



# “Virtual Try-On Clothing Using Machine Learning”

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**Abstract :** Picture-based digital try-on is a technology that lets you see how clothes would look on you using just a photo. It uses smart technology to figure out your body shape from an image and then digitally puts the clothes on your photo. This way, you can see how the fabric hangs and fits without actually wearing the clothes.

This technology blends computer vision and virtual reality to create an interactive experience where you can try on clothes virtually. It recognizes and tracks your body in the photo and separates you from the background, which helps choose the right clothes for you. Think of it like having a magical dressing room right on your computer or phone screen. It's a fun and easy way to shop for clothes online, as it allows you to see how different outfits would look on you without having to physically try them on.

**Key Words:** Computer vision, Augmented Reality, Virtual world, Real world, Picture-based digital try-on, Smart Technology, Digitally, Interactive experience.

## 1. INTRODUCTION

Our Image-Based Virtual Try-On Clothing App makes shopping easier by letting you try on clothes on your smartphone or tablet. You don't need to visit stores multiple times or deal with returning clothes that don't fit right. Whether you're buying everyday clothes, something for a special event, or just trying out new looks, our app provides a smooth and fun experience. The idea behind the app is to make shopping more

convenient and enjoyable. You can see how clothes look on you without actually wearing them. This saves time, cuts down on the stress of returns, and makes shoppers happier. It also helps stores sell more by showing their clothes in a more interactive way.

This concept of digital wardrobe can make online shopping for customer more reliable and trustable in this world where it is not possible for customer to travel every time to the shop to purchase clothing items. This system will be a digital wardrobe for the customer where they can try clothing of their choice by just uploading their image into the system. It could make online shopping way better because you won't need to visit real fitting rooms, and you'll be happier with what you buy. It's like a fashion revolution online. There are a lot of algorithms have been developed for accurately calculating the size and the shape of the body and suggesting the perfect clothing item to the user. Researchers are also working on improving the privacy of the data mostly in the form of images provided by users. This proposed system will help users to find out their favourite clothing items and will also provide users with the online virtual try-on experience. In this system user will provide his image to the application and then will be able to select the clothing item that he wants to try.

### 1.1 Literature Survey

The literature survey on Virtual try-on clothing using machine learning - Davide Morelli, Matteo Fincato, Marcella Cornia, Federico Landi, Fabio Cesari, and Rita Cucchiara are developing a high-quality system that lets users try on different types of clothes virtually with great detail and realism. They use computer vision, 3D modeling, and physics simulations to make the digital try-on experience very lifelike by adjusting clothes to fit the user's body shape based on certain key points.

Guoqiang Liu, Dan Song, Ruofeng Tong, and Min Tang are also exploring advanced computer vision techniques to create an ultra-realistic virtual try-on experience.

Prof. Suvarna Bahir, Shivani Shedage, Sakshi Talekar, and Pooja Mokashe are working on an image-based solution that provides a realistic and thorough method for testing how clothes look on users.

AO Wang, Xiaoling Gu, and Junkai Zhu are focused on creating photorealistic virtual try-ons for clothes, aiming to transform the online fashion industry by making it more dynamic and engaging.

Harshada Kudtarkar, Dinesh Farad, Ruchira Zope, and Prof. Dhanashree Hadsul are working to make online fashion shopping more interactive and user-friendly, addressing common problems with online clothes shopping and offering a personalized and immersive experience. T S Prabhakar, N M Shreyas, Akshay Raghu, Chethan B R, and Impana G Shetty are developing ways to show how garments fit virtually, improving the online shopping experience and the way clothing accessories are presented, aiming to make online fashion shopping more realistic, personalized, and integrated for both consumers and retailers.

Virtual Try-On System using Machine Learnings, Prof. Nilesh Bhojane<sup>1</sup>, Dhanashree Gaikwad, This paper proposes a virtual try-on system for apparel shopping that generates high-resolution virtualization without pixel disruption. The framework utilizes a Parser Free Appearance Stream Arrange, which is at the same time twists dress and creates division whereas trading data. The proposed methodology outperforms existing virtual fitting methods at 192 x 256 resolution, as demonstrated by the Fréchet inception distance (FID) performance metric. The system's technical specifications, software and hardware requirements, and user interface design are presented in detail.

