk-prones and sensitive to be effectively done by people alone. How does Retraced AI apply this principle to supply chain visibility, supplier risk auditing, and compliance?

Our solutions support CSR managers and suppliers who deal with heaps of information. Sorting through all these files manually eats up a lot of time. Plus, it's risky – spending hours on similar files can make you miss crucial details. But details are crucial for supply chain compliance. That's where Retraced AI steps in: We extract data from all kinds of supply chain documents, interpret it, and provide actionable steps to enhance compliance. It's about improving compliance and making a positive impact on the fashion industry simultaneously.

A significant barrier to AI adoption is building trust in the output. This is certainly true in places where generative models are being rolled out, but it's especially true in an area as sensitive as supply chain transparency and accountability. When you have relationships between brands, suppliers, and other stakeholders that hinge on the accuracy and reliability of data - and that data is also the foundation for legal disclosures - how do you establish the right structures and engage the extended user base in a way that establishes real trust in AI?

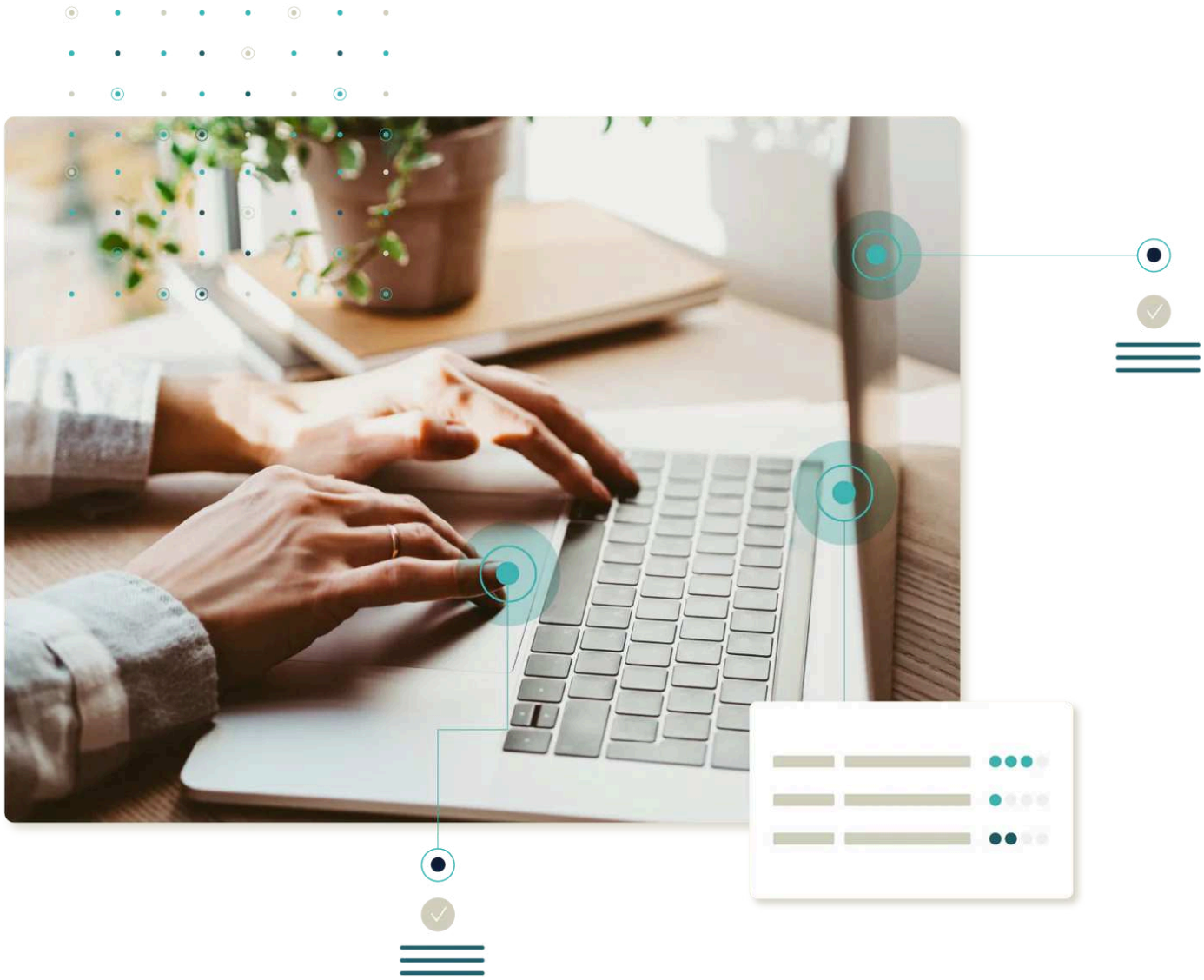
We implemented what we call "keeping the human in the loop" for any data generated by AI. This means that before any AI-generated data is finalized and distributed, it undergoes a human review to ensure accuracy and reliability. This extra step is crucial for maintaining user trust.

While our goal is to eventually minimize the need for human intervention through continuous AI model training, currently, human oversight is essential. We ensure that no AI-generated data is integrated into our system without the opportunity for a final human check, reinforcing trust in our AI-driven solutions.

We're also implementing service level objectives, meaning that we are setting ourselves AI accuracy goals. Continuous tests are conducted to verify that accuracy and ensure that we continuously improve.

Another key consideration is where AI lives in the enterprise technology stack. With off-the-shelf tools, AI resides separately from critical business data, and outside the reach of the established tools that ESG / CSR teams use. This is both a risk - auditing and compliance involve sensitive data - and a point of friction for the user experience. How does Retraced aim to both lighten the time and administrative burden of working with AI, and provide a secure way for users to centralise and analyse the information and the insights they need to build reliable transparency?

AI integration within the Retraced platform is strategic. We positioned AI exactly where ESG data resides, ensuring seamless accessibility for ESG and CSR teams. By embedding AI directly into our user interface, we empower users to leverage its



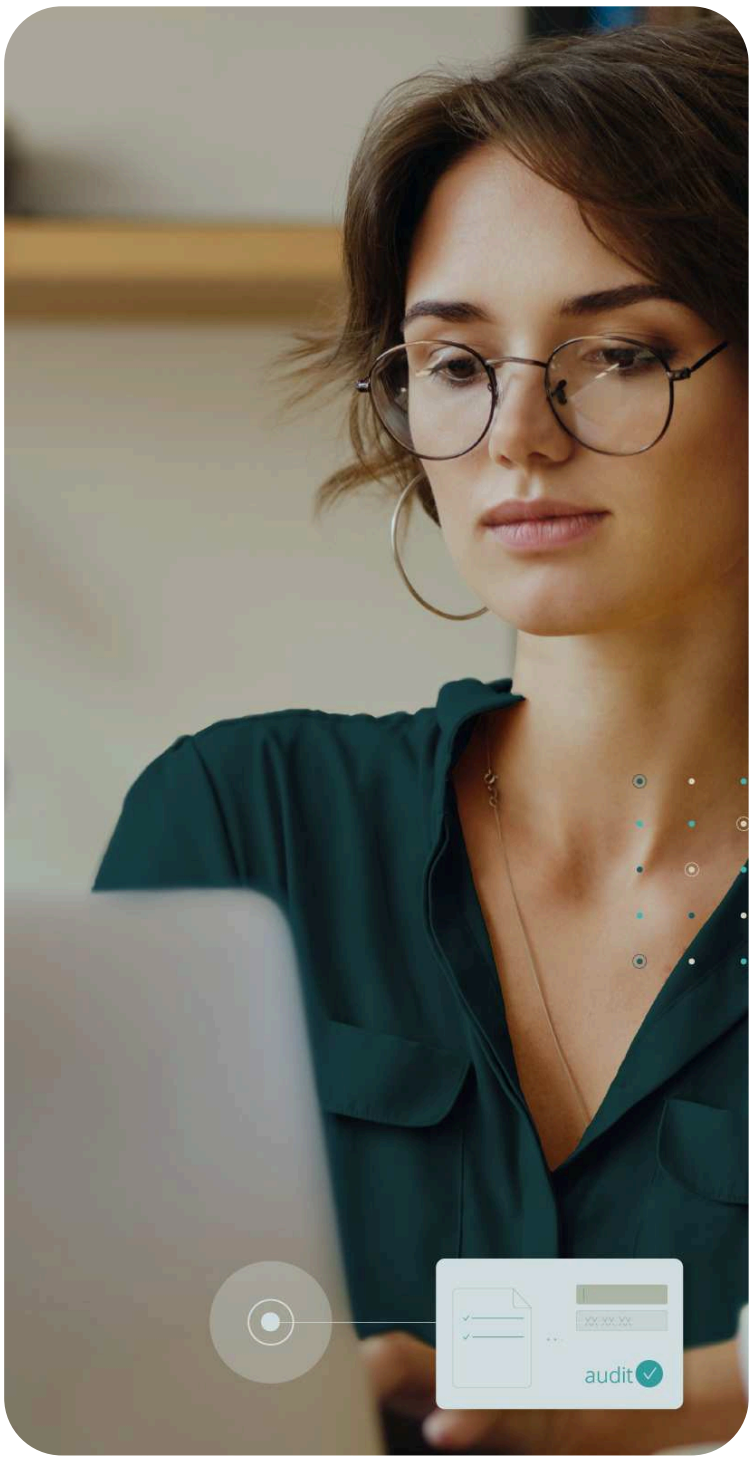
capabilities effortlessly. We've opted for Azure OpenAI data models due to their robust enterprise grade data security standards to protect sensitive data from unauthorized use and exclusion from any training. This approach guarantees that sensitive information remains within our platform and isn't utilized to train public models.

