Virtual Try-On

Aditya Bhat (ab2260), Anirudh Negi (an721), Harsh Patel (hkp49)

February 6, 2022

1 Introduction

Virtual try-on app is a augmented reality based application which tries to create an illusion of a person wearing particular cloth. Due to recent pandemic people tend to avoid going to shops and prefer online shopping. It wouldn't be feasible for clothing stores to sanitize the cloth every time a customer tries it on. There are several areas within the fashion industry itself, where this can be implemented, like Virtual Clothing Fittings, Make-up and hair color try-on, Shoes try-on, Optical glasses try-on, Tattoo try-on, to name a few.

Our research is focused on Virtual try-on for a clothing store. Our model augments the dress on to the person and show how it would look on them. User would stand in front of the phone or a 'smart mirror' (if in store) and can browse through tons of collections in the store in a matter of few minutes and choose or filter the one that best suits the taste of the person.

2 Challenges of existing Projects

One of the major challenge that exists is to preserve the pose of the person in the image or the video. Other challenges include preserving cloth texture and maintaining its alignment when augmented on the person. Several techniques proposed suffer from these challenge and we plan to improve the existing models to some extent.

3 Proposed Approach

Figure 1: Procedure Flow

Our approach is mainly divided into 4 steps:

1. Using segmentation[2] and Pose detection models[1], we grab the clothing and the arm data. Our neural network eliminates clothing and arm information while preserving pose, identity and hands of the person in the image.

2. We then use reference cloth, pose map and use segmentation map of result of step 1 and build a segmentation generator which gives us another segmentation map in which the person would be wearing the reference cloth.

3. Third step would be cloth deformation [4]. In this step we try to align clothing information on to the result of previous step since it has clothing area on which reference cloth has to be placed[3].

4. Normalisation. In this step we take of any deformation or misalignment that might have resulted from step 3. We would use Alignment aware segment normalisation technique which enables the preservation of semantic information, and the removal of misleading information from the misaligned regions by leveraging the mask of these regions.

References

[1] Zhe Cao et al. "OpenPose: Realtime Multi-Person 2D Pose Estimation using Part Affinity Fields". In: (2019). arXiv: 1812.08008 [cs.CV].

[2] Ke Gong et al. "Instance-level Human Parsing via Part Grouping Network". In: (2018). arXiv: 1808.00157 [cs.CV].

[3] Bochao Wang et al. "Toward Characteristic-Preserving Image-based Virtual Try-On Network". In: (2018). arXiv: 1807.07688 [cs.CV].

[4] Han Yang et al. "Towards Photo-Realistic Virtual Try-On by Adaptively Generating↔Preserving Image Content". In: (2020). arXiv: 2003.05863 [cs.CV].