



Is AI the future of Sustainable or Green Fashion: A Review Report

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Abstract -

Technology has surely altered many facets of humanity throughout history, and more recently, artificial intelligence has undoubtedly had a big impact on society, business, and the environment.

Another element that has an impact on the planet and people's lives is the negative impact that the entire fashion industry has on the environment. Fashion generates a vicious cycle from manufacturing to consumption where unsustainable behaviours are continuously used. However, there is growing awareness about these harmful methods and a call for a more sustainable fashion industry.

Could artificial intelligence play a part in creating a sustainable fashion system in this scenario? This qualitative research aims to provide an answer to that issue by looking at how artificial intelligence might be used to produce and use clothing in a sustainable way.

Keywords:

Sustainable, Fashion, Artificial Intelligence, Technology, Impact, Fashion Industry, creative ability, design critic,

Introduction -

The majority of people were raised believing that artificial intelligence only existed in fiction. As it turns out, artificial intelligence is real and more helpful than we could have ever imagined. In our daily responsibilities, especially in the fashion sector, we humans make mistakes. The production department may become frustrated and disappointed if we lose a stitch or two in the sewing room or cut the cloth incorrectly and have to start over on a dress that took days to produce. AI can help in this situation. A new relationship between fashion and artificial intelligence is one that will undoubtedly be successful for many years to come.

Artificial intelligence (AI) is revolutionising the fashion business as it gains importance in several of its fundamental sectors. AI is having a big impact on the fashion industry, affecting everything from design to manufacturing, logistics, and marketing.

What is AI?

In the simplest terms, AI which stands for artificial intelligence refers to **systems or machines that mimic human intelligence to perform tasks and can iteratively improve themselves based on the information they collect**. AI manifests in a number of forms. A few examples are:

- Catboats use AI to understand customer problems faster and provide more efficient answers

- Intelligent assistants use AI to parse critical information from large free-text datasets to improve scheduling
 - Recommendation engines can provide automated recommendations for TV shows based on users' viewing habits
- AI is much more about the process and the capability for super powered thinking and data analysis than it is about any particular format or function. Although AI brings up images of high-functioning, human-like robots taking over the world, AI isn't intended to replace humans. It's intended to significantly enhance human capabilities and contributions. That makes it a very valuable business asset.

How AI is Impacting fashion Industry -

Artificial intelligence (AI) is revolutionizing the fashion industry, from design, production, shipping, marketing, and sales. A high percentage of fashion stores that have not implemented AI are now risking insolvency. The fashion and retail industries' investment in AI technology is predicted to reach \$7.3 billion per year by 2022.

Let's look at some of these AI applications and how firms adopt unique methods to enhance their business models.

1. Apparel Designing –

Artificial intelligence (AI) solutions for fashion design have been underutilized in the past, but they have enormous potential for an industry that is rapidly automating its design and presentation processes. As more research scientists develop new models for creativity, the potentials of AI become more evident. Artificial intelligence (AI) can help fashion manufacturers understand consumer desires better and make better garments. Zalando, a German fashion marketplace, was one of the pioneers of AI-powered fashion design based on the customer's favourite colours, textures, and other style preferences in collaboration with Google. Synflux is another company blending fashion and AI. They're collaborating on a project called Algorithmic Couture. Which creates optimal fashion pattern modules, modelled using computer-aided design tools.

2. Virtual Merchandising –

Augmented reality and virtual reality are bridging the gap between online and in-store purchase experiences. Fashion businesses use augmented reality (AR) to provide new features to traditional and online purchasing. The Want an app allows users to try on several pairs of sneakers, point your camera at your feet, and presto — you're virtually wearing your selected footwear.

3. Visual Search –

You can search online, but you'll just get a bunch of results that are mostly irrelevant and have no real connection to the person you want to buy it for. Some AI-enabled apps allow users to take screenshots of online clothes, detect shoppable gear and accessories in the image, and then discover the same outfit and shop for similar fashions. One example is, Lykdat, a reverse image tool to find fashion goods using photographs.