Looking beyond supplier auditing, what is Retraced's vision for extending the use of AI into wider ESG and sustainability risk assessments? Where else do you see AI adding value in both responsive compliance with regulations and more proactive sustainability strategies? And do you believe the industry is ready to embrace AI in those areas?

We are already leveraging AI beyond supplier auditing. We use it for risk assessment and monitoring of suppliers, checking their compliance status and performance over time. AI support enables us to anticipate potential risks and supplier developments.

Our ultimate goal is to empower AI to provide forecasts, providing our customers with the chance to react proactively and leverage opportunities. To give an example: Imagine predicting the impact of climate change on the supply chain, allowing customers to be warned and giving them the chance to mitigate risks and look for alternative solutions in time.

I believe that the fashion and textile industry is more than ready for AI. Companies recognize its inevitability and embrace its potential. We're receiving inquiries from potential customers eager to leverage AI technology for faster supply chain visibility and informed decision-making. They understand the urgency of making better decisions swiftly and are keen to explore AI solutions.



What do you see as the near-term future of AI - both within your solution(s) and in general? Do you believe it will be a transformative class of technologies the way people expect?

I'm genuinely optimistic about AI's future impact. I believe it will significantly transform many industries. Picture a world where routine tasks are automated, allowing humans to focus on more meaningful work. This shift is already underway, with AI easing the workload for content creators and developers alike.

We believe in a future where AI enhances productivity and efficiency in everyone's daily life. Our team is already fully embracing it, whether it is for creating concepts, designing our product or writing the code - AI enables our teams to drive innovation and achieve our goals more efficiently. The future holds promise, and AI is a key part of that journey.

Style3D | ASSYST

assyst.de (Europe)
home.style3D.com(Global)

With AI plus 3D, Style3D | ASSYST enables brands, suppliers, and manufacturers to develop amazing fashion products and customer experience.

Embedded in a seamless 3D/2D fashion workflow, AI can prove its business value for the industry. With easily gained inspiration for fabric patterns and designs plus high-quality auto generated content and photoshoots, we accelerate fashion development and enable our customers to reach out with ideas to a b2c or b2b audience via eCommerce, streaming or in physical stores in a fast and efficient way.

The direct synch between 3D design and CAD patterns ensures swift production and cost calculation along the development process from planning up to the cutter.

The Style3D | ASSYST portfolio includes:

- **top-tier AI and 3D design software**
- **full-suite digital fabric sourcing solution**
- **collaborative platform**
- **digital asset management**
- **2D CAD software and**
- **a nesting/costing platform for automized processes**

Style3D actively supports the users of its 3D and 2D products with a reseller network in around 60 countries and direct representation in the main fashion regions – Europe, North America, and Asia.

Style3D is committed to research & development and a deep understanding of the fashion processes. Our multinational teams therefore comprise esteemed scientists, engineers, designers, and artists, serving a wide array of fashion brands, manufacturers, and fabric mills worldwide.

Style3D | ASSYST represents Style3D in Europe and other global sourcing markets.

HEADLINE CUSTOMERS

Ackermans
Adidas
AKRIS
Benetton
Betty Barclay
Bonprix
BRAX
Cinque
Decathlon
DIBELEL ARTI ALDO
GALLI
Drycorn
Esquel Group
Great Escapes
Hugo Boss
Jade
Leverstyle
Makalot
Marco Polo
Max Mara
Mey
Modart International
New Wide Group
Olymp
Paul Smith
Promax
s.Oliver
The Hong Kong Polytechnic University
The University of Manchester
Toni Dress
Trigema
Vaude

Style3D | ASSYST

assyst.de
home.style3D.com

Active users worldwide:

8,000+	Cloud Users	**1,000+**	ODM Onboard
19,000+	Studio Users	**2,000+**	CAD, Nesting & Costing
300+	Fabric Mills Digitized		

TECHNOLOGY PARTNERSHIPS, INCLUDING:

Adobe Substance, Alibaba.com, Alvanon, Baidu, BOK, CADDON, Cobalt/Li & Fung, Coloro, DITF, ET System, gloop!, Humantecis, Jeanologia, KM.ON/Stoll, Nvidia, Pantone, Renderbus, SAB, TMALL.com, YKK

What role do you see your application playing in the future of AI for fashion?

Our AI mission is to empower designers, technical developers, and pattern makers, enabling them to create amazing fashion collections, and to instantly share high quality content with their marketing & sales teams. Eliminating the need for physical samples, we save valuable time and costs for brands and manufacturers alike.

Because this AI content is created with an industry-model it has its roots in the existing high quality 3D assets making it reliable and editable. This way, the value of 3D design in the collection development sparks powerful benefits for the entire company.

Through the integration of AI into our 3D product suite, we incorporate AI functionality into our customers' 3D design environments and workflows. With just a few clicks, users generate stunning content effortlessly using AI features along their existing assets.

Our integrative approach enables brands, ODMs, and OEMs, to design captivating experiences for their customers, communicate their ideas easily, with low effort and great impact.

Here's how it works: Style3D AI empowers a brand's design team to swiftly develop a summer dress. They can base it on a new AI induced fabric pattern or draw inspiration from a sketch prompt combined with an image of a bestselling dress from their previous collection. Once created in 3D, this dress can be instantly photo shot within Style3D Studio and showcased in online stores or showrooms. The AI model avatars can be customized to fit specific regions or age groups. They can also be placed in ideal background settings, all seamlessly generated with AI.

Using AI plus 3D, our customers accelerate their go to market and dramatically cut their marketing and sales expenses. With features like AI photoshoots that normally require intensive IT skills, every fashion company can now innovate, enhance the competitiveness of their brand and speed up the fashion transformation. And there's more to come from Style3D along those lines.

CONTACT US


Style3D | ASSYST
AI + 3D in Fashion
assyst.de
home.style3d.com

ERIC LIU

FOUNDER & CEO, STYLE3D

What's your working definition of AI? Does it differ from the public understanding, which is currently dominated by large language models and generative text-to-image models? And how does that definition manifest itself in your solution(s)?

At Style3D | ASSYST, we have an 'AI in fashion' approach to Artificial Intelligence. Our AI model is an industry-specific model, and it is especially trained on visual data and the needs of the fashion industry. For us, the outcome of AI is not merely a visual representation but an enhancement of creativity, efficiency, and the delivery of a comprehensive digital product.

Our expertise in garment design, digital fabrics, and visualization is deeply embedded into our AI products. We also have a profound understanding of how fashion professionals work, and thus, we offer an AI approach that seamlessly aligns with their workflows. Our AI tools, for example, accept various inputs, including not just text but also sketches or images as prompts. This makes it easy to use and easy to add to an existing process.

What also sets us apart is the integration of our AI industry model with our design tools.

Style3D | ASSYST stands as a key player in digital fashion providing a wide range of 3D solutions and structured data for every step of the clothing industry, from design to production. The combination with AIGC is a huge boost to creativity and productivity.

Over the last few years, Style3D has established its reputation by focusing on 3D tools and the digital ecosystem around them, especially in design and production. You're now placing a big emphasis on AI in the form of generative content for materials, textures, models, and eCommerce assets. How did that shift come about? And why do you believe there's such a strong synergy between 3D and AI?

The fashion industry is extremely creativity-driven and is constantly challenged to meet diverse consumer demands for personalized products. This leads to an almost continuous product creation process with some eCommerce platforms requiring 5.000 to 6.000 SKUs (style*color*size) per day.

In our 3D and 2D solutions, we help companies to generate and manage the huge amount of structured data throughout their development and production process.

With our AI + 3D, Style3D users easily add materials, textures, and visual improvements to their simulations, based on our extensive asset libraries. Our 3D simulations provide an optimal environment for product creation, featuring real-time effects and all the assistance IT can give. Moreover, using Style3D AI, our users can effortlessly generate high-quality images of their digital products for ecommerce and other digital platforms. This

synergy significantly enhances productivity and leads to fast results. At the same time, it helps fashion companies to boost their digitization efforts. You see, AI and its capacities are a natural enhancement of our 3D tools.

A key challenge for brand and retail organisations right now is quantifying where AI can create business value – and where it can augment and support specialist skills, rather than replacing them. How have you approached engineering AI solutions that are sufficiently grounded in the real product, pattern, material, cost, and other vital, practical concerns? And where do you expect those solutions to deliver measurable impact and value?

