Kurdish Studies
Apr 2023
Volume: 11, No: 2, pp. 3791-3796
ISSN: 2051-4883 (Print) | ISSN 2051-4891 (Online)
www.KurdishStudies.net

Received: May 2023 Accepted: June 2023
DOI: https://doi.org/10.58262/ks.v11i2.273

The Role of Artificial Intelligence and 3d Printing in the Fashion Industry

Nashwa Mohamed Esam Abd El Aziz[1] Naglaa Muhammad Farouk Qandil[2] Randa Mounir Al Kherbawy[3]

Abstract

Artificial intelligence is one of the most important technologies currently used in all industries, not just fashion. Artificial intelligence is the simulation of human intelligence using computers, programs, and machines, and has recently been used by fashion industry companies for many and varied purposes. It also has a role in enriching the fashion and 3D printing industry. Applications of artificial intelligence in fashion include the ability to improve customer experiences, analyze and predict trends, and understand purchasing patterns. Fashion aesthetics also uses virtual and augmented reality technologies, as virtual reality includes a fully simulated environment, while augmented reality transfers interaction and simulation to the real world The research problem is determined to what extent is the impact of 3D printing and artificial intelligence on enriching the fashion industry?The research seeks to achieve three basic approaches: the entrance to the impact of 3D printing on fashion designs, the entrance to studying the concept of artificial intelligence and its applications, and the entrance to enriching the fashion industry. Through these approaches, the concept of artificial intelligence and the various plastic capabilities of this modern technology were clarified, and the applications of artificial intelligence and its importance in the field of Printing in general and the field of the fashion industry in particular. The research followed the descriptive, analytical and experimental approach. Accordingly, we made several designs, but they were processed using an artificial intelligence system, which is one of the most important modern design methods and sources for use in 3D printing to enrich the fashion industry. Among the most important results we reached was that the hypotheses were verified and it was proven that artificial intelligence applications and 3D printing can be used to enrich the fashion industry.

key words: *The impact of 3D printing - artificial intelligence - enriching the fashion industry.*

The Introduction

The Fourth Industrial Revolution created major trends to influence the course of society, and resulted in a revolution in the way business is managed. It is considered the spirit of the age. We are in the midst of this technological revolution, as societies tend to adopt these developments to increase and benefit from the advantages and achieve sustainable and comprehensive growth. In essence, it plays the role of a link between All cutting-edge and

[1] Department of Home Economics - College of Culture and Arts- Abha - King Khalid University, P.O. Box 3236. Abha,
Email: namohmed@kku.edu.sa
[2] Associate Professor at the College of Culture and Arts
Department of Home Economics - College of Culture and Arts- Abha - , King Khalid University,
Email: P.O. Box 3236. Abha. nalsaied@kku.edu.sa
[3] Associate professor of clothing and textile, Head of the fashion design department, Department of Home Economics - College of Culture and Arts- Abha - King Khalid University, P.O. Box 3236. Abha
Email: ralkrbawe@kku.edu.sa

emerging technologies to provide enhanced, precisely tailored products and services that improve people's lives. (Mohamed Madahi, 2022—p. 447)

Artificial Intelligence has become a part of the way we do business in all different industries, and the fashion industry is no exception; from product discovery to AI part of AI and so on to almost every sector of the value chain, fashion has always aspired to a finishing touch and remains new when it comes to... Develop it as artificial beauty did and it wants at the speed you want, (Leanne Luce, 2019, p. 222).manufacturing, AI has made its way into almost every sector of the fashion value chain. Fashion has always been forward-looking and seizes new technologies as they emerge. Artificial intelligence works and moves at the speed at which fashion moves. Therefore, this research aims to study artificial intelligence, its methods and applications, study the fashion design stage, predict fashion trends, and the developments brought about by artificial intelligence through its applications and effective expression in digital fashion. The applications of technology and artificial intelligence will be limited to some ready-made clothing factories.

Research Problem

Due to the scarcity of academic studies that have dealt with this topic, which requires more specialized research in this field, the research problem is determined in the following question:

To what extent has 3D printing and artificial intelligence enriched the fashion industry?

Research Aims

The research aims to

Learn about artificial intelligence through virtual and augmented reality .*Highlighting the fashion industry using 3D printing and artificial intelligence.

*Reaching the various possibilities of artificial intelligence technology, its various algorithms, and its applications in various practical aspects.

*Creating contemporary designs suitable for enriching fashion and giving it an aesthetic aspect using artificial intelligence systems..

Research Importance

The importance of the research is due to

- Enriching the fashion industry using 3D printing and artificial intelligence
- Highlighting artificial intelligence, its applications and advantages in the field of fashion printing.
- Promoting research in the field of artificial intelligence in creating 3D designs to enrich the fashion industry

Research Hypotheses

The fashion industry can be enriched through applications of artificial intelligence and 3D printing.

Search Terms

artificial intelligence

It is the field of computer science that looks at the logic behind human intelligence. This field searches for a way to understand how we think and recreate this intelligence in machines. Due to its nature, artificial intelligence extends across human activities, which makes it relevant in different ways to every industrial

3D Printing

D printing is a technology that supports the designer and the innovation process. It is called additive manufacturing, manufacturing in 3D shapes from a digital file. These additive manufacturing technologies are suitable for developing a product, visualizing data, and rapid printing of the model.

