



# DARPAN\* (Virtual Trail Room)

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**Abstract**— With the recent advancement in internet technology, many online shopping websites have emerged. Despite its advantages, online shopping presents some disadvantages. Checking the suitability of garments is very important for both the customer and the trader. Our approach focuses on how the selected garment fits the user's body and how it appears in the real world. [1] Trying on clothes in clothing stores is usually a time-consuming process. [2] Besides, in cases like online shopping, even trying on clothes is not possible. Our aim is to extend time efficiency and enhance the access of clothing by creating a project called Darpan.

## I. FOREWORD

Augmented is a computer-introduced image from the client perspective which is a technology that expands the present world by integrating layers of modern information. Augmented reality uses cameras or sensors to add a digital element to live viewing. The main objective of this work is to create a virtual fitting room using augmented reality, which allows the user to try on virtual clothes. Based on this distance, we can analyse how the clothes look to the wearer. [3] Trying on clothes in clothing stores is usually a time-consuming process, especially during peak hours such as weekends, and in occasions such as online shopping, trying on clothes may not even be possible. For security reasons there is a limit on the number of garments that can be checked in at one time. And sometimes shopkeepers can't show customers the new stock that will arrive in a few days. To overcome these issues, we aim to develop a virtual test room using augmented reality.

However, fashion does not explore these technologies as a way to improve the online experience. In the wake of Covid-19, future fitting rooms are often closed. Applications for this technology have expanded beyond the confines of fashion stores and into the realm of fashion designers, where fashion designers can create prototype designs and samples of early concept art and test it before committing to materials and resources. Physically expressing these designs. [6]

A virtual trial room using computer vision is a technology that allows customers to try on clothes virtually without physically wearing them. It uses computer vision algorithms to simulate how the clothing would look on the customer's body, based on the image or video input of the customer. [7]

The virtual trial room technology typically requires a camera, which captures the customer's image or video, and a software application that uses computer vision algorithms to map the clothing onto the customer's body. The software can be integrated into a website or mobile app, allowing customers to access the virtual trial room from anywhere.

Using a virtual trial room can provide several benefits for customers, including the ability to try on multiple outfits quickly and easily, the convenience of being able to try on clothes from home, and the ability to see how the clothes look on their own body before making a purchase. Overall, the virtual trial room technology has the potential to revolutionize the fashion industry by providing a more immersive and personalized shop.

## II. OBJECTIVES

The main objective of this project is

1. To help users to see how the apparels look in real-time without having to try them on manually.
2. To help users to see how the apparels look in real-time without having to try them on manually.
3. To provide protection against disease like covid-19.
4. To choose the correct dress through online.
5. To view the virtual outfit selection of clothes.
6. To design the prototype model that provides better accuracy results



### III. METHODOLOGY

First need to detect body parts of target human body and we need to transfer things according to suitable body parts. So for body part detection we were used haar cascade dataset So what is haar cascade dataset 24 \* 24 target window is moving on to the image and it contains features like(line features, rectangular feature, edge feature etc..) value of feature is computed using concept of integral images(it would select best value of feature among this by using adaboost classifier. They are like convolutional kernels. haar features are relevant feature for object detection and nonrelevant features are discarded by adaboost algorithm. Prepare the Paper Before Styling. Procedure Building models Input: cleaned data Output: pre trained model

Step 1: Read the dataset using cv2 Step 2: Extract the face features Step 3: convert into numerical array Step 4: Build model

Step 5: Train model using data Step 6: Save the pre train model

Haar Cascade Classifier: It will work based on following steps:

1. Calculating Haar Features.
2. Creating Integral Images.
3. Using Adaboost.
4. Implementing Cascading Classifiers.

Here we will work on face detection. Firstly, the algorithm needs a very good and clear images of faces and not a good image without faces to track the Haar classifier. Then extract features from it. For this, the Harr features shown in the figure below are used. They are similar to our convolutional kernel. Each property is a unique number generated by eliminating the addition of the pixels under the white rectangle from the addition of the pixels below the black rectangle.