4. Improved customer personalization -

Deep learning technologies such as AI and ML enable fashion firms to follow individual client buying behaviour and tailor shopping experiences to meet their customers' needs and expectations. Nike has pushed personalization to the next level by allowing customers to design their sneakers with the Nike by You platform. Already, product suggestions based on such algorithms account for 35% of what people buy on Amazon, according to the company's own data. The company is not surpassed in the personalization game.

5. Automated authentication –

Customs and border officials are employing AI technology to help determine authenticity of high-end products. Computer Vision powered by ML is also used to detect fashion forgeries and counterfeit items. Detecting fakes formerly required professional customs or other law enforcement personnel's trained eye. Some organizations use AI to examine and identify potentially counterfeit products by relying on massive datasets and pictures. Entrupy has created artificial intelligence-powered authentication solutions for firms that acquire and sell high-value commodities. The company's cutting-edge authentication solutions are powered by a mix of ML and Computer Vision. Verifone has

developed a new way to authenticate handbags and accessories from major luxury brands such as Louis Vuitton, Chanel, and Hermès. The company's technology is being used by resellers and professional buyers of luxury goods.

6. Trend Forecasting –

Fashion forecasters generate trend forecasts, which product developers use to design garments and accessories for businesses. Trend forecasting is the branch of the fashion business concerned with projecting new fashion trends. Forecasters look at color, styling techniques, fabric textures, and so on to predict what will pique consumer interest. Heuritech has developed an in-house deep-learning technique that uses artificial intelligence to spot emerging trends in real-world photographs posted on Instagram, Twitter and Tumblr.

Benefits of AI in Fashion Industry –

Repairing the fit, trends forecasting and authenticating upscale items are all divined by collecting data. Designers use AI to create fabrics and garments; consulting firms use it to predict trends for their clients.

TOP benefits of AI IN FASHION

1. Creating better fit and more accurate sizing
2. Authenticating items to prevent knockoffs
3. Streamlining manufacturing
4. Reducing returns

With this grounding, let's see how AI can make fashion smarter and more sustainable.

AI CAN FIX FIT

Ill fit is the top reason for returning clothes bought online, a new startup says. Bodify asks shoppers for photos, then uses computer vision to determine their measurements. "You'll discover these brands you didn't even know about," McKinney said. Data will help manufacturers coordinate sizes of different types of garments and determine the best place to make garments. "The same pair of jeans can be made in China and in Indonesia, and they'll fit differently," McKinney said.

AI HELPS MAKE DECISIONS

Styleriser, a B2B German company, makes a software that employs AI in image consulting. Customers upload a picture to the retailer's online store and a virtual stylist analyzes the photo. According to CEO and cofounder Mark Hunsmann, the product promotes shopping confidence, which raises purchase readiness by 80%. Additionally, he continued, this results in lower returns, which support the industry's viability.

AI HELPS WITH DESIGN

Fashion designer Hussain Almosawi taps AI for inspiration and idea generation. He says the technology has helped him generate more ideas than he could without it. AI, he said, aids collaboration by expanding person-to-person collaboration to human-machine collaboration.

AI AIDS MERCHANDISING

Augmented and virtual reality can help online shoppers more fully comprehend what a garment looks like, and how it will look on them. Certain apps enable customers to project garments onto their actual bodies, then play with color, texture and accessories to get a look that's just right.

"Product placement is a huge part of building hype around a product...With AI, you can quickly generate cool and relevant backgrounds for your product in different styles."

AI CAN "GREEN" FASHION

A tool created by accounting giant Deloitte uses AI to spot design infringements. Dupe Killer uses information from millions of photographs to detect subtle but distinct design elements. Another solution uses computer vision to authenticate "real" items and thus help customs officials spot fakes.

AI CAN REDUCE COUNTERFEITING

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AI CAN ADVANCE WEARABLES

Artificial intelligence could be used to make clothes better for sports and performance. Smart fabrics could sense when the body is hot or sweating, and open up to allow more airflow. By learning a wearer's body movements and patterns while playing sports, AI could create areas in the garment that are stiffer or flexible.

Fashion Brands Implementing AI

AI may be used to improve every aspect of a fashion firm, including marketing, e-commerce, and business operations. Popular fashion companies using AI in their business models include Zara, H&M, Dior, Macy's, and Nike.