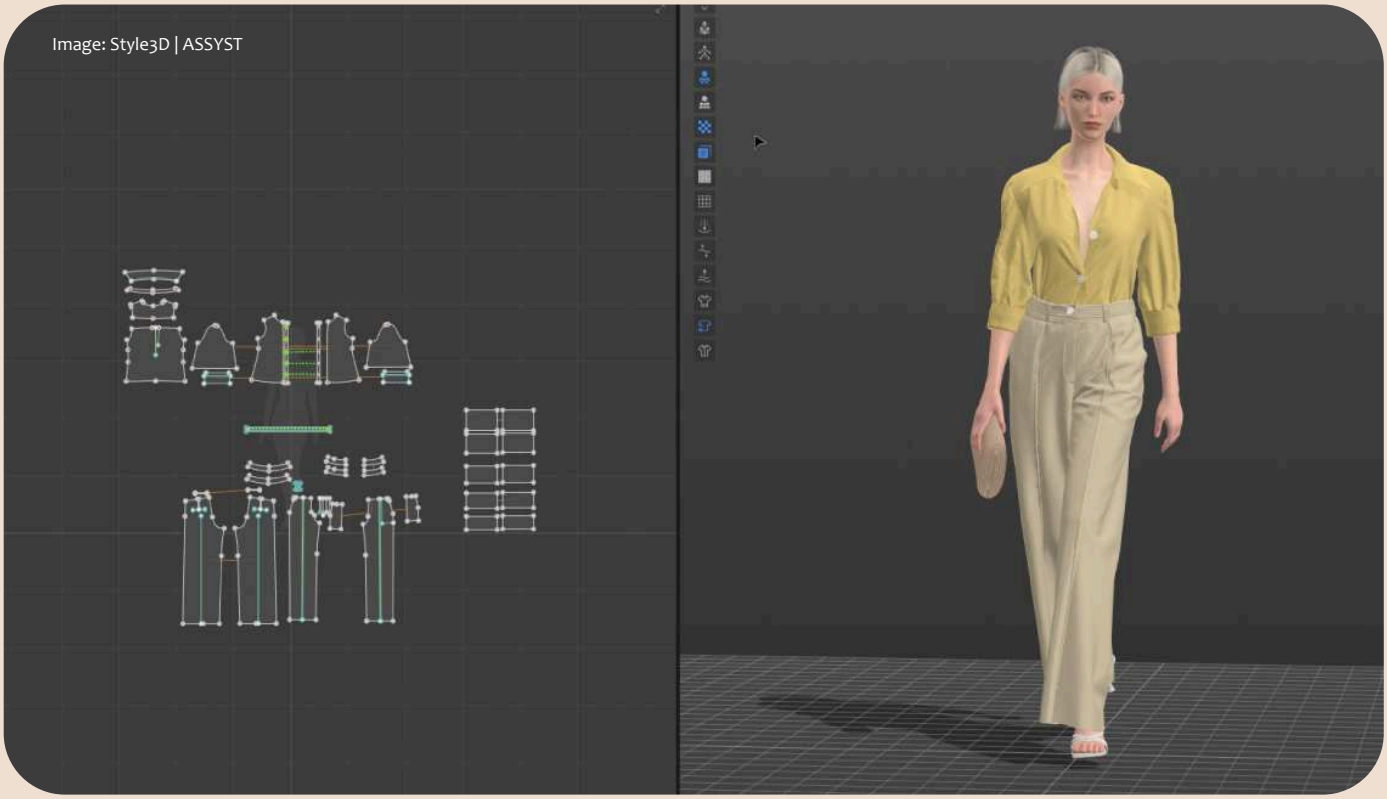
No matter the volume of SKUs required, along the whole industrial chain from trend-based designs to sample garments to the market-ready products, businesses are always facing the challenge of efficiency and cost. When you look closely at how fashion and apparel companies operate, you'll see that to deliver genuine value, AI generated content needs to possess specific qualities.

Primarily, the output needs to be multimodal, meaning different types of content are generated at the various stages and remain interconnected. You can use AI inspired design to quickly define the volume of SKUs at an early stage, or digital products can be used to assess their later market value. This is where the second AI requirement sets in. The generated content needs to align with the physical products, seamlessly supporting a direct-to-production process. And lastly, the generated content should be reusable; for example, patterns and designs can be stored as data resources for future use.

When fashion professionals look at our Style3D | ASSYST tools, they'll find all this.

One of the driving forces in 3D and digital product creation at the moment is the need to move beyond isolated change or amendments (in design and patternmaking, for instance) and into enterprise-wide digital transformation. How do you see AI factoring into this? What do you believe the pathway from AI to 3D simulation and 2D patterns, and then back to AI again can do to further transform the route from an initial idea to a finished product?

We have started to integrate AI technology fully with our 3D products to streamline the entire industry R&D process. This sets the stage for our 'AI + 3D/2D + AI' process, leveraging AI for creativity and realism while ensuring 3D accuracy for consistent design and production readiness as this integration extends to connecting our CAD, nesting, and costing solutions. Our approach ensures that AI delivers immediate value to a fashion company and can be implemented right away.



For designers for example, AI + 3D is an inspiration accelerator. It doesn't take over their jobs or do everything for them, but it significantly speeds up the design process. This means designers can reach their desired results faster and sometimes even better than before.

Our AI supports this workflow section in various ways: enabling prompts for inspiration with the option to edit individual sections of the AI generated fabric pattern or garment, offering AI try-ons to inspire styling and improve decision making at an early stage, or providing options to visually prompt models and backgrounds and conduct high-quality photoshoots for every region or brand.

And just like with any new tech, there's a learning curve. Therefore, brands, agencies and manufacturers can test out the newest AI tools at one of our Style3D Styleverse showrooms, where they're integrated with other fashion technologies. Through our Styleverse concept, we help the fashion industry to connect and to explore the latest tech, allowing them to shape their digitization approach based on value.

With AI, as a class of technologies, being as hype-prone as it is, there are a lot of technology companies from outside fashion now creating either industry-agnostic tools, or fashion-specific tools as new products. As a company that's been pretty deeply immersed in the digital transformation journey of the brands that are already deploying DPC tools and workflows, what perspective does that give you on the importance of industry-specific experience and expertise to this next wave of enterprise technology?

Our deep understanding of the industry's characteristics and customer needs from the outset is differentiating us from generic AI tools and siloed solutions. Through extensive research and our industry-specific model, we help the fashion industry to solve its major challenges: to become more efficient and at the same time more sustainable. This is particularly crucial given the trillion-dollar-valuation of the textile and apparel industry and its global impact.

Historically, fashion companies have been struggling with low digitalization, high costs, excessive inventory, and inefficiency due to the traditional separation of production and sales. Isolated solutions will even foster this effect.

At Style3D | ASSYST, we are committed to helping the fashion industry reshape with a profound integrated approach based on research and technology. In this global approach, AI not only helps to accelerate the design process but also simplifies digitization when it is integrated with a fully comprehensive tool set. Fitted into an end-to-end process fashion companies can improve massively using Style3D | ASSYST technology and address many of their core economic and sustainable challenges.

What do you see as the near-term future of AI – both within your solution(s) and in general? Do you believe it will be a transformative class of technologies the way people expect?

Today, we stand on the brink of a revolutionary era, where artificial intelligence reshapes every facet of the industry. From fostering design ingenuity to promoting sustainable methodologies, AI acts as a driving force behind remarkable transformations.

As major trends, the textile and apparel industry is transforming towards personalization and sustainability. Digital technologies like 3D and AI are being embraced by designers to accelerate apparel design and development processes and on the company level to cater to personalization and other needs of consumers. For consumers, AI will mean their expectations will be met with extended product experience, while for fashion creators, AI provides great support in their daily work.

So, AI-driven solutions bring product creators closer to consumer needs and production capacities, enabling a better grasp of the market trends and meeting market demands, and ultimately reduce waste.

Our technological advancements are also reshaping production methods, reducing costs, labor, and materials. Consequently, the fashion industry is poised to embark on a journey towards sustainable, more flexible, and faster development. In the long run, digital R & D and marketing models are to become the norm in the fashion industry and with our AI this will be accelerated.


Created with ♡+ AI + 3D
in Style3D

Theodo

www.theodo.com

Founded: 2009

Theodo is a leading international technology consultancy that specialises in designing, developing, and deploying custom digital applications for innovative companies. We partner with our clients to create ingenious digital products that cater to their unique needs, empowering them to transform the lives of their users.

We are your trusted experts in fashion technology, offering a wide range of solutions tailored to enhance your business processes. From integrating PLM systems and building 3D configurators to leveraging AI for various applications, we help our clients in the fashion industry grow their business. Our approach ensures that the intellectual property of these custom solutions always belongs to our clients.

We bring extensive expertise across all critical technology domains in product management and development, partnering with our clients throughout the entire product lifecycle; our value-driven methodology ensures that every project decision is aligned with the value we deliver to our clients' business.

With a team of over 700 dedicated Theodoers who share a passion for technology and continuous improvement, we operate in five countries across Europe, North America, and Africa.

HEADLINE CUSTOMERS

Decathlon

Dior

LVMH

Sézane

VF

Pricing model:

Our pricing model is customised based on the specific team or resources required for your project. We staff experts who understand the technical challenges and strategic requirements of your project, ensuring that you pay for the most efficient way to build out your solution.

Whether you need a cross-functional team of 10+ developers, designers, and product experts for large-scale builds, or a smaller, specialized team with focused expertise, such as a single data scientist to address specific challenges, we adapt our teams precisely to match your project requirements.

What role do you see your application playing in the future of AI for fashion?

Theodo has been developing AI solutions since 2016, spanning various industries including fashion. We possess expertise in multiple branches of AI such as Computer Vision, Deep Learning, and Generative AI.