A. Abbreviations and Acronyms FFNN -Feed Forward Neural Networks CNN-Cable News Network

ROI -Read Only Information

NLP -Natural Language Processing TTS -Text-to-speech algorithms ROI -Read Only Information

AR -Augmented Reality Units

### IV. ARCHITECTURE

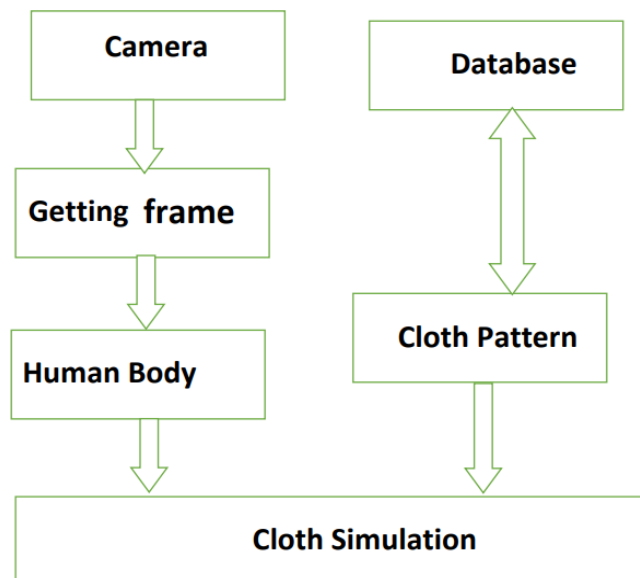


Fig 4.1 Block Diagram of the project



Firstly, the user stands in front of the camera. In monitor displays the list of items if user like the dress or jewelry it will automatically and virtually fits to the user. The Data which is received from Haar Classifier, face will be detected and virtually the cloth will fit to user.

#### A. COMPONENTS REQUIRED

##### SOFTWARE COMPONENTS

###### 1) PYTHON

Python is a high-level, general-purpose programming language. Its organize emphasizes reading code with the help of important indentation. Python is dynamically typed and garbage-collected. It supports multiple Programming paradigms, including structured (especially pragmatic), object-oriented, and functional programming. It is often described as a "battery contained" language due to its extensive standard library. Guido von Rossum began work on Python in the late 1980s as a successor to the ABC programming language and first published it as Python in 1991. Python 3.0, released in 2008, was a major revision that was completely backward-incompatible with previous versions. Python 2.7.18, released in 2020, is the last release of Python 2. [8]



Figure 4.2 Python [8]

###### 2) INSTALLATION OF OPEN CV

OpenCV abbreviated has Open Source Computer Vision Library, is an open source computer vision(CV) and machine learning library. OpenCV was also built as to provide acommon basics for computer vision applications and appreciates the use of machine perception for mass-market strategies. Since Apache 2 is a licensed product, OpenCV makes it easy for businesses to use and modify the code. [9]



Fig 4.3 Open CV

###### 3) Installation of Pip Install Pillow

The Python Imagines Library addup imaging process capability to the Python interpreter. PIP library which also provides considerable document format support, systematic interioer presentation and totally powerful image process computing. PIP is a package regulation system for installing and be in charge of Python based packages and information centre. [4]



4) Installation of Pip Install Pandas

Pandas is an open-source library in Python. It is ready to use high performance data structures and data analysis tools. The Pandas module runs on top of NumPy and is popularly used for data science and data analysis.[5]

HARDWARE COMPONENTS

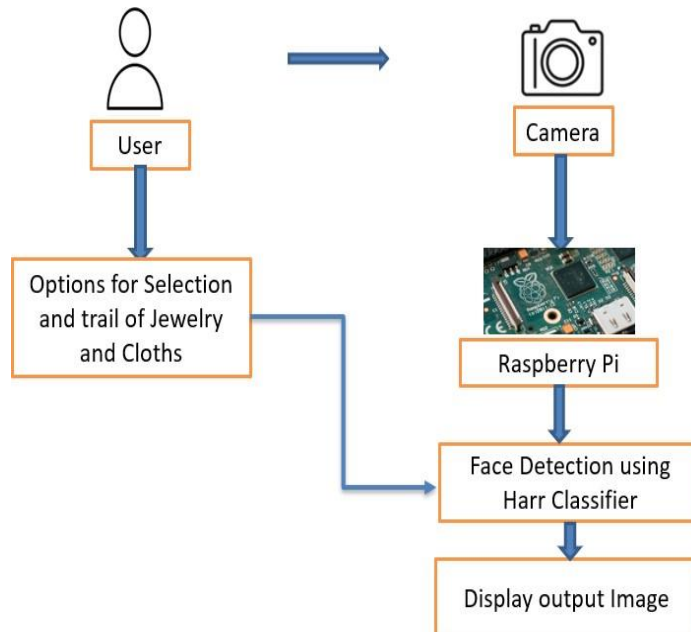
Raspberry Pi

Raspberry Pi is a series of small single-board computers (SBCs) developed in the United Kingdom by the Raspberry Pi Foundation in association with Broadcom. The Raspberry Pi project originally leaned towards the promotion of teaching basic computer science in schools and in developing countries. The original model became more popular than anticipated, selling outside its target market for uses such as robotics.

