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USAGE OF ARTIFICIAL INTELLIGENCE IN FOOTWEAR INDUSTRY

First of all, we should point out the differences between artificial intelligence and machine learning. There has been a lot of controversy about that.

That is why we have chosen AI in footwear industry as an **object of our research**.

Because of increase of quality and importance of artificial intelligence in the world the **purpose of our research** is to show the ability of using it in footwear industry.

We used information analysis method and included practical experience in machine learning and artificial intelligence in our research.

Research results. According to Professor Margaret Boden, artificial intelligence is an area of study, which deals with machines that can make intelligent seeming decisions. Machine learning is a process of teaching a computer to make decisions using huge amounts of data. Nowadays it is really important in business, because in modern world we have too much data, which we cannot process on our own. But using this technologies people can see only most relevant conclusions which have been extracted [6].

So this modern technology can be implemented in different spheres of footwear industry: design, manufacturing and some marketing tasks.

According to the article “Generating Shoe Designs with Machine Learning”, in our time a lot of designers are working for making many modern, unusual, exclusive and attractive constructions of shoes, but the problem to please all customers can be

solved with using Generative Adversarial Networks. GANs use two different networks: generator and discriminator. So using a lot of pictures of shoes from Amazon, the programmer Jerry Wei made this research. Generator processes images with shoes and discriminator tries to exclude fake shoes between real ones. After discriminator could not find differences between fake and real images, the model has converged. With GANs the design of shoes can be personalized for each customer. Using data about his previous purchases, big fashion companies can produce more new trendy footwear [5].

AI can make our shoes more comfortable. For example, as Engadget writes, a laboratory Adidas Speedfactory created special sneakers AM4NYC for New York's inhabitants using data from sensors on runner's shoes. Technologists found out that shoe strengthening in the front of the foot was really important for New York's inhabitants. This individual footwear might help runners get excellent results. Adidas said that sneakers for other cities would be made with other materials and would have different structure. The company decided to create sneakers for London (AM4LDN) and Paris (AM4PAR) [2].

As Callum Booth writes for TNW News, special insoles with sensors and accelerator which collect data about running style are also really important inventions for runners. The inventor is Hee-Suk Kim, but now there are some companies which are developing them: Runvi, Invertex, Lumo Run and Arion. Sensors analyze foot strike, ongoing gait, body fat, pulse and send information to a smartphone. After that the application which is based on technology of AI can coach users by giving them advices how to improve their form and prevent injuries [4].

The AI technology can help customize footwear products, making better classification in online shops, which is extremely popular about the athletic footwear market today, according to a report from TechNavio. The experience of such big companies like Adidas, Nike, New Balance etc. proofs, that propositions for client's models of shoes, which are based on their previous purchases, are much more

pleasant and useful for them, and, as a conclusion, is the most profitable way to sell a product [3].

But, during online shopping, size and fit issues cause 28 % of returns, and 60 % of people are walking around in the wrong size shoes, says the survey by Nike. This problem can be solved with using artificial intelligence too. Nike created a program, which can give the best recommendation, based on 13 data points mapping foot morphology for both feet, which is collected by using a smartphone's camera to scan the feet [1].

Conclusions. After conducting the research, we tend to the idea that such new technologies as artificial intelligence and machine learning have a big bright future ahead of them. Taking into consideration the present condition of evolution of apparel industry, including footwear production in Ukraine, they may take it to a new higher level on the world stage, which would be really important for economy of our country.

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