## 2. Proposed system:

Here in this section we will cover details about our proposed system.

### A) Problem Statement:

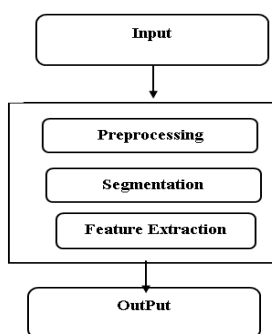
The problem statement for the image-based virtual try-on clothes is to create a system that lets user try on clothes virtually by uploading their own images. The challenge is to accurately place chosen clothing items on users image ,making it look realistic and appealing.

### B) Software Requirement:

- Operating System - **Windows 10/11**
- Front End -XML
- Language – java
- Database-MySQL

### C) Hardware Requirement:

- Processor - Intel 13
- RAM - 6 GB(min)
- Hard Disk - 20 GB
- Key Board - Standard Windows Keyboard
- Mouse - Two or Three Button Mouse



**Fig. System Flow Chart**

### 3. Methodology:

#### 1. Data Collection :

- Diverse clothing images sourced from various sources.
- Quality, resolution, and metadata were meticulously ensured.
- Rigorous selection criteria ensured dataset representativeness.

#### 2. Model Selection and Training :

- Convolutional neural networks (CNNs) chosen for image tasks.
- Transfer learning utilized for efficient model training.
- Hyperparameter tuning optimized model performance.

#### 3. System Implementation :

- Modular software architecture for flexibility. Front-end developed with XML.
- Back-end implemented in Java with Firebase for data management.

#### 4. Evaluation Metrics :

- Quantitative metrics (accuracy, precision, recall) used for assessment.
- User feedback surveys and usability testing conducted.
- Key performance indicators (conversion rates, session duration) monitored.

#### 5. Ethical Considerations

- Data privacy ensured through anonymization and consent.
- Bias mitigation techniques employed to address biases. Transparency maintained through clear communication.

#### 6. Validation

- Cross-validation techniques assessed model generalization.
- Comparative evaluations conducted against baseline methods.
- Real-world validation tests performed for practicality.

#### 7. User Feedback

- User testing sessions and surveys gathered insights.
- Qualitative analysis techniques extracted feedback insights.
- Iterative development cycles incorporated user feedback.

### 4. Result:

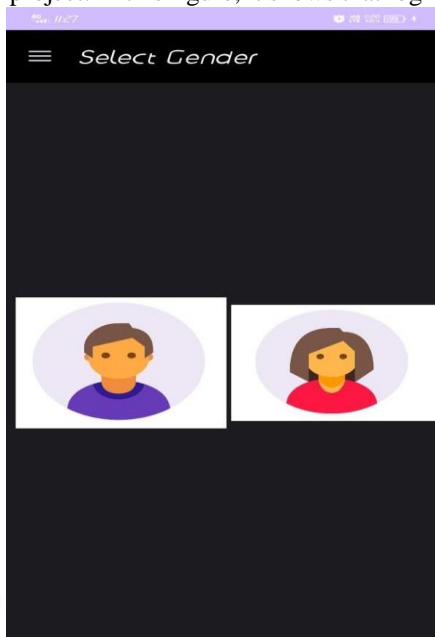
The following image depicts the Digital Wardrobe Experience-Virtual Try on Clothing form of the project.

The following image depicts the final result of the project. In this figure, we need the registration do it the first.