There is a great opportunity for fashion companies that are in the process or have succeeded in adopting PLMs. These systems contain large amounts of proprietary, structured data that will unlock differentiating use cases for Generative AI.

However, focusing solely on specific AI technologies like Generative AI, without considering the broader context and operational processes, can limit brands' ability to innovate effectively. GenAI is not the answer to every business problem.

Implementing these solutions effectively requires more than just technology; it necessitates a profound transformation in the operational practices of large teams. At Theodo, we specialise in facilitating this transformation, helping brands overhaul their PLM systems and other asset management platforms, making them reliable sources of truth.

By combining cutting-edge AI technologies with comprehensive process optimization, we enable our clients in the fashion industry to gain a competitive edge, innovate more effectively, and address their most pressing challenges.

CONTACT US

Theodo

New York — Paris — London — Casablanca

Custom Software and Integrations for Apparel and Footwear brands

1000+
Projects shipped

700
Employees

We are software engineers, experts in fashion technology. We help our clients innovate by integrating their PLM systems with design tools, crafting interactive 3D experiences and deploying bespoke AI applications. Our custom solutions enhance your processes, from Planning, to Digital Product Creation, to e-commerce.

JR BEAUDOIN

CTO, Theodo

What's your working definition of AI? Does it differ from the public understanding, which is currently dominated by large language models and generative text-to-image models? And how does that definition manifest itself in your solution(s) and services for fashion?

Our understanding of AI closely follows Luke Julia's perspective. He said "artificial intelligence" is a vague and inaccurate term. Instead, what people are generally referring to is machine learning, which involves systems learning from data to autonomously perform tasks.

To get more technical, machine learning encompasses deep learning, a subset focused on creating more complex models based on neural networks. Within deep learning, we have specific models like Large Language Models (LLMs) and transformers, which have gained significant attention recently.

Generative AI is a subset of deep learning, and as we all know really caught the spotlight in 2022 with models like ChatGPT for text and DALL·E for vision. What really sets these new AI models apart is their accessibility. Unlike previous AI models, which were part of larger products, these Generative AI models are products themselves and are accessible to any type of user no matter their knowledge level of AI.

In our solutions and services for the fashion industry, understanding how AI works is crucial. We typically combine multiple models to address our clients' business problems effectively. While clients often approach us with requests for generative AI products, we dive deeper into their problems and find that generative AI might not always be the best solution. These models are often the most energy-intensive and may not be well-suited for all use cases. Instead, we find that more specialised models are often more energy-efficient and better suited to solving our clients' business problems.

One of our recent projects was developing an AI personal shopper for a luxury brand. The innovation department of a major French luxury group wanted to enhance the conversion rate of their e-commerce site by replicating the experience of a personal shopper in-store. We developed a conversational product recommendation tool based on LLM in less than two months. The user enters a recommendation request and can then chat with their AI personal shopper. The deployment of the first version took just two weeks, resulting in a 42% click-through rate on products.

As software consultants, you tackle a different side of product development - working with brand and retail businesses to create solutions and build out their technology ecosystems in ways that are logical, viable, and driven by real value. How does that map to the AI space right now, when there are so many conflicting visions for what is possible, and so little clarity around what results to expect?

In the current AI landscape, there are many conflicting visions about what's possible, and there's often little clarity around the expected results. Historically, clients would present us with a business problem, and we would find the most appropriate solution, which sometimes involved using machine learning models, and other times, more traditional algorithms.

However, a significant shift in the market is the growing trend of companies wanting to implement generative AI solutions without fully understanding its applicability to their specific problems. This trend is often driven by pressure from financial markets or executive leadership.

To address this, we've adopted a product-focused approach to identify which problems are well-suited for generative AI. While in the past year, most engagements were Proof of Concepts (POCs), clients are now starting to understand where generative AI is and isn't applicable. As a result, the projects clients bring to us are becoming more relevant and are increasingly driven by real value.

When it comes to the results to expect from AI solutions, it heavily depends on the proprietary data available—how structured, clean, and diverse it is. Evaluating the quality of generative AI outputs can be challenging, unlike with classic AI use cases where quality assurance was relatively straightforward.

While generative AI tools can streamline processes, it's important to understand that today they don't fully replace human intelligence. Instead, they should be seen as valuable assistants.

To truly extract value from AI solutions, it's important not to see them just as extensions of current processes but to rethink business models and understand what users truly need. Just as success came from rethinking business models during the shift from paper-based to digital processes, embracing AI requires a similar innovative approach.

Theodo has been active in AI, with a dedicated engineering team, for the past eight years. In that time you've worked extensively with non-generative AI - across deep learning, computer vision and other approaches. Do you believe fashion's current focus on generative AI runs the risk of becoming too narrow, and leading brands to miss out on the potential of those other avenues?

While the fashion industry's current focus on generative AI is understandable, I do agree there is a risk of it becoming too narrow. Generative AI has certainly brought AI into the spotlight, but it's not always the best solution for every problem.

However, I see increased attention on generative AI as extremely positive! It's sparked interest in AI among businesses. Many of our customers now come to us considering AI solutions, even if they're not sure exactly what they need. That's where we come in. We're here to help them navigate the complex world of AI and find the right solution for their specific needs.

In the current AI landscape, there are many conflicting visions about what's possible, and there's often little clarity around the expected results.

That being said, GenAI is on the rise for good reasons. It is incredibly versatile and can be applied to a wide range of use cases. For example, while deep learning models have traditionally been used for classifying images, we've found that generative AI can achieve similar results. It's not the primary function of these models, but it allows for quick Proof of Concepts without needing a ton of data to train a model. It's the best way to try something new with AI without having to dive too deep into it and risk investing too much.

For a long time, Product Lifecycle Management (PLM) has been positioned as the central hub for all data pertaining to product design and development, giving brands the fabled "single source of truth". In practice, that vision is often left incomplete - not necessarily because of software, but because complex workflows and long-established processes are difficult to change. Today, though, that brand-specific data could be what separates tailored applications of AI from generic, off-the-shelf tools and capabilities. How do you think about addressing that balance and bringing together all the data needed to make the most of AI, from all the different tools people use day-to-day, in one place?

Your PLM has the potential to hold so much data that could be leveraged with AI, but companies struggle to consistently put data in their PLM. It requires changing the ways of working of large teams. Theodo helps turn PLMs and other asset management platforms into trustworthy sources of truth.

PLM holds the data you need to create AI applications that actually set you apart and give you a competitive advantage. Using commercial AI models trained on public data sets, you end up creating the same things as the other users of these commercial models.

We help companies get data into their PLM without having to change the way people work. Designers keep working in the tools they love (Adobe Illustrator, Browzwear, CLO etc) and we extract product information from there and feed it into the PLM.

> **There's a significant hype surrounding GenAI, and while this hype may eventually subside, the truly useful applications of AI will remain.**

With the current pace of AI development, the ability to quickly trial new potential applications approaches feels vital. When it comes to deciding on the right AI strategy, or the right model, and then to getting one or more concurrent proofs of concept off the ground, what do you see as the right approach to shortening the time from initial idea to real value?

In our experience, the key to shortening the time from initial idea to real value with AI projects lies in a structured approach.

Firstly, we begin with a Proof of Concept (POC) stage, which consists of two essential steps: framing the use case and building the baseline.

During the 'Framing the Use Case' step, we dive deep into the project, defining its value and complexity. We extensively research the industry landscape, identify potential technical challenges, and outline what it would take to create a baseline version of the product.

Next, during the 'Building the Baseline' phase, we create the first usable version of the product to demonstrate its value. This is where we take controlled risks, leverage the expertise of our team, and continuously improve performance.

What's advantageous about this stage is that it typically spans 2-8 weeks, allowing us to build various POCs to determine which one is the most effective based on the performance of the baseline.

Once we've identified the highest priority value, we move on to the build and industrialization stage. Here, we proceed with developing and refining the product for widespread use. By starting the build only after assessing the baseline performance, we ensure that the product can deliver value in as little as one month.

This structured approach significantly shortens the time to realise real value. By following this methodology, our clients feel more confidence switching from an initial idea to a product that delivers tangible results.

What do you see as the near-term future of AI - both within your solution(s) and services, and in general? Do you believe it will be a transformative class of technologies the way people expect?

In the near-term future, I believe AI will play a transformative role, both within our solutions and services at Theodo, and in the broader technological landscape.

At Theodo, we see AI as an integral part of the future of software development. Incorporating AI into our development process enables us to deliver value faster for our clients, streamlining processes, and enhancing the efficiency of our solutions.

Currently, there's a significant hype surrounding Generative AI (GenAI), and while this hype may eventually subside, the truly useful applications of AI will remain. I anticipate that as the hype dies down, people will become more discerning, better understanding what they want and what actually works.

I like to draw a parallel with past technological shifts, such as the invention of the telephone or the anticipation of flying cars in the 1950s. While AI may not revolutionise society in the same way the internet did, it will undoubtedly have a transformative effect. Like previous technological advancements, AI will both eliminate certain functions and create new ones, reshaping the way we work and interact with technology.

