

The Role of Artificial Intelligence (AI) Applications in fashion design and Forecasting in the garment industry, An Analytical study

Prof. Eamn Abdel Salam

Professor of Mannequin Modeling & Draping Faculty of Home Economics, Helwan University, Emansalam253@gmail.com

Prof. Rabbab Hassan Mohamed

Professor of Fashion Design, Faculty of Home Economics, Helwan University, Rababbhassan@gmail.com

Rawda Ahmed Ali

Master student, Faculty of Home Economics, Helwan University, Rawda.ali.ibrahim1@gmail.com

Abstract:

Artificial intelligence is a part of communication ecosystem of digital technology, the shift to digital technology and the development of information and communication technologies have become among the reasons that led to the creation of an ecosystem composed of digital technologies where the digital transformation of the fashion industry affects by increasing its ability to produce and use data that was not technically or financially possible before, so the research deals with the study of artificial intelligence applications and the role played in a basic and important stage of the production of ready-made garments in Egypt, the research aims to identify the applications of (AI) and its various algorithms and study the applied ones in the fashion design, forecasting and inspiration, in the types of diverse production, and to identify the relationship between the use of (AI) and the specialization of the designer, and the impact of years of experience, and know the extent of the correlation between the impact of the size of the factory (large – medium – workshop) and the type of production (local – export – export and local), the research methodology is the descriptive approach and analytical method, with the research tool (Electronic questionnaire) for the research sample, which amounted to (28) from ready-made garment factories to find out the extent of their use for applications modern technology, and its use for (AI) in the design and forecasting stages, the most important of results were: that factories use the AutoCAD program and the design method at the request of the customer by (28.6%) in the design stage, and for those with years of experience (2-5 years) were the largest in relying on modern technological applications, while in the forecasting stage the percentage reached through the analysis of sales and profit trends to (28.6%), and the analysis of fashion trends reached (50%), the percentage was for the type of local- export production for the use of AutoCAD is (26.7%) followed by local factories (25%), and the research recommends the use of artificial intelligence applications in factories to keep pace with the future trend of fashion design, the creation of (DataSet) for clothes to inventory patterns and attributes and formulate them in a new way through the algorithm of (GANS) to obtain creative patterns, Paying attention to the analysis and prediction of the direction or any element of clothing as in (Google Cloud), and reduce the gap between the designer and the requirements of customers by creating special files for customers containing feedback from clothing their opinion whether admired or for modifications or preferences.

Keywords:

Artificial intelligence- Fashion design- Forecasting- Ready- Made Cloth

References:

1. Abd El-Meguid, Q.M.(2009). Using the artificial intelligent in electrical engineering application: Study and comparison [unpublished Master's thesis].Arab Academy. Denmark.
2. Abdeen. A. (Ed). (2002). Innovation Theories in Fashion Design (A primer ed). Arab Thought House.p14.
3. Al-Farghali, O.M.(2022).A machine learning Approach for Analyzing medical Images[unpublished Master's thesis].Cairo University.P15.
4. Ali, S.M., Hassouna, A.G., & Abd El-karim (2021). The effectiveness of using augments reality to develop the skill of digital fashion design. Scientific Journal of the Faculty of Specific Education, Article6, Vol.8 (27), 213-234
5. Bakr, E. A. (2022). Maximizing customer engagement with deep reinforcement learning [unpublished doctoral dissertation]. Cairo University.
6. Bassiouni, A. (Ed). (2017). Virtual reality technology, Application and projects. Universities Publishing House.
7. Csanák, Ó. [Ed.]. (2019 November 21 – 22). THE CRYSTAL BALL OF FASHION: UNITED FORECASTERS OF AN INDUSTRY. International Joint Conference on Environmental and Light Industry Technologies[Conference Paper]. Óbuda University.
8. Doi:10.21608/MOLAG.2021.200451
9. El-bahadli, S. Z. (2013). Study of the technological methods for mass customized apparel design [unpublished master's thesis]. Cairo University.
10. El-sheikh, A.M,(2016,January). Application of intelligence Artificial for Designing ladies wear fabrics. Journal of science and Arts- Studies and Research. Vol28 (1), 139-146
11. Farghaly, Z.A. (Ed).(2006). Ready-made Clothes between Preparation and production (2nd ed).Arab Thought House.
12. Gazzola, P., Pavione, E., Pezzetti R. & Grechi, D. [Eds.].(2020), Trends in the Fashion Industry. The Perception of