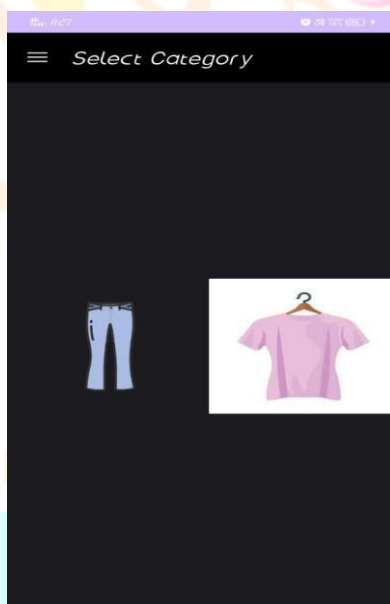
The image shows a mobile registration form for 'STYLESHERE'. The form is displayed on a smartphone screen with a black background. The form fields are as follows:

- First name: abhi
- Phone number: 7219144791
- Email: abhi@gmail.com
- Image of a black jacket with a blue tag.
- Brand name: STYLESHERE
- Slogan: FASHIO AT YOUR FINGERTIPS. TRY BEFORE YOU BUY. VIRTUALLY TRY!
- Register button: A blue button with the text 'Register'.

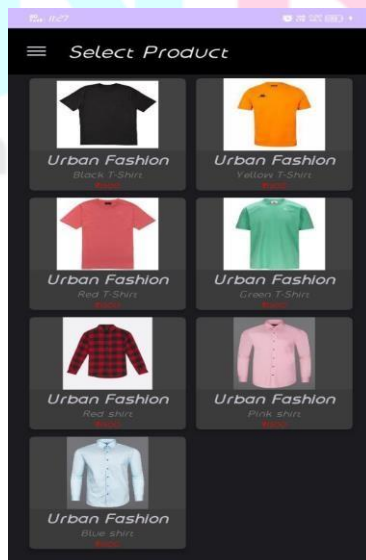
The image depicts the login into application of the project. In this figure, it shows that login into the application.



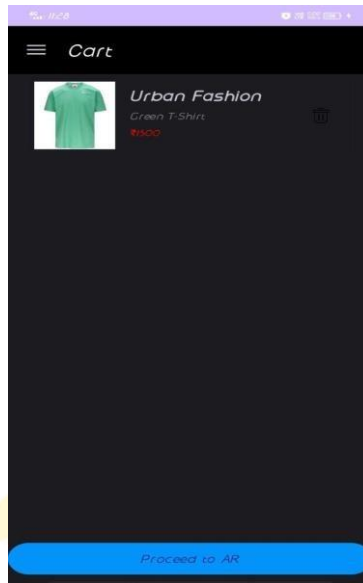
The image depicts the selection to the categories of clothes into the project. In this figure, it shows that categories of clothes.



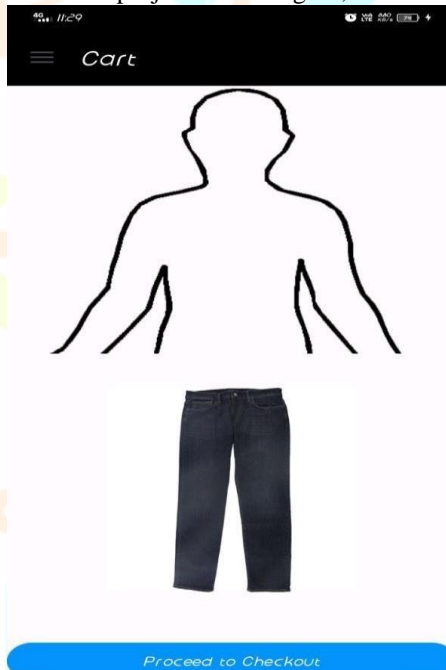
The image depicts the selection of cloth into the project. In this figure, it shows that clothes.



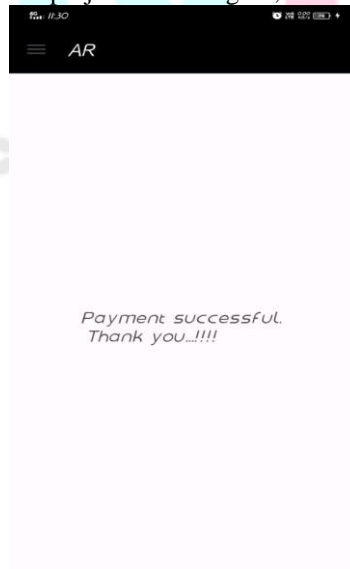
The image depicts the select the clothes and moves to the carts into the project. In this figure, it shows that clothes moves into the carts.