Vmake AI

Founded: 2023

Pricing model:

We offer usage-based pricing, including:

- Monthly and annual subscription
- Pay-as-you-go options
- Flexible enterprise licensing

Vmake AI is revolutionizing the fashion e-commerce industry by integrating advanced AI technologies into our visual content creation tools. At Vmake AI, we're on a mission to empower fashion retailers to create high-quality and appealing digital visuals that are crucial for online marketing and sales.

Our platform efficiently transforms standard mannequin and flat-lay clothing images into lifelike, high-resolution model photos. These visuals are highly customizable, allowing for variation in details and backgrounds to suit diverse marketing needs. Vmake AI also offers exclusive private model services, enabling retailers to create bespoke models that align with their unique brand identity and values. Additionally, we provide scalability-boosting features such as batch generation and alteration of model images and product visuals. By streamlining such essential tasks, our platform significantly cuts overhead costs associated with traditional content production methods for our clients, facilitating swift responses to market trends and consumer preferences.

With these offerings and more to come, Vmake AI is dedicated to advancing the digital content creation process and enriching the online shopping experience, helping fashion retailers thrive in a competitive digital marketplace.

HEADLINE CUSTOMERS

383 DESIGN STUDIO	MosMan	SWANKSTORE
AMB	laFestiva	SWANWICK
BAHIA	LULUALWAYS	SwipeAbove
DanceElite	matta	TICTOC
Fabtiek	O'STIN	Tischplatte nach Mass
femi 9	ODN	TRUE GLORY HAIR
FERATT	RELOOP	urbanic
fridayy	RICKEY ENGLISH	VERBENA
HEIRLOOM	ROBDECHI	Vestua
M2K	royalfashion	vorus
MK's JERSEYS	SETHUKRISHNA	waveBalance
MOLY9	STEVEN PASSARO	WEDRESSFAIR

Vmake AI

Founded: 2023

770,000 active users* worldwide across the following regions:

**As at March 2024.*

20%	North Ameria	30%	EMEA
5%	LATAM	45%	APAC

TECHNOLOGY PARTNERSHIPS, INCLUDING:

Adobe, Amazon Web Services, Google, Microsoft Azure, NVIDIA, OpenAI, Substance

What role do you see your application playing in the future of AI for fashion?

Vmake AI is set to revolutionize the fashion e-commerce landscape by addressing critical challenges such as rapid adaptation, cost efficiency, sustainability, and the demand for localized shopping experiences.

As the fashion sector continues its shift online, the ability to produce high-quality, swiftly generated digital content becomes increasingly crucial. By streamlining the generation of model images and product visuals, Vmake AI significantly accelerates the content production process, allowing for quick response to fashion trends and consumer demand changes, all while reducing the costs and delays associated with traditional photography.

Furthermore, Vmake AI champions sustainability by minimizing the need for physical photo shoots. By adopting Vmake AI's solution, our clients are able to not only lower logistics and production expenses, but also reduce the environmental impact associated with traditional fashion photography, aligning with the growing imperative for sustainability in the fashion industry.

Moreover, Vmake AI caters to the global fashion e-commerce market with solutions that are universally robust yet flexible enough to adapt to local tastes and preferences. Our platform's extensive customization options enable retailers to create visuals that reflect the diverse cultural nuances and aesthetics of various regions, enhancing inclusivity and relevance.

Looking forward, Vmake AI remains steadfast in our commitment to help fashion retailers adeptly navigate the evolving demands of the market with agility and conscientiousness. Through continuous innovation and a commitment to sustainable practices, we aim to ensure our clients not only survive but thrive in the rapidly evolving fashion e-commerce landscape.

CONTACT US

Vmake AI

AI Model Solution

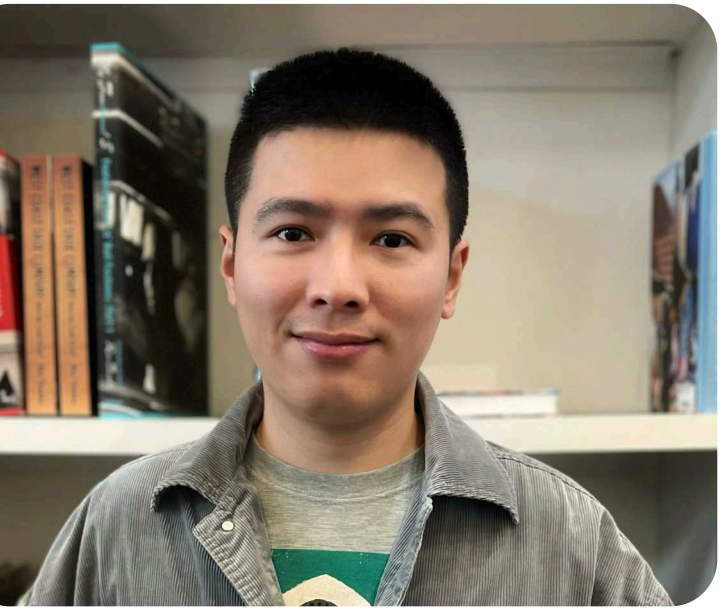
- High-fidelity results with diverse model selections
- Highly customizable to fit your brand's needs
- Unmatched scalability for business growth
- Foster sustainability with eco-friendly digital solutions

https://vmake.ai

Benben Li

HEAD OF PRODUCT

VMAKE AI



Xuchen Zheng

SENIOR PRODUCT LEAD

VMAKE AI

Vmake AI

What's your working definition of AI? Does it differ from the public understanding, which is currently dominated by large language models and generative text-to-image models? And how does that definition manifest itself in your solution(s)?

Xuchen Zheng: Our definition of AI extends beyond the popular buzz around large language models and generative visuals. At Vmake AI, we view AI as a transformative tool that mimics human cognitive functions to solve real-world problems. Specifically, we leverage AI to transform visual content creation in e-commerce, focusing on the practical application of generating high-quality, diverse visual models that cater directly to the unique needs of fashion retailers. This goes beyond generating text or images—it's about creating a dynamic, scalable solution that directly addresses the operational efficiencies our clients desperately need.

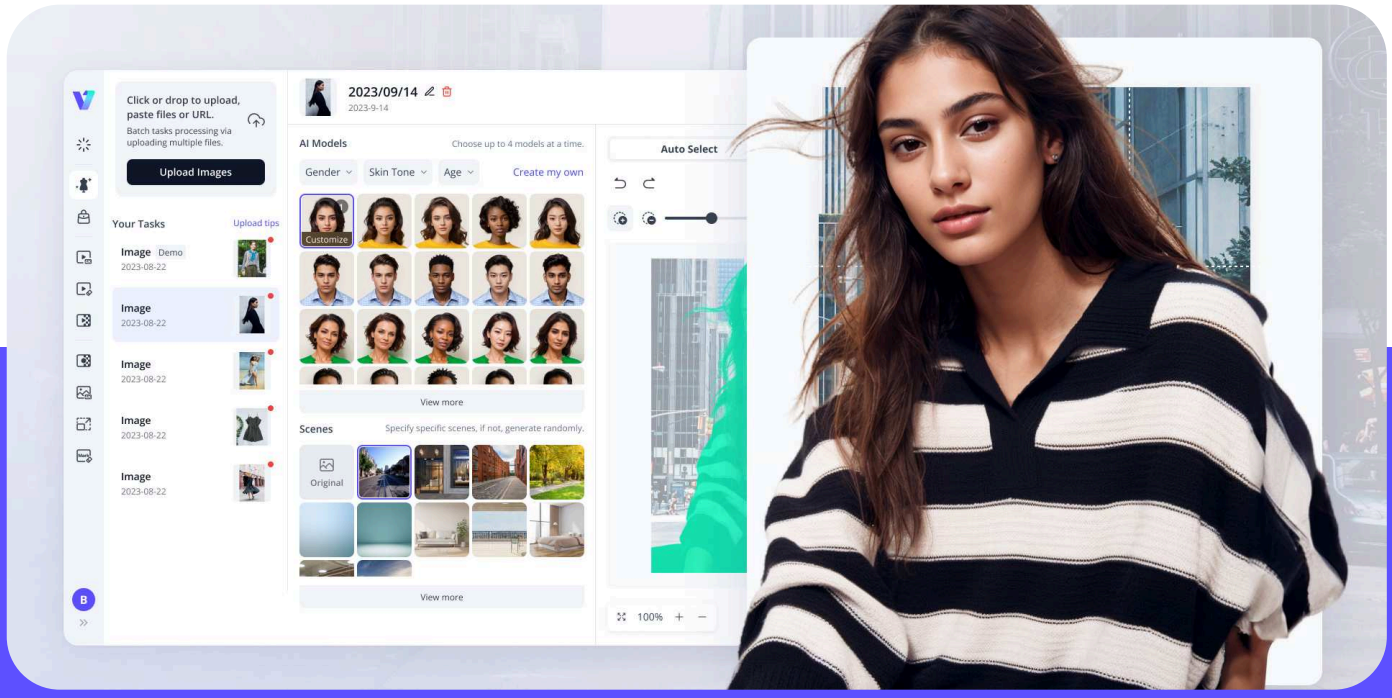
Perhaps the biggest roadblock to AI adoption is the difficulty in connecting potential to measurable value in specific process areas. With Vmake AI you're explicitly targeting eCommerce, so let's start with a baseline: help our readership understand where delays, waste, and excess cost originate in eCommerce, across content creation and customer acquisition, and how AI can have a tangible positive impact in those areas?

