

Impact of Artificial Intelligence on Garments and Fashion Industry

Naglaa M. Teama

Professor in Fashion Design, Department of Ready-made Garments, Faculty of Applied Arts, Damietta University, Damietta, Egypt. naglaateamal@yahoo.com

Gehad E. Ali

Researcher in the Department of Ready-made Garments, Faculty of Applied Arts - Damietta University, Damietta, Egypt. gehadesmail397@gmail.com

Tariq M. Zaghloul

Associate Professor, Department of Ready-made Garments, Faculty of Applied Arts, Damietta University, Damietta, Egypt. tarekzaghloul@yahoo.com

Abstract:

Artificial intelligence is one of the most important outcomes of the Fourth Industrial Revolution, playing an increasingly rapid and evolving role that has revolutionized most fields. Artificial intelligence is part of the digital technology ecosystem. The shift to digital technology and the development of information and communication technologies have become among the reasons that have led to the creation of an ecosystem consisting of digital technologies, as the digital transformation of the fashion industry affects its ability to produce and use data that was not technically or financially possible before. This study aims to find ways to benefit from artificial intelligence technology in the field of clothing and fashion industry. The study found that AI-powered fashion design platforms unify the different steps of the designer process, from product ideation to e-commerce enablement. They help designers create new collections, including automated design suggestions. AI-powered retail platforms help e-commerce apparel companies improve their customer experience and increase sales. Smart garment factories operate primarily on AI and data analysis with the help of robotic arms. These factories allow for a reduction in the time it takes to complete the production process from 90 days to two weeks. Artificial intelligence has recently become a door that opens to limitless innovations and leads to more revolutions that can radically change human life. With the tremendous and rapid technological development and the transformations that the world is witnessing in light of the Fourth Industrial Revolution, artificial intelligence will be the engine of progress, growth and prosperity in the coming few years. It and the innovations that it entails can establish a new world that may now seem like a fantasy, but current signs confirm that the creation of this world is imminent. As Artificial Intelligence (AI) becomes part of the way we do business in every industry, the fashion industry is no exception; from product discovery to robotic manufacturing, AI has made its way into almost every sector of the fashion value chain. Fashion has always been forward-looking and embraces new technologies as they emerge, just as AI moves as fashion. Artificial intelligence is a computational system that simulates human cognitive functions, and shows great potential in performing complex tasks such as data analysis, object recognition, image processing, and independent problem solving. The fashion industry has shown increasing interest in applications of artificial intelligence (AI), extending to big data analysis in the supply chain, sewing robots, color trend prediction, and supporting clothing design systems. Text-to-image sites have gained a lot of attention after an emerging artist won the prestigious state award at the Colorado State Fair in 2022 using the Midjourne site, and this has encouraged designers and artists to explore more of the capabilities of artificial intelligence in generating more initial ideas and creativity through AI applications.

The research problem can be summarized in the following questions: 1- To what extent can AI applications contribute to accelerating the development of plans, goals and initial concepts for the design stages and thus reaching the greatest possible vision to achieve the results? 2- What are the artificial intelligence applications used in ready-made garment factories? The research aims to study the impact of artificial intelligence applications in the design process of ready-made garments and some applications used in the production process of ready-made garments.

Results and discussion: The research results can be summarized in the following points: Artificial intelligence is changing the traditional methods in the clothing and textile industry. The use of AI technologies in the clothing and textile industry will help reduce the cost of clothing and textile manufacturing. The use of AI reduces the time required to manufacture clothing. AI can improve many parts of design, manufacturing, and retail processes to reduce costs, speed up production, personalize the customer

experience, and improve quality control. AI-powered fashion design platforms unify the different steps of the designer's process, from product ideation to enabling e-commerce. AI-powered fashion design platforms use advanced algorithms to help designers create new collections, including automated design suggestions. AI-powered retail platforms help e-commerce clothing companies improve their customer experience and increase sales. Smart clothing factories have been established that are primarily based on AI and data analysis with the help of robotic arms. These factories allow reducing the time required to complete the production process from 90 days to two weeks.

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