

Image-Based Virtual Try on Clothes

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Abstract: *The Virtual Try on Cloth is image-based technology to enhance the user experience on fashion-oriented ecommerce websites, it will help customer's satisfaction. To get perfect body fit cloth or exact cloth fitting on body through Imaged based -virtual try on, it's quite difficult. Here we present a virtual try on system to get photo-realistic images of clothed person and target clothing. Our project idea is applying some steps below to get exact results. Firstly, based on the pose of the given person our model adjusts the target clothing form to compatible with the given pose. After this next task is to generate the body segmentation map of the person wearing the target clothing, to better understand the body parts and clothing regions. Finally, the body segmentation map is fused together with warped clothing and a given person image for fine-scale image synthesis. The body segmentation map prediction using CNN, helps to guide image synthesis where body part and clothing intersects and it's useful to preserving clothing and body part details.*

Keywords: CNN, Body Segmentation Map, Virtual try on cloth, Machine Learning, Image-based technology.

I. INTRODUCTION

There can be multiple problems a customers can face while he/she goes out to shop. When the cloth in shop tried by lots of people it may leads to various skin diseases to the customer, and it's also degraded the quality of cloth. Also, customers' needs a secure trail room, the chances of having camera in trail room is a major issue in India. If such problems are addressed by an effective solution of virtual try at home, then the pleasure of shopping can surely be increased leading to a huge profit to sellers as well.

Nowadays Online shopping has getting speedy growth, instead of people walking in and out of the several shops to find their clothes, peoples using internet for shopping at home just with fewer clicks. One benefit of online shopping is we get a large verity of cloths at one place, so we can choose best one easily. With the help of internet and ecommerce websites, online shopping's becomes a trend these days. But as lots of people nowadays tend to go for online shopping, it's not the case that the customers are totally satisfied. Customers can only try on of the clothes only after the product is delivered to the customer. It's fair to customers to provide a way on website to try a cloth virtually, so person can get an idea how cloths is looking on him/her. Kind of virtual try on technology also useful to sellers, because after delivery when customers don't like a cloth or cloth doesn't come in fitting, customers return the cloths, which leads in excess of money waste to reverse procedure to get cloth back to seller. As this way, virtual try on cloth Beneficial's to both customers and sellers.

Also, analysing look of cloths and garments is also big problems in online shopping as cloth may not be same in real which leads to customer's dissatisfaction, to avoid this virtual try on cloths can became a good solution to try cloth before purchasing it. This solution must be user friendly, efficient and embedded with advance technology. Virtual Try-on can be a great solution for eliminating the problems. It provides an option to try on the clothes virtually without visiting a shop in real and physically try on the clothes.

II. RELATED WORK

2.1 Image Synthesis

Image synthesis is the process of artificially generating images that contain some desired content. It is analogous to the inverse of the classification problem: generating an image that contains the visual contents that are associated with a specific label. Generative adversarial networks (GANs) are an architecture that can be trained to generate synthetic images. Huang He et al. [1] propose overview of the methods used in image synthesis with GAN and point out strengths and weaknesses of current methods. There are three main approaches in image synthesis, i.e., direct methods, hierarchical methods and iterative methods. Generative adversarial networks (GANs) aim to model the real image distribution by forcing the generated samples to be indistinguishable from the real images.

2.2 Virtual Try on Synthesis

Image based virtual try on can be of different types, that are listed below –
(Fixed-Pose) Virtual Try-On is used to transfer in shop cloth to humans, keeping the pose fixed. VITON [2] and CP-VTON [3] propose VTON pipelines with two main stages - clothing warping and try-on image synthesis. In Multi-Pose Guided Virtual Try-On, given an input person image, a desired clothes image, and a desired pose, the proposed Multi-pose Guided Virtual Try-on Network (MG-VTON) [5] can generate a new person image after fitting the desired clothes into the input image and manipulating human poses. Another popular application of image-based VTON is the person to person clothing transfer. SwapGAN [6] proposed three generators and one discriminator for person-to-person cloths swapping. The first and second generators are conditioned on a human pose map and a segmentation map, respectively, so that we can simultaneously transfer the pose style and the clothes style. In addition, the third generator is used to preserve the human body shape during the image synthesis process. SwapNet [7] proposed a garment exchange method between two human images.