Benben Li: In e-commerce, significant delays and costs are often tied to traditional content creation methods—such as prolonged photo shoots and manual image editing, which can be time-consuming, labor-intensive, and environmentally costly.

Vmake AI's solution drastically reduces these bottlenecks by streamlining the generation of model images and product visuals. This not only enables rapid online catalog updates and speeds up marketing and customer acquisition efforts, but also reduces the carbon footprint associated with traditional content creation methods, helping businesses scale efficiently and sustainably. For instance, one of our clients has seen a 30% boost in operational output and a 21% increase in 7-day turnover rate. The integration of AI has streamlined their product development process, significantly enhancing product quality by minimizing the need for fine-tuning and simplifying the release of new products.

Diving a little deeper into specifics, tell us how you approached the challenge of building an AI model that can deliver high quality visuals, customisation and brand protection, and the ability to do both on-model content generation and lay-flat images.

Xuchen Zheng: The development of our AI model centered around three key pillars: fidelity, customization, and scalability.



Firstly, we've meticulously engineered our AI to produce visuals that adhere to the highest fidelity standards, by employing cutting-edge diffusion models, and training our models on a diverse dataset of high-resolution images. Such an approach enables our models to generate detailed, lifelike images that align precisely with client specifications, which is vital for maintaining brand integrity and building consumer trust for our clients.

Secondly, our deep learning capabilities allow for extensive customization, from accommodating diverse body types to incorporating varied backgrounds, ensuring each image reflects our clients' unique brand aesthetics accurately.

Lastly, we've significantly streamlined the content creation process by supporting both on-model content and lay-flat images. Such dual capability means clients can swiftly switch between displaying their clothing on mannequins and laying them flat for

photography, depending on their operational needs. This greatly speeds up the setup time and reduces the manpower typically required for dressing mannequins. This enhancement offers operational flexibility and scales our clients' ability to produce a higher volume of customized content quickly and efficiently.

Another challenge in content creation and product photography is the economy of scale. Larger organisations, that introduce enough volume and variety of product to conduct their photography in-house, have an inbuilt cost advantage over small-to-medium brands and retailers. How do you see AI helping to even that playing field and allowing smaller merchants to compete more directly with larger ones? And how important do you see this democratising effect of AI being in the future?

Benben Li: You know, there was a time before the invention of electricity when European breweries had to rely on manual brewing methods, which limited their production scale and efficiency. Then electricity was introduced, and the industry underwent a seismic shift. Initially, the largest breweries started building their own power generators, gaining a massive boost in production capacity and cost efficiency. However, as public utilities started providing electricity on demand, even the smallest breweries could scale up production without the prohibitive cost of building and maintaining power infrastructure. This shift democratized brewing, encouraging more focus on crafting better beer rather than worrying about power generation.

Just as electricity revolutionized brewing, AI is transforming the fashion industry. Before AI, retailers, especially smaller ones, struggled with the hefty costs and logistical challenges of traditional content production, from organizing photo shoots to editing images, which favored larger players with more resources. But with the advent of AI, and specifically through Vmake AI's solutions, the landscape is changing. Our AI solutions act like the utilities of the brewing industry, enabling retailers of all sizes to effortlessly and affordably generate high-quality digital visuals, without needing extensive in-house infrastructure.

This transformational technological advancement allows them to focus on what truly enhances their 'beer'—their products—by enabling rapid, cost-effective, and high-quality visual content production, much like how utility companies enabled breweries to focus on brewing better beer. As Vmake AI continues to innovate, we are unwavering in our commitment to powering this transformation, ensuring all fashion retailers, regardless of size, can use AI to captivate and engage their customers more effectively than ever before.

For most retailers and brands, growth eventually coincides with global expansion, but this brings with it the challenge of targeting a range of new demographics in a way that's culturally relevant, inclusive, sensitive and effective. How do you aim to help companies find that balance with AI? What does it look like to build AI systems that are trustworthy and cost-effective, but that also unlock that ability to globalise and localise?

Benben Li: At Vmake AI, we design solutions to cater to global markets with cultural relevance and inclusivity in mind. Our AI offerings are built not only to generate visuals but also to adapt to cultural nuances and demographic specifics, ensuring that the visual content is high quality, culturally attuned, and sensitive. By embedding flexibility and extensive customization capabilities into our AI, we are ensuring our models are free from biases and uphold the values of inclusivity and diversity, which are becoming increasingly essential as brands move into global markets.

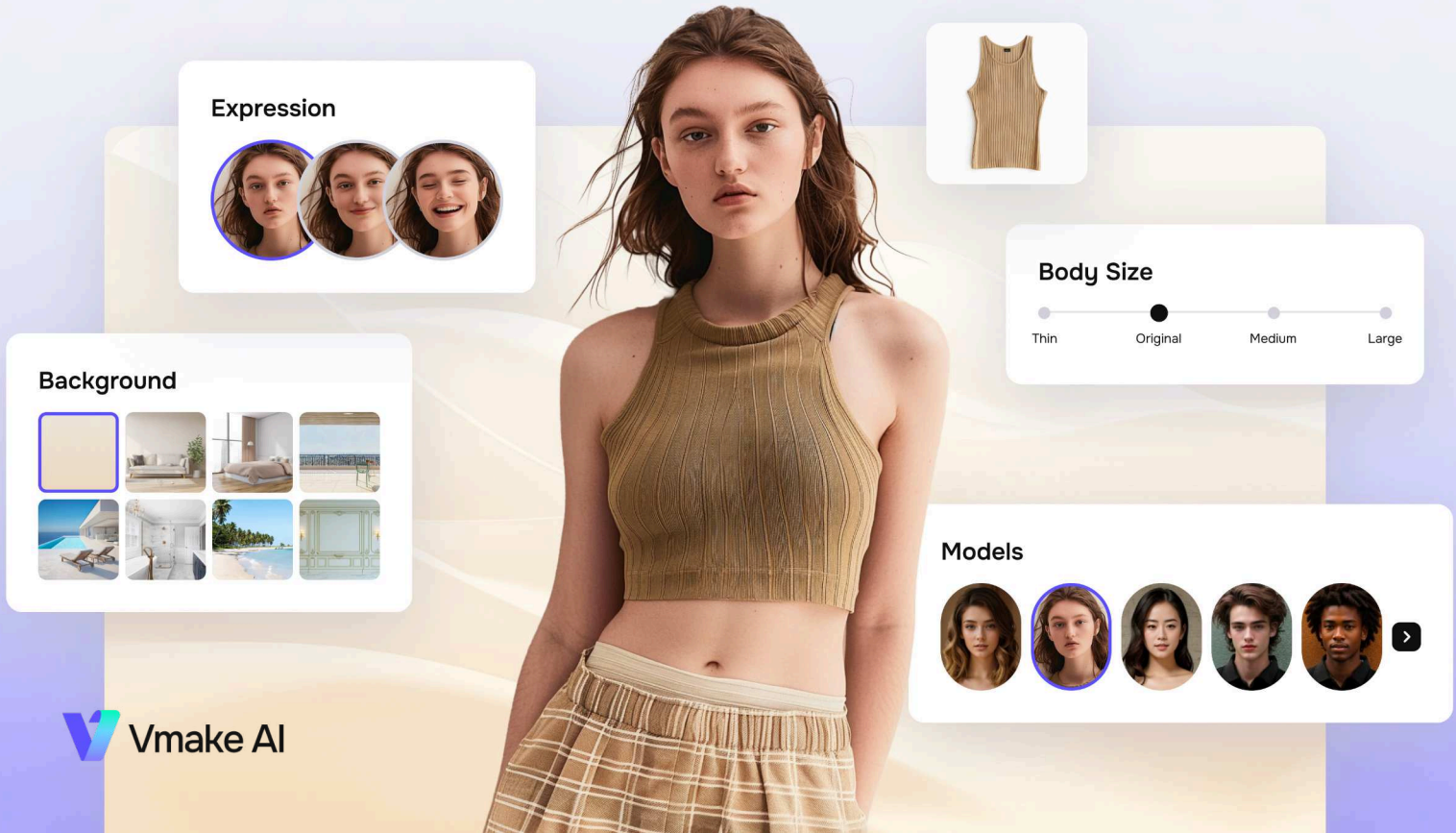
At Vmake AI, we proudly offer our clients a diverse range of over 100 AI models. These models encompass a variety of body types, ages, and cultural backgrounds, ensuring inclusivity and representation. We have also introduced a private model service, empowering our clients to create their own unique AI models that truly reflect their brand value and aesthetic. Our approach is empowering our clients to expand globally efficiently without compromising on localization.

What do you see as the near-term future of AI - both within your solution(s) and in general? Do you believe it will be a transformative class of technologies the way people expect?

Benben Li: In the near term, AI is set to radically transform the e-commerce landscape, especially in how online visuals are created and utilized to engage consumers. At Vmake AI, we recognize the intense competitive pressures fashion retailers face, particularly the need for compelling visuals to attract more customers. Vmake AI's solutions are meticulously designed to address these challenges by powering clients to stand out with high-superior, customizable visuals that significantly enhance online presence and customer engagement.

