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AN INSIGHT IN MAKING A VIRTUAL TRY-ON USING GENERATIVE ADVERSARIAL NEURAL NETWORK

Dolgovyazov A.R. (ITMO University), **Usacheva D.M.** (ITMO University)
Scientific supervisor - Sigaev A.S. (ITMO University)

Introduction. Nowadays, Virtual Try-On is a relevant problem in computer vision and image generation. This paper is about usage of generative adversarial neural network, which upgrades the performance of already existing neural networks.

Buying clothes is close to everyone in the humankind. Usually, people go to shopping malls, spend a lot of time there trying to figure out what suits them. Technology does not leave this industry behind though. Instead of wasting time people can simply reach out to an online shop and choose whatever catches the sight here. There will not be any restriction with a limited range of choices of "real" shops, but a certain price has to be paid. In order to find out if the clothing piece fits, it is necessary to order it first, and then try it on. Not all clothing shops agree to use the "try first - pay last" system, which means that there is a chance to try a piece on before actually purchasing it. This means that the company should provide a place with dressing rooms or sign a contract with a marketplace. If the company decides to use a marketplace, a client still needs to spend their time going somewhere to finally learn if the piece fits at all. There is a way to simplify this process.

This piece is about a Virtual Try-On - a technology which allows people to try a piece on using their photo or video. First step is to create technology for photos and then for video.

Main part. Generative adversarial neural network (GAN) is one of the innovative technologies in generating images. GAN was firstly used to create human faces and other photorealistic things. Then, it learned how to change a part of an existing picture based on input. Neural networks which use this architecture are able to create high quality images in, what is most important, a relatively short period of time. It is only logical for this technology to take place in a Virtual Try-On.

A Virtual Try-On as a concept is actually a compilation of problems: starting with changing parts of the face using filters, trying on masks, new hairstyles and finishing off with trying on clothes and changing home interior. There are plenty of solutions to it, so one [1] was used as a base of our work and we changed it significantly.

Program starts off with an image of a clothing piece and an image of a person in this clothing piece. Using the image of a person the body parts and the pose are extracted from it. Then, with this information the algorithm combines a new clothing piece with a silhouette of a person. Such a solution is effective in execution, but it allows "artifacts" to happen. Artifacts are blurred somewhat random shaped parts of an image [2]. In this work the first upgrade will be implemented: adding GAN will significantly lower the number or artifacts. It will be added on the refinement stage. Also, running time of the algorithm was lowered by resizing the image to a lower size. After the model provides its output, Super Resolution (based on GAN) was used to make the picture more presentable and appealing.

Conclusion. In future, we are going to upgrade the algorithm to use it on a video and to use it in implementation of Virtual Try-On in real-time conditions. The technology might be used in shopping malls and boutiques in the form of a "mirror", also on the websites or apps of the online shops.

Bibliography

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