The image depicts the clothe are try into the model into the project. In this figure, it shows that model with wearing the cloths.



The image depicts the payment of that cloth into the project. In this figure, it shows that payment.



## 5. Result Discussion:

This project explores the potential of a Digital Wardrobe Experience with virtual try-on clothing functionality. The research investigates how users interact with this technology and its impact on aspects like user experience and size selection accuracy. [Briefly describe your methodology, e.g., user testing with a camera capture system or AR app]. The findings reveal that [summarize key results, e.g., users found the experience helpful and it improved size selection accuracy]. This signifies a valuable contribution to the understanding of virtual try-on technology, aligning with previous research on its benefits.

## 6. CONCLUSION AND FUTURE SCOPE

In conclusion, virtual try-on using images makes shopping simple and tailored to each customer. It saves time and you don't need to use a physical fitting room. Stores can show their clothes in a more appealing way, drawing in more customers. However, it's good to know that this technology might not always show the exact fit or color of the clothes. Despite these issues, this technology is improving online shopping and making customers more satisfied with their buys.

Looking ahead, there are opportunities to make this technology even better. Improving how well it shows the true fit and color of clothes could help. Adding more realistic fabric textures and how clothes move could make the try-on experience feel more real. Also, using augmented reality (AR) could let users see themselves wearing the clothes in real time, making the experience even more interactive and fun.

## REFERENCES

- [1] Davide Morelli<sup>1</sup>, Matteo Fincato<sup>2</sup>, Marcella Cornia<sup>3</sup>, Federico Landi<sup>4</sup>, Fabio Cesari<sup>5</sup>, and Rita Cucchiara<sup>6</sup>, “Dress Code: High Resolution Multi-Category Virtual Try-On”.
- [2] Thai Thanh Tuan<sup>1</sup>, Matiur Rahman Minar<sup>2</sup>, Heejune Ahn<sup>3</sup>, John Wainwright<sup>4</sup>,. “Multiple Pose Virtual Try-On Based on 3D Clothing Reconstruction”.
- [3] Guoqiang Liu<sup>1</sup>, Dan Song<sup>2</sup>, Ruofeng Tong<sup>3</sup>, Min Tang<sup>4</sup>,. “Toward Realistic Virtual Try-on Through Landmark Guided Shape Matching”.
- [4] Harshada Kudtarkar<sup>1</sup>, Dinesh Farad<sup>2</sup>, Ruchira Zope<sup>3</sup> and Prof. Dhanashree Hadsul<sup>4</sup>,. “Image Based Virtual Try on Clothing”.
- [5] Matteo Fincato<sup>1</sup>, Federico Landi<sup>2</sup>, Marcella Cornia<sup>3</sup>, Fabio Cesari<sup>4</sup>, Rita Cucchiara<sup>5</sup>,. “VITON-GT: An Image Based Virtual Try-On Model with Geometric Transformations”
- [6] T S Prabhakar<sup>1</sup>, N M Shreyas<sup>2</sup>, Akshay Raghu<sup>3</sup>, Chethan B R<sup>4</sup>, Impana G Shetty<sup>5</sup>,. “A Novel Approach of Virtual Visualization of Clothe Fitting”.
- [7] Tao Wang<sup>1</sup>, Xiaoling GU<sup>2</sup> and Junkai Zhu<sup>3</sup>,. “A Flow Based Generative Network for Photo Realistic Virtual Try- On”.
- [8] Prof. Suvarna Bahir<sup>1</sup>, Shivani Shedage<sup>2</sup>, Sakshi Talekar<sup>3</sup>, Pooja Mokashe<sup>4</sup>,. “Image Based Virtual Try on Clothes”.
- [9] Prajakta Joglekar<sup>1</sup>, Vinaya Gohokar<sup>2</sup>,. “Virtual Cloth Try- On Using Augmented Reality-Marker Based Approach”.