Xuchen Zheng: As pioneers in applying AI to fashion retail, we are continually advancing our solutions. We have extensively fine-tuned and customized Stable Diffusion and SDXL models to achieve lifelike portrait generation. We also harness the latest advancements from OpenAI to enrich our AI with superior intelligence capabilities in image recognition and analysis. Moreover, our technical prowess extends to proprietary developments such as our semantic segmentation model for clothing, which is highly accurate and designed to enhance the virtual try-on experience. These models allow for dynamic adjustments to clothing items on different body types, providing realistic and appealing presentations.

Benben Li: Looking ahead, we are excited about the rollout of new features and innovations designed to supercharge marketing efforts and customer acquisition. These enhancements will allow our clients to drastically amplify their marketing reach, leveraging the very best of what AI can offer. Our unwavering commitment to deep technological innovation in AI ensures that Vmake AI not only responds to current industry demands but also shapes future trends. We invest heavily in our technology to uphold our position at the forefront of the fashion and e-commerce industries, driving transformative change and delivering unparalleled value to our clients.



MARKET ANALYSIS

ADDRESSING MISCONCEPTIONS, TRACKING PRICING AND ADOPTION, AND CREATING A BASELINE FOR UNDERSTANDING THE MARKET FOR AI SOLUTIONS IN FASHION.

Conceptual art by Baris Gencel

WHAT CONSTITUTES AN AI SOLUTION?

When The Interline's team set out to create this report, our first task was to draw a line around AI solutions in order to separate them from the market analysis we have previously conducted in our reports on PLM, DPC, and Sustainability.

This proved extremely difficult in practice - not least because effectively every piece of enterprise and consumer software sold or given away in 2024 either has an AI component to it, or is developing some measure of AI integration or capability as part of their roadmap.

To narrow the market scope down for the purposes of this analysis (and the wider report around it) we settled on a few key criteria. To qualify as an AI solution for fashion, a platform must be commercially available and have paying customers in fashion, it must have direct use cases in apparel, footwear, or accessories, and it must be either an AI-native solution (where the product is indistinguishable from its AI capabilities) or a proven application that has had meaningful AI capabilities added to it that are likely to deliver value to fashion businesses at some stage of the value chain.

Obviously this still creates a very broad remit, and the primary conclusion from the work that went into assembling this report is that there are far too many AI solutions claiming to cater to fashion to count.

But the most critical paring-down step we took was to limit the purview of this report to companies that are commercially active and have ongoing customer relationships with brands that we were able to identify.

From the solutions that reached this bar, we then worked with a selection of 14 directly to interview their executives, gather their pricing model, customer names, geographical distribution and other datapoints. The "meet the key players" section prior to this one includes these details and interviews, and can be used as a starting point to make more informed choices about which AI solutions - if any - to shortlist.

In addition to this, we also canvassed publicly available information on other AI companies - both newly-emerged AI startups and scaleups, and established technology vendors that have now added noteworthy AI capabilities to their solutions.

It is important to note that the data we obtained from that broad canvassing has only been used for qualitative analysis here, while the direct information we were given by vendors contained within these pages has given us the ability to run more quantitative comparisons.

Finally, not included in this analysis are the major enterprise AI companies that do not specifically cater to fashion or retail. We do not consider OpenAI, for instance, to be a fashion AI company, and neither do we consider Cohere or even Microsoft to be fashion companies either.

Our focus with this initial baseline analysis is to begin understanding what the market for fashion-specific AI tools looks like, and how that market is likely to develop in the near future. Working from this baseline in future years, we will assemble more granular and complete figures to showcase growth (or otherwise).

Conceptual art by Baris Gencel

Conceptual art by Baris Gencel

MARKET BREADTH

Even taking account of the narrow selection criteria we applied to this analysis, we observed a very wide spread of use cases for AI. Within the pages of this report readers will find solutions applying AI to size and fit, applications designed to revolution enterprise decision-making, platforms built to tap into the new possibilities of generative AI, suites tailored to integrating those possibilities into existing digital product creation and digital transformation objectives, intelligent features and modules for planning, pricing, competitive analysis, supply chain auditing.

It is extremely clear that, while image and text generation are obviously the headline features of the current rush towards generative AI, there is no single dominant "AI application" any more than there is a single category of software in general.

> "THERE IS NO SINGLE DOMINANT "AI APPLICATION" ANY MORE THAN THERE IS A SINGLE CATEGORY OF SOFTWARE IN GENERAL."

MARKET COMPOSITION AND MATURITY

There is a misconception that the companies selling AI solutions are services are largely startups and scale-ups that are working to capitalise on an immature segment (i.e. one populated by inexperienced buyers, or by companies that do not have the grounding to be properly selective) by pitching innovative but unproven applications of a new technology.

It would be naive to say that this profile does not exist - like any technology gold rush, AI will attract its share of unscrupulous salespeople - but our analysis shows that around 70% of the companies that met our criteria are what we would define as "established". These are organisations that have proven their market fit, built solutions that users in the fashion sector find compelling, and are now either building new, complementary AI-first products or adding new AI capabilities to their existing solutions that are designed to fit a market need.

In this sense, while AI is certainly still an emerging software category, it would be inaccurate to say that it is a segment made up of emerging companies.

And indeed, of the 30% of technology companies we examined who we would class as startups or scale-ups, all have active customer bases - many of which include some of the biggest brand names in the world.

This is not to say that investing in AI technology is risk-free (this is not true of any software segment, however mature) but our finding is that AI solutions, by and large, are created by bigger companies than readers may expect - or by small companies that have already achieved success.

Conceptual art by Baris Gencel

SOFTWARE DEVELOPMENT

It will be no surprise to see that the dominant model of selling and deploying AI solutions is cloud-based SaaS with subscription pricing on either a monthly or (sometimes discounted) annualised basis. This has become an axiom for essentially every software category at this point in time, and there is little about AI products that requires any deviation from a model that vendors and customers have accepted as the norm.

We did not find a single instance of perpetual or lifetime licensing, which should also be expected given that running inference for any AI model represents a significant ongoing cost that is effectively impossible to predict and cover up-front.

It is interesting, though, to see credit and token-based pricing being comparatively rare amongst the companies we analysed. Where companies are making API calls to larger models supplied by other companies, this is the pricing structure that is being charged to them as overhead, so translating this into monthly fees with limits (or limitless monthly fees at a higher cost) is a careful exercise in understanding usage patterns and calculating margins based on averages.

For larger, more "code your own" enterprise AI platforms, tokens and credits do appear to be the pricing model of choice, but these are - notably - cross-industry tools that cater to fashion as one of many verticals.

SOFTWARE ADOPTION

Just as it may surprise people to know that the AI market is not comprised of primarily small software vendors, neither is the AI for fashion userbase made up of solo artists and SMEs.

"JUST AS IT MAY SURPRISE PEOPLE TO KNOW THAT THE AI MARKET IS NOT COMPRISED OF PRIMARILY SMALL SOFTWARE VENDORS, NEITHER IS THE AI FOR FASHION USERBASE MADE UP OF SOLO ARTISTS AND SMES."

Quite the contrary, in fact: we found that the brands making use of the AI capabilities of established tools were amongst the largest in the world, leading to the conclusion that the enterprise segment for AI is beginning to flourish. Across capabilities like enterprise search, retrieval, classification and insight, many household names are already trialling out AI initiatives or forging beyond the proof of concept stage - and we are also observing a trend for luxury brands in particular to be making early use of both generative and non-generative AI capabilities.

And the same is broadly true of the AI solutions being brought to market by new and emerging companies. While these applications may be comparatively young, the evidence provided to us (and gathered from our wider research) shows that some of the oldest heritage brands - as well as some of the biggest success stories from the last decade or so - are already making use of solutions from disruptive new companies.

This is not a market where big businesses will only buy from other big businesses; there is a demonstrable willingness for some of the largest and longest-running companies in the world to experiment with solutions from some of the newest.

Even those relatively new companies, though, will potentially have thousands of users already - such is the level of interest in commercially available, fashion-focused AI products.

Geographically speaking, there is little analysis to do on the current AI landscape for fashion: due to the international availability of cloud services and AI models, these tools are being deployed and used in almost every market, with a predictable concentration in Europe and the USA, where a large number of fashion brands are headquartered.

Interestingly, though, many of the established companies promoting new AI capabilities have deep reaches into the extended supply chain - potentially leapfrogging the usual adoption roadblock that plagues other enterprise software, where incentives for upstream implementation are low.

Finally, we are also seeing a significant amount of crossover between AI solutions - even those that, strictly speaking, have a similar functional footprint. Unlike, say, PLM or ERP, AI solutions are sufficiently diverse that a single brand may use ten or more different AI tools - just as we, personally, may interact with several different AI models and services to accomplish tasks.

MARKET LADDERING

Across some of our other reports, which focus on narrower software categories, we have been able to delineate the market into tiers based on customer size, which we map by placing brands and retailers into revenue brands that separate the large multinationals from the SMEs. This is, at least currently, not feasible for the AI market since adoption is relatively universal and since many AI initiatives and proofs of concept are kept under wraps.

It is worth noting, though, that the early indications are that AI will not follow the typical technology progression from initial adoption by the largest and best-resourced companies, followed by a steady trickle-down to smaller organisations as prices fall and deployment methods open up.

Conceptual art by Baris Gencel

> GENERATIVE AI IS, IN A VERY REAL SENSE, AVAILABLE TO EVERYONE.