Raspberry Pi camera module

Raspberry Pi Camera Module can be used to take high- definition video, as well as stills photographs.

Proposed System



V. OUTPUT

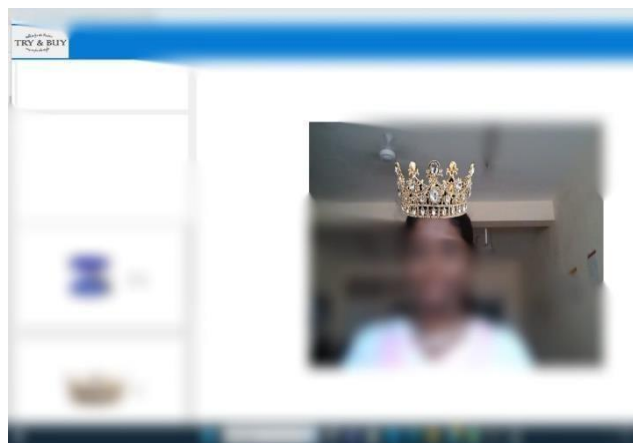


Fig 5.1 Output results



Figure 5.1 shows Expected results which describes a dynamic texture overlay method from monocular images for real-time visualization of garments in a virtual mirror environment. Similar to looking into a mirror when trying on clothes, we create the same impression but for virtually textured garments.

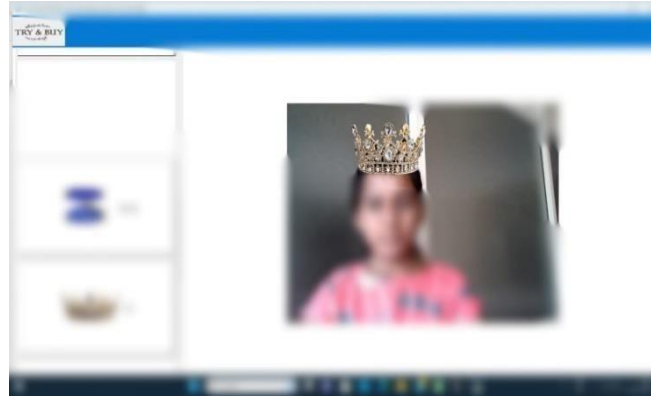


Fig 5.1 Output results

The mirror is replaced by a large display that shows the mirrored image of a camera capturing e.g., the upper body part of a person. A virtual mirror system is designed for the purpose of cloth changing room. Our motivation here is to increase the time efficiency and improve the accessibility of clothes try-on by creating a virtual dressing room environment. The system exchanges the color and the texture of a shirt while the person wearing the shirt can move freely in front of the mirror and even perform elastic deformations of the cloth like stretching and bending or move toward or away from the camera.

## VI. APPLICATIONS

- E-commerce
- Online shopping
- Physical retail stores
- Video Conferencing
- Fashion and Apparel Industry
- Personal styling
- Marketing
- Retail industry
- Fitness industry
- Education industry
- Home Decor Industry

## VII. CONCLUSION

As the final output, system will display the available dresses from database according to positioning and measurements of user. The user can access the GUI by hand gesture and can select the apparel or also select various category. Thus, it will be very convenient and hassle free for the customer to choose the perfect apparel through virtual means without much of inconvenience. Also, an additional feature that gets displayed on the apparel would be 'S','M','L','XL'. Along with this the price of the product description about the selected category can also be displayed. Virtual trial rooms using computer vision represent a promising technology that has the potential to revolutionize the way we shop for clothes and other products. By allowing customers to try on clothes virtually, this technology offers several benefits, including increased convenience, reduced costs, improved sustainability, and a better customer experience. However, there are still challenges that need to be addressed, such as ensuring the accuracy of computer vision algorithms, addressing privacy concerns, and ensuring that the technology is cost-effective for retailers. Despite these challenges, virtual trial rooms using computer vision have already gained significant traction across various industries, including fashion, e-commerce, fitness, home decor, automotive, and medical.



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