Research Methodology

- The research follows the experimental descriptive method.
- Descriptive approach: studying the meaning of artificial intelligence, its applications, and its uses in 3D printing and enriching fashion.
- Experimental approach: This is done by conducting experiments using 3D printing and artificial intelligence applications to create contemporary designs to enrich fashion.

Search Limits

•Objective research limits:

*The study is limited to the use of artificial intelligence applications

*Use of 3D printing

*Printing on cotton canvas.

The Research Sample

The research was limited to implementing some of the innovative designs using 3D printing and artificial intelligence applications to enrich fashion.

Search Tools

-Applications of artificial intelligence that are suitable for creating contemporary designs

-Using contemporary designs using 3D printing

Canvas to print on

A questionnaire form to measure the arbitrators' opinions.

Procedural steps for research:

First: The theoretical framework: It includes:

Second: Practical framework:

By benefiting from the results of the study in the theoretical framework

First: The Theoretical Framework

3D Printing

Three-dimensional printing is a technology that supports the designer and the innovation process, and it is called additive manufacturing, manufacturing in three-dimensional shapes from a digital file, and these additive manufacturing technologies are suitable for developing a product, visualizing data, and rapid printing of the model (Bronwyn, 2017, p. 86.(

As for procedurally, the researchers have defined it: a visual experience based on interaction with the holographic image by mixing advanced technology with art, especially fashion printing, and the produced works represent the modernity and materiality of a technological technique that reduces time, cost and effort

3D printing is a common name given to a group of additive manufacturing techniques that produce objects, and are used

3D printing as a prototyping method has been and continues to be a very effective way to test and evaluate products before committing

With more expensive mass production techniques. Prototyping is still a major application of 3D printing, but there is more to it

Applications due to developments in materials and machine capabilities.)1, P.2015Tajeddin,Zahed.

Second: Practical framework:

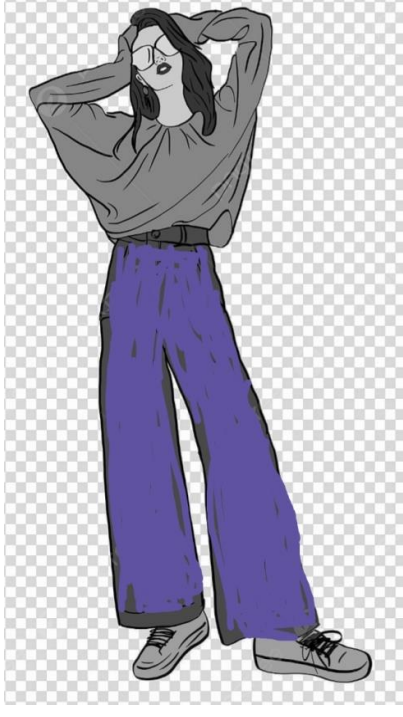
Fashion Design Process

Identifying the client: Designs may be specific to a specific client, so some information must be known that may affect the design process, such as the budget that the client has, or knowing the style of clothing he prefers, and other information. Initial drawings: This is the stage in which the designer begins searching for sources to inspire his design idea, and begins implementing some ideas in the form of initial drawings. In order to reach the desired idea, he must draw many initial drawings. Each drawing adds or modifies an idea to obtain a distinctive design. . Choosing colors and fabrics: After determining the shape of the piece to be designed, the designer chooses the appropriate colors and fabrics, and during this stage he uses paper"(https://mawdoo3.com)

Making a preliminary model: After the designer determines the shape, colors, and fabrics that he will use, he will have obtained his comprehensive plan for the designed piece, so he works on sewing a preliminary model of the design until he obtains a clear copy of the design that can be modified. Suitability to the body: It is not possible to know the final shape of the piece without knowing its shape on the body and its suitability for it, so some designers resort to making the design using an adjustable material such as cotton, so as not to lose the precious fabric at every adjustment stage. Determining specifications: When the designer finishes the experimentation phase, he writes specifications for his design, by specifying the type of stitches used in the design, the type of fabric, measurements,

Practical Applications




The applications illustrate the use of artificial intelligence programs to demonstrate the ability to produce a number of designs on a production lineFirst: results

Producing fashion design using 3D technology

•The goal of the research is to enrich the fashion industry through applications of artificial intelligence and 3D printing.

Creating contemporary designs suitable for enriching fashion and giving it an aesthetic aspect using artificial intelligence systems.

Second: Recommendations

Interest in 3D drawing technology

Highlighting the fashion industry using 3D printing and artificial intelligence.

Interest in learning about artificial intelligence through virtual and augmented reality

The authors extend their appreciation to the Deanship of Scientific Research at king Khalid University for funding this work through Small group Research Project under grant number.RGP1/292/44

Reference

1- Nihal Afifi Muhammad - Using modern technologies for smart textiles to improve the functional performance of clothing - Doctoral dissertation - Faculty of Applied Arts - Helwan University - 2013 AD.

2-Ahmed Mahmoud Abda Al-Sheikh, 2016: "Application of artificial intelligence in designing fabrics for women's clothing, issue (1), volume (28), Arts and Sciences Journal - Studies and Research - Helwan University.

3-Brutwin McFarlane: Mawhibah Publications: Designing Curricula for Gifted Students, Mahmoud Ahmed Al-Wahidi, Obeikan Publishing, Saudi Arabia, 2017 AD.

4- Ismail Shawky, 1998: "Art and Design", Dar Al-Nahda, Cairo.