How H&M Uses Artificial Intelligence to Predict Trends

The Swedish fashion empire H&M employs more than 200 data scientists to predict and analyze trends. Its AI algorithms obtain fashion trend data by capturing information on search engines and blogs. It forecasts new trends the company's buyers should be aware of and informs them of whether they should restock currently popular merchandise.

How Zara Uses Artificial Intelligence to Predict Trends

Zara employs AI robots to fetch requested orders for customers using its Buy Online, Pick-Up in Store (BOPIS) or Click and Collect options. The company has also hired Tyco to install microchips into its clothing's security tags so that they can identify where within the supply chain a particular style and size is located.

Can AI Replace Designers

Designers will soon be replaced by AI, but for current designers rather than future designers. AI would enable designers to collaborate creatively and as a tool to adapt to the changing demands of the industry. Design is about seeing ahead, moving through time, and determining what is required next. Humans are the only species with the unique ability to foresee future events and how things will change. Co-creation between designers and AIs is more likely to happen in the near future.

Can AI Predict Fashion Trends

Heuritech's proprietary technology scans 3 millions of social media images and videos each day and analyzes more than 2000 fashion details. Results of the analyses include current trends and forecasts about fashion markets and products. This informs the strategies of leading brands, including Louis Vuitton and Dior Moncler, and Havaianas.

IBM's Watson AI can analyze thousands of images from fashion shows and analyze insights into which colors and patterns retailers should look for in the upcoming season. When a new product hits the market, if AI can predict the sales of that product two months in advance, it can help minimize unsold inventory.

How AI is helpful for sustainable or Green Fashion

The fashion industry has a huge impact on our planet from multiple aspects. Our unsustainable consumption habits and how we dispose of apparel has made it even worse. Mckinsey has already identified "Sustainability Credibility" as one of the 10 fashion agendas in 2018.

However, altering a company model is not simple. Can we quicken the pace of change by employing digital technologies? A few options are shown below.

1. Marketing Campaigns and Fashion Shows going virtual

In Mckinsey's 2019 Apparel CPO Surve, 83% believed that physical samples would be used less often than virtual samples by 2025. For the big luxury brands, many fashion shows have gone virtual in creative ways. The Fabricant is one such —it is the "world's first digital fashion house".

2. Virtual Fitting Room and better customisation reducing returns and enhancing customer experience

As 3D virtual model technologies are made available, virtual fitting rooms for every individual soon emerge. MySize has developed technology to make these possible with just a smartphone camera. Recommender systems and AI-based personalised styling are upgrading customers' online shopping experiences. This streamlines the traditionally frustrating experience of searching online for the clothes that fit your style. Using an initial Style Quiz, Stitch Fix develops a Style Profile for each customer, combining it with data from the consumer's personal traits, garment traits, post-Fix feedback, past interactions with the service, and goods data to generate predictive algorithms.

3. Propelling the second-hand market

The second-hand clothing market is expected to expand rapidly from \$24 billion (in 2018) to \$51 billion by 2023. AI has the potential to improve customer experiences in the used clothes market from a variety of different angles, including more reliable pricing and better styling services. Vue.ai were used to process images using image recognition, to provide accurate pricing and tagging based on patterns, colour, fashion edginess.

4. Rental Fashion meets AI

Increasing clothing utilisation is identified as one of the ambitions for a more sustainable textile economy by the Circular Fiber Initiative. In late 2021, Rent the Runway — a rental fashion e-commerce platform went public, marking an important milestone in the rental fashion market. The platform works on a membership subscription-based model, allowing customers to rent clothes for a flat monthly price.

5. AI sales prediction prevents stockpiling

The fast fashion industry creates enormous waste as fashion trends change day by day. One of the most obvious use cases of Artificial Intelligence in this aspect is to use advanced data analytics and machine learning sales forecasting. Being cost-saving and environmentally friendly at the same time, much research has been devoted to this area.

Conclusion –

For fashion brands, AI and ML can be a game-changer. It will allow for faster customer service, better user experiences in the store environment and more sustainable business practices.

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