

Literature Survey on Virtual Try-On Technologies

Project Overview

In the realm of virtual try-on technology, this project is structured to progress through three distinct phases. The initial phase focuses on developing a 2D virtual try-on system for clothing. This will be followed by the implementation of a 3D human pose detection mechanism, culminating in the integration of these components into a robust 3D virtual try-on solution.

Existing Technologies and Gaps

The domain of virtual try-ons has seen several noteworthy advancements, particularly in applications like Lenskart's 3D try-on for glasses. However, a critical examination reveals a significant void in applications that effectively leverage machine learning and deep learning for 3D virtual try-ons.

Comparative Analysis

While there have been attempts to utilize OpenCV for 3D clothing try-ons, they often fall short in terms of accuracy, resulting in outputs that lack realism. This highlights a key area where current technologies are not meeting the desired standards.

Proposed Approach

The proposed project aims to fill these gaps by first establishing a robust 2D try-on framework. This approach is seen as a foundational step towards achieving more complex 3D modeling and pose detection. The project will then shift its focus towards the development and integration of 3D human pose detection capabilities, which is a crucial step in creating a more immersive and accurate virtual try-on experience.

Existing projects:

1. Lenskart App for 3D Glasses Try-On(<https://www.ijraset.com/research-paper/glass-virtual-try-on>)

Lenskart is an e-commerce portal specializing in eyewear, offering a wide range of eyeglasses and sunglasses. The Lenskart app features a 3D try-on technology that enables customers to virtually try on different glasses using their mobile device or computer.

Pros:

- ◆ **Convenience and Accessibility:** Users can try on glasses virtually from anywhere, making it easier to make a decision without visiting a physical store.
- ◆ **Wide Range of Options:** Provides a diverse array of styles and trendy colors, allowing users to experiment with different looks.

- ♦ **Innovative Integration of Technology:** Enhances the online shopping experience by blending advanced technology with e-commerce.

Cons:

- ♦ **Accuracy of Fit:** Virtual try-on might not accurately represent the physical fit and comfort of the glasses.
- ♦ **Limitation in Experience:** Lacks the tactile feedback and personal interaction that some customers prefer in physical stores.

2. 3D Human Body Generator

The 3D Human Body Generator's primary goal is to create a fully customizable 3D human body based on user-provided body measurements. This tool is particularly relevant for applications in virtual fitting rooms and similar environments.

Pros:

- ♦ **Customizability:** Allows the generation of a 3D human body model based on specific body measurements, offering a personalized experience.
- ♦ **Potential in Virtual Fitting:** Can be a valuable tool for online clothing retailers to provide a more accurate virtual try-on experience.

Cons:

- ♦ **Complexity in Usage:** Users need to input precise body measurements, which may be challenging to obtain accurately.
- ♦ **Technical Limitations:** The project's success in real-world applications can be limited by the complexity of accurately rendering different body types and clothing items.

Papers:

<https://ieeexplore.ieee.org/document/9412052>

<https://ieeexplore.ieee.org/document/10213129>

References :

[1] Jetchev, Nikolay, and Urs Bergmann. "The conditional analogy gan: Swapping fashion articles on people images." Proceedings of the IEEE international conference on computer vision workshops. 2017.

[2] Han, Xintong, et al. "Viton: An image-based virtual try-on network." Proceedings of the IEEE conference on computer vision and pattern recognition. 2018.

[3] X. Han, Z. Wu, Z. Wu, R. Yu, and L. S. Davis, "VITON: An Image- based Virtual Try-On Network," in *CVPR*, 2018.