Generative AI is, in a very real sense, available to everyone. It will, of course, be the case that the companies that make the biggest investments in talent are able to deliver the deepest applications, or the most carefully-tailored small models, but broadly speaking the real catalysts for the current AI boom - large, cloud-hosted models and the enterprise connectors and retrieval techniques that can feed them - are as available to microbrands as they are to massive multinational organisations.

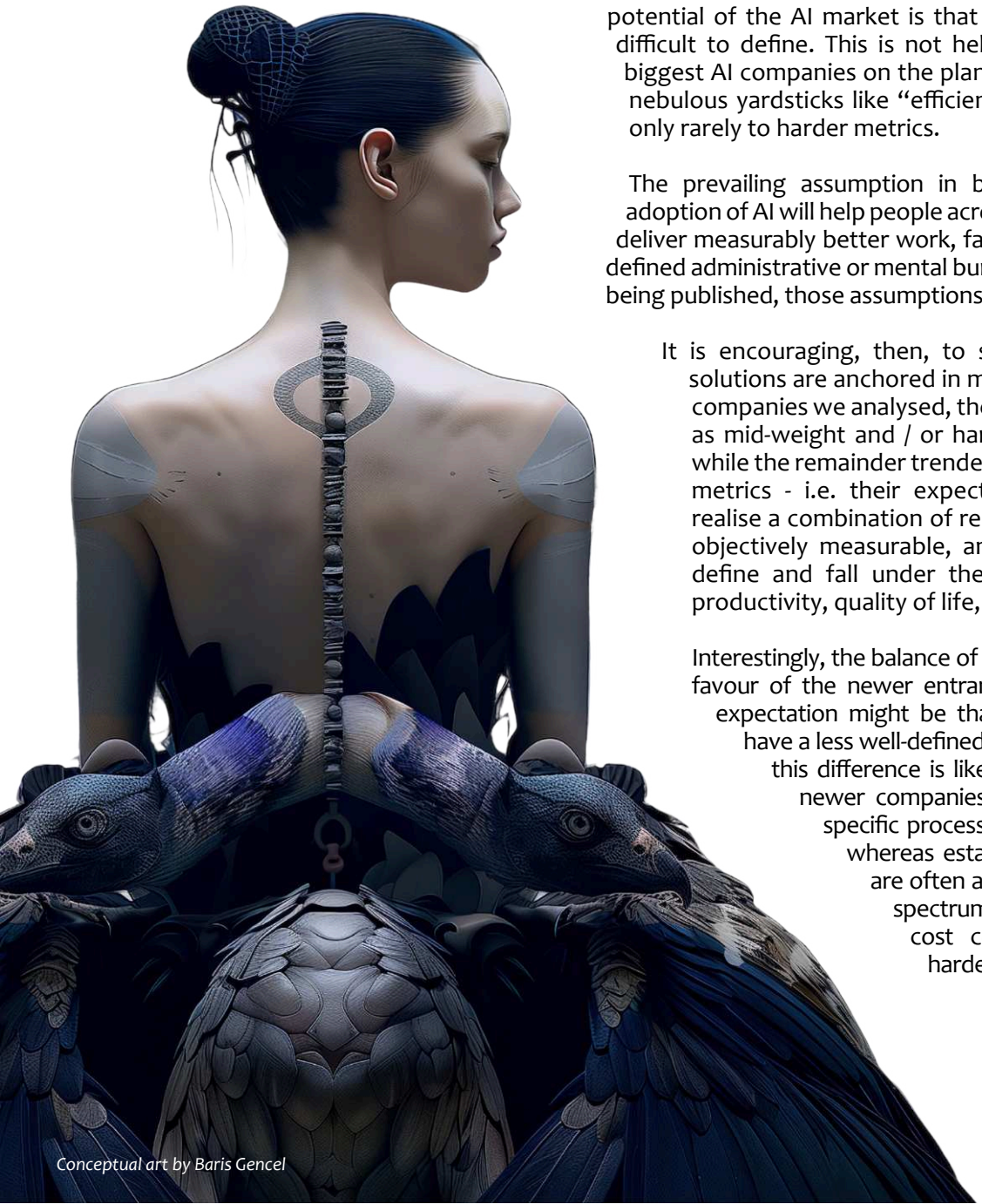
This may, in fact, end up being the most lasting legacy of AI as a burgeoning technology category, with it effectively marking the first time that a new class of capabilities has been so widely distributed from day one.

PARTNERSHIPS AND INTEGRATIONS

When we examine the partnership strategies of the AI companies we analysed, we see some points of commonality - most obviously the links between business-facing applications and those aforementioned large models, and the relationships between application developers and advisors, and infrastructure and compute providers like nVidia, AWS, and Microsoft.

Beyond the pure technical level, though, we are observing partnerships between AI companies and research organisations (a lot of AI talent comes from the research and academic sector) and between companies creating AI solutions and complementary technology vendors that create applications that can take advantage of the output of those solutions. Examples include partnerships between AI sizing solutions and eCommerce platforms, links between generative AI companies and 3D design and simulation providers and rendering solutions, hooks into digital asset management ecosystems and more.

Notably, many AI companies see themselves as providing a service that they aim to make available through their own APIs - with AI output being increasingly seen as a valuable input for other processes, or, in reverse, with the critical data contained in other processes and solutions becoming an aggregate input for layers of AI that exist as monitoring, automation, workflow, and assistance tools on top.



Conceptual art by Baris Gencel

RETURN ON INVESTMENT

Another common refrain when commentators consider the potential of the AI market is that the return on investment is difficult to define. This is not helped by marketing from the biggest AI companies on the planet, which routinely points to nebulous yardsticks like "efficiency" and "productivity," and only rarely to harder metrics.

The prevailing assumption in big tech is that widespread adoption of AI will help people across a huge range of disciplines deliver measurably better work, faster, or that it will ease an ill-defined administrative or mental burden. At the time this report is being published, those assumptions are still largely untested.

It is encouraging, then, to see that fashion-focused AI solutions are anchored in more concrete metrics. Of the companies we analysed, the majority list what we define as mid-weight and / or hard metrics (a combined 77%) while the remainder trended towards mid-weight to soft metrics - i.e. their expectations are that clients will realise a combination of results that are independently, objectively measurable, and some that are harder to define and fall under the umbrella of more general productivity, quality of life, and efficiency.

Interestingly, the balance of hard to soft ROI tilts slightly in favour of the newer entrants to the market, when the expectation might be that younger companies would have a less well-defined value proposition. In practice, this difference is likely to be due to the fact that newer companies have tended to target very specific process areas with their AI solutions, whereas established enterprise companies are often aiming to deliver value across a spectrum of different functions and cost centres - making that value harder to directly measure.

MARKET SIZING AND INVESTMENT

Due to the wide spread of different AI solution categories, the wildly divergent areas where they deliver value on vastly different scales of investment, and the crossover of customers between different (and even competing) solutions, it is difficult at this point in time to assemble a monetary market size for the AI solutions category in fashion.

In place of that analysis, we can say with confidence that the amount of investment flowing into this sector is likely to be unprecedented. While the financial performance of infrastructure and hardware providers like nVidia has obviously garnered headlines, in relative terms investment in new AI companies (and in companies who have a clear pathway to adding meaningful and marketable AI capabilities to their existing products) in fashion is set to eclipse investment in most other software categories.

Perhaps needless to say, this is fertile ground not just for technology companies building solutions, but also for management consultants and advisors. More than any time in the last two decades, there is now a huge swing potentially taking place in how fashion businesses operate, and there are entrenched methods, embedded solutions, and long-held ways of working that are all open to being challenged and possibly augmented by AI.

Still uncertain at this stage, though, is the extent to which brand and retail AI projects have crystallised into the measurable value that technology vendors promise. The last eighteen months have been characterised by experiments and proofs of concept with generative - at least publicly - but at the same time applications of deep learning and other more traditional definitions of AI have continued.

Which leaves the AI market for fashion in something of a middle ground - albeit a very well-funded one. And the challenge for both parties (technology vendors and customers) is how to treat AI as both the next major wave of enterprise technology, with huge volumes of untapped and unforeseeable potential, and as another part of the technology toolkit, to be measured against the success criteria that typically apply.

The Interline will be conducting a deeper analysis of the fortunes of new AI projects, and the fashion industry's ambitions for further transformation and scale, as part of an additional project later this year. And our team also looks forward to picking up this baseline and being able to build market laddering, sizing, and growth statistics on top of it in 2025.

In the meantime, the currency that appears to matter most in AI may not be investment - even if a huge amount of this is available - but trust. And this is something that the technology vendors present in this report, who parted with their information, have already begun to build.

The Interline would like to extend our thanks to every technology and service provider who took part in this first AI Report, and to all our editorial contributors - as well as our friends and sponsors at MMGNET - the fashion ecosystem behind milestone industry events and content.

We hope you found value in this publication, and we encourage you to bookmark The Interline for more coverage of AI as the technology, and the industry around it, develops - both in regular stories, special projects, and in the release of our next AI Report in the spring of 2025.

If you are a technology company creating AI-native tools or adding meaningful AI capabilities to existing platforms, or a brand, retailer, or supplier using them, and you'd like to be featured in next year's AI Report, please contact us.

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