Image-based generative models are more computationally efficient and broadly applicable.

For example, VITON [2] first proposed image based virtual try-on method, which generates warped clothes using Thin Plate Spline (TPS) transformation and maps the texture to the refined result with a composition mask. CP-VTON [3] improves VITON by using neural networks to directly learn the parameters of TPS for clothing warping, and thus achieves more accurate alignment results. CP-VTON+ [4] outperforms CPVTON by improving the clothing warping stage and blending stage.

III. METHODOLOGY

CNN image segmentation is used which involves dividing a visual input into segments to make image analysis easier. We follow a three-stage design strategy. The convolutional neural network for extracting high-level features of unreformed clothing contains multiple convolutional layers. First, it transforms the target clothing into a warped form compatible with the pose of the given person. Next, by using encoding layers and decoding layers it predicts a body segmentation map of the person wearing the target clothing. In order to preserve the features of both human body and clothing, segmentation map of the person wearing the target clothing before the final image is synthesized. Hence, the final image is guided by the generated segmentation map.

IV. LITERATURE SURVEY

Han X et al. [2] propose a coarse-to-fine strategy to transfer a desired clothing item onto the corresponding region of a person. First it generates a coarse synthesized image with the target clothing item overlaid on that same person in the same pose. It further enhances the initial blurry clothing area with a refinement network. The network is trained to learn how much detail to utilize from the target clothing item, and where to apply to the person in order to synthesize a photo-realistic image in which the target item deforms naturally with clear visual patterns.

Wang B et al. [3] propose a novel visual try-on network, namely Adaptive Content Generating and Preserving Network (ACGPN). In particular, ACGPN first predicts the semantic layout of the reference image that will be changed after try-on and then determines whether its image content needs to be generated or preserved according to the predicted semantic layout, leading to photo-realistic try-on and rich clothing details.

Image-based virtual try-on systems based on deep learning have attracted research and commercial interests. Although they show their strengths in blending the person and try-on clothing image and synthesizing the dis-occluded regions, their results for complex-posed persons are often unsatisfactory due to the limitations in their geometry deformation and texture-preserving capacity. To address these challenges, Minar M et al. [4] propose CP-VTON+ for seamlessly integrating the image-based deep learning methods and the strength of the 3D model in shape deformation.

V. FUTURE SCOPE

Automating the manual processes could be a nice accomplishment insured by technology advancements particularly within the laptop vision field. One in all the most important industries that's influenced by technology advancement is Fashion attire. Because of laptop vision high-powered tools, an excellent expertise is often born for each retailer and customers. making AI systems that may perceive fashion in pictures, will produce a next-level client expertise like on-line fashion searching as a result of the fashion business is essentially regarding visuals, thus, it is often coping with laptop vision to acknowledge pictures even as we tend to handle creating computers perceive pictures.

Creating AI systems that can understand fashion in images, can create a next-level customer experience like online fashion shopping because the apparel industry is basically about visuals, thus, it can be dealing with computer vision to recognize images just as we do by making computers understand images.

VI. CONCLUSION

As Customers can buy clothes from lots of shopping apps and websites but using guessing method of how a cloth will look on the customer. So here the solutions come in picture is virtual try on system. After Considering all possible advantages and disadvantages of existing models on Virtual Try on system, we propose new way of virtual dressing AI model. Virtual Try-On presented an efficient and affordable method for real time virtual dress up system, consists of two steps: exploring the shopping app/website and select the cloth and second is to try it on using the mobile camera. There were many benefits from this real time virtual dress up systems for customers, sellers and companies, such as space saving as there is no need for extra space for trial rooms and help to maintains the quality of cloths, as customer not actually trying cloth on body. Thus, it didn't require physical space and it was much easier to use.

Our model firstly working on picture to get body segmentation map which is then used to find target cloth. As this is easy method to try cloth virtually, even after dressing up virtually, we can share this pic to get opinions of other people. It also made people easier to choose dress perfectly within a short time. In this way, our system is reliable to solve the promising and challenging real-time automatic dress up system.

This study proposes that online consumers' usage experiences with and attitude towards VTO technology play an important role in their online purchase decision intention. According to this tendency and the consumption trend, this study not only enhances the convenience and satisfaction level of consumers but also contributes to profit increase of online retailers.

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