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### **ARTIFICIAL INTELLIGENCE TOOLS FOR CREATING A CLOTHING COLLECTION**

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Artificial intelligence is advancing rapidly and is currently extensively employed across diverse sectors, fashion included. From crafting clothing designs to predicting consumer preferences, AI is revolutionizing the processes of fashion production, sales, and consumption. Through its capacity to scrutinize vast datasets and discern patterns, AI is introducing novel possibilities for designers, retailers, and consumers.

Research in artificial intelligence is concentrated on formulating algorithms capable of addressing intricate problems, drawing logical conclusions, and emulating human reasoning. In the fashion industry, AI is already widely applied in several capacities, encompassing:

- Trend prediction and procurement.
- Merchandising and analysis.
- Product design and development.
- Styling and visual merchandising.
- E-commerce.
- Retail operations.
- Work schedule optimization.
- Multichannel shopping.
- Content generation, among other areas.

Artificial intelligence holds significant potential within the fashion industry to enhance efficiency, devise personalized offerings, foster sustainable production, and mitigate adverse environmental impacts. AI-driven fashion concepts are becoming increasingly prevalent as technology evolves and ongoing research explores the applications of successive generations.

Over the past six months, with ChatGPT, Lensa AI, Midjourney, Stable Diffusion and Dall-E entering the scene, so-called generative AI software has exploded. Several leading brands in the fashion industry have taken advantage of this trend, although so far they have limited the use of such applications mainly to communication purposes.

Modern AI-enabled generators are widely used to optimise product industrialisation, as well as sales and customer experience. However, there is very limited use of AI tools for the design process. In 2020, the Covid-19 pandemic gave a boost to digitalisation, and AI technology has advanced even further.

The problem of the creative concept (the main idea, the semantic orientation of the goals and objectives of the design) occupies a central place in the problems of modern design. While the fashion sector has traditionally relied on manual design, AI-based solutions offer new ways to support production. From using images of previous collections and customer data to generate new design ideas to

tracking current trends, AI is proving to be an invaluable tool where physical labor is not possible.

Models created with the help of artificial intelligence impress with their realism and can be customized to the specific needs of the brand. AI fashion model generators are revolutionizing the fashion industry, making it more inclusive, efficient and cost-effective.

In the classical approach, the creation of clothing sketches was carried out by the designer manually on paper. Later, graphic editors such as Adobe Photoshop, Adobe Illustrator, CorelDRAW and others began to be used [1].

Unlike traditional algorithms, neural networks are not programmed in the usual sense, but are formed according to the tasks, which is the main advantage of this type of artificial intelligence. A neural network can detect complex dependencies between input and output data, and find and perform generalizing actions.

The process of creating a collection of clothing models using different types of neural networks has its own peculiarities. In general, the process of creating a clothing collection consists of the following stages:

- Choosing the theme (idea) of the collection (setting the task, forming the concept and design image);
- Creating a visual mood board;
- Creating a textual description - a prompt - a short textual instruction that helps artificial intelligence to correctly perform a human task;
- Registration in the relevant neural network, creation of an account → Work in the neural network;
- Generating a collection → Editing if necessary → Uploading a satisfactory result.

To achieve an optimal result, you should enter the neural network with a ready-made idea, a ready-made prompt, and ready-made visual referents [2].

The number of generations depends on the level of compliance of the final result with the author's intentions. From a number of generations, we select the most successful option and upload it as the final one.

The desired result, which largely corresponds to the intention of the author of the collection, is shown in Fig. 1.



**Fig. 1. Collection of women's jacket models adjusted and generated by Leonardo.Ai**

AI generators help fashion designers in many aspects of the creative process, making it more efficient and innovative by creating new product designs based on different parameters and styles. Fig. 2 shows an example of obtaining possible variants of one model from a previously designed collection by generating

a reference (a graphical representation of the model) and a prompt with details of individual structural elements.



**Fig. 2. Variants of the model of the women's jacket, generated with the help of the referent and prompt with the detailing of structural elements**

It is advisable to use different types of neural networks at different stages of work. Namely:

- at the stage of developing the concept of the collection - neural networks for working with text such as ChatGPT, Inferkit, Talk to Books, BLOOM, Namelix, smodin.io, etc;

- at the stage of translating the prompt into different languages - artificial intelligence translators such as DeepL, Google Translate, iTranslate, Microsoft Translator, Reverso Translate and Dictionary, SeamlessM4T, etc;

- at the collection generation stage, neural networks for working with images such as Midjourney, Leonardo.ai, Stable Diffusion, Dall-E 2, NightCafe, Gaugan, Images.AI, etc.

Thus, there is a different type of neural network for each type of activity, each of which has its advantages and disadvantages.

From the analysis of the presented images (Figs. 1,2), it follows that a significant part of the generated details of a women's jacket are unique and original. Among these elements, the top of the sleeve, collar, lapels, fastener and others stand out the most. They have the potential to be used in the creation of an author's fashion collection, giving it a unique character and aesthetic sophistication.

However, certain elements of the products require further development to meet a number of technical and aesthetic requirements. This may include optimising the design, additional material processing or taking into account functional features. Another important aspect is the interaction of each part in the context of the overall composition of the product.

The most important factor in shaping the final result is the author's professionalism, experience and creativity. The successful combination of these elements guarantees the creation of a unique and promising fashion collection that will impress with its originality and sophistication. This approach will not only highlight the designer's talent, but also ensure recognition and success in the modern fashion world.

The result of developing sketches of the generated models of women's jackets is presented on Fig. 3.



**Fig. 3. Technical sketches of the generated models of women's jackets**

Thus, the use of artificial intelligence generators to create clothing collections or any light industry products has a number of positive aspects and advantages:

- Creative inspiration and choice of ideas: AI generators can provide designers with new, unexpected and creative ideas;
- Increased productivity: AI generators can automate some routine tasks, such as generating prototypes, design options, data and trend analysis;
- accelerating the development process: AI generators can speed up the collection development process by reducing the time required to generate ideas, prototypes and design options;
- Personalisation: AI generators can help create personalised products, taking into account the unique preferences and needs of each customer.

The successful use of AI depends on the designer's ability to interact effectively with these tools and adapt their results to their creative needs and market requirements.

### References

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