- Sustainability and Circular Economy: A Gender/Generation Quantitative Approach. Sustainability.12 (7): 2809.p4.
13. GEORGE E. P. BOX, GWILYM M. JENKINS, TIME SERIES ANALYSIS Forecasting and Control, Published by John Wiley & Sons, Inc., Hoboken, New Jersey pp1,2.
 14. Hammed,D. L., (2022, August). Apparel marketing strategies and their role in fashion brand, an analytical study. Heritage & design journal. Vol2 (10), 99-122 Doi:10.21608/jsos.2022.114716.1142
 15. Kamel, Sh.A.(2019). Utilizing the virtual reality technology of industrial manufacturing systems in developing the level of production performance in the garment factories [unpublished Master's thesis]. Cairo University.
 16. Kim, E., Fiore, A.M. & Kim, H. [(Eds.)(2011), Fashion Trends Analysis and Forecasting [A primer ed.]. Berg.pp18,49,60
 17. Luce, L. [Ed.]. (2019), Artificial Intelligence for Fashion: How AI is Revolutionizing the Fashion Industry, APress. United Kingdom.pp3,49,125-134,163,164. <https://doi.org/10.1007/978-1-4842-3931-5>
 18. Mahmoud, M.M.(2008). Study of Artificial intelligence Technology & Industrial Role In It's Application In The Field Of Smart Products [unpublished Master's thesis].Helwan University.
 19. McKelvey, K. Munslow, J. [Eds.]. (2018), Fashion Forecasting (A primer ed.). Markono Print Media Pte Ltdl, Singapore.P50.
 20. Midahi, M. (31/3/2022). The effects of the applications of the Fourth Industrial Revolution -artificial intelligence- on the economies of Arab countries. Tikrit Journal of Administration and Economics Sciences, Vol. 18(57), Part (2): 418-437 Doi:[www.doi.org/10.25130/tjaes.18.57.2.25](https://doi.org/10.25130/tjaes.18.57.2.25)
 21. Patrick Hui , C., Jason Choi, T. &Ren,S.[Eds.].(2018), Artificial Intelligence for Fashion Industry in the Big Data Era, Springer Series in Fashion Business, Gateway East, Singapore. https://doi.org/10.1007/978-981-13-0080-6_15
 22. Pupillo, M. [Ed.]. (2018/2019), Artificial Intelligence and the Fashion Industry, [Bachelor's Degree Thesis], Luiss Guido Carli university.p10,38
 23. Spahiu, T., Piperi, E. & Shehi,E.[Eds.].(2014),Advanced CAD/CAM systems for garment design and simulation[Conference Paper]- 6 th INTERNATIONAL CONFERENCE OF TEXTILE, Tirana, Albania.pp1,2,5.
 24. Thomopoulos, T .N.[Ed.]. (2015) , Demand Forecasting for Inventory Control, Springer ,Heidelberg,Germany.p2,6 DOI:10.1007/978-3-319-11976-2
 25. Tsan-Ming Choi, Chi-Leung Hui and Yong Yu,(2014) , Intelligent Fashion Forecasting Systems: Models and Applications, Springer :Heidelberg, Germany,p3.
 1. ثالثاً:مواقع الانترنت:
 26. <https://www.slideshare.net/suniltalekar1/fashion-forecasting-process>[Accessed10.sep.2022].
 27. <https://thetechfashionista.com/fashion-trend-forecasting-websites-and-agencies/>[Accessed 25.sep.2022].
 28. <http://doer.col.org/handle/123456789/5107>[Accessed18.sep.2022].
 29. <https://www.fashionsnoops.com/Company/AboutUs>[Accessed26.sep.2022].
 30. <https://research.aimultiple.com/ai-in-fashion/>[Accessed1.sep.2022].
 31. <https://www.slideshare.net/suniltalekar1/fashion-forecasting-process>[Accessed30.sep.2022].

Paper History:

Paper received August 16, 2022, Accepted September 24, 2022, Published 1st of November 2022