International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 07 Issue: 05 | May 2020 www.irjet.net p-ISSN: 2395-0072

# Fashion Accessories using Virtual Mirror

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**Abstract -** *This document presents a virtual trial room model using the similar concept of virtual reality which allows users to try different apparels.The intended model's purpose is to enhance user's shopping experience by using the system, through which they can lessen the time on queuing for fitting rooms. The application is implemented in two-stages: creation/capturing of a human 2D model image based on sizing of the user and superimposition of clothing over the human image. The intended model of the application captures the image and displays the 2D model of the human body, which is in proportion to the size and shape of the person trying the virtual apparels.*

***Key words***: Virtual Reality, Virtual Mirror, Fashion - Accessories, Virtual Fitting

## 1. INTRODUCTION

**Virtual Reality** (**VR**) creates a computer-generated environment which allows the user to experience a virtual world. Virtual Mirror is believed to be one of the concepts of Virtual Reality. Virtual Mirror is a computerized generated mirror which acts like a real mirror and hence allows a person to see themselves for various applications. The application "**Fashion Accessories Using Virtual Mirror**" is a model which we intend to implement in our project. Our model is restricted to clothing itself. Thus, the system will be used to visualize the fashion accessories for the clothing that a person can try and watch in front of a mirror although it wouldn't exist in reality. This is achieved by using the webcam of the user's laptop. The user enters the field of the view of the camera,here the camera captures the user's image. When the user selects a particular object to try on, that particular item automatically pops onto the body according to the user body alignment and hence the user can try out various accessories of clothing and decide whether the particular item suits him/her or not by experiencing similar to that of manual shopping.

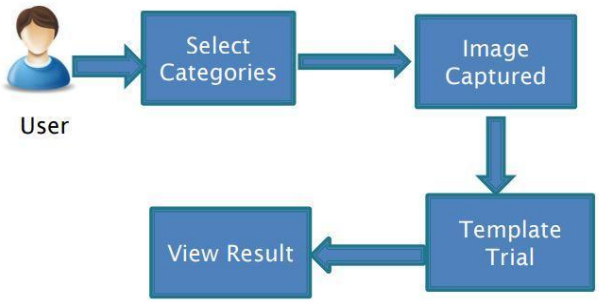
## 2. RELATED WORK

We mainly focus on designing the real time virtual dressing room model. Virtual dressing rooms are used in shops, malls and any shopping Centre. Trying clothes in the shopping centres is actually a time-consuming activity. Perhaps, our motive is to increase time efficiency and improve the accessibility of clothing through a virtual room environment by building an interactive and highly realistic model on which the user can try clothes without wearing it actually. lack of this model could be the key reason why a smaller number of apparels is being shopped online. Hence, a virtual room which might make people understand how clothes personally slot in would be a good luxury for the eCommerce giants that provides a wide choice for purchasers.

## 3. PROBLEM DESCRIPTION

Trying different clothes in shops and finally selecting the right one is a time consuming and tedious task. In shopping malls due to crowds, there is also a restriction on the number of garments that can be taken at one instance of time for trial.

## 4. PROPOSED SYSTEM




The proposed system uses the OpenCV library algorithm that is Haar Feature-based Cascade Classifier for Object Detection. The classifier is trained with six subjects with

different body shapes for fitting evaluation. Every subject was scanned by putting on the fitted size of shirt at the beginning, and then changed the shirt sizes to a bigger one and a smaller one.

## 5. LITERATURE SURVEY

**Protopsaltou D. et al.[1],** developed an internet based approach for virtual fitting rooms for the body even though it wasn't a real time approach and required marker based motion capture systems for animation.

**Zhang W. et al.[2],** used a multi-camera system by utilizing shell fitting space techniques to build an intelligent real time fitting room. due to its advancement in time of flight, consumers were availed with depth sensors technology with lower prices and better performance. Thus, it led to research in numerous fields such as rehabilitation, indoor modelling, and the pharma sector.

**Giovanni S. et al.[3],** by utilizing a calibrated set of kinect and HD cameras, he developed a virtual try-on system. Comparing two state of the art depth sensing software development kits, OpenNI and kinect for windows.garment meshes with simulation of physics is utilized by most frameworks. Another approach is using a pre-recorded apparel image database using which the image is super positioned in the RGB video of the user. The problem with depth sensors are quality and distortion of the depth stream. The following problem is analyzed in detail by Khoshelham and Elberink , they concluded that standard deviation reaches to 2 centimetre in a measuring distance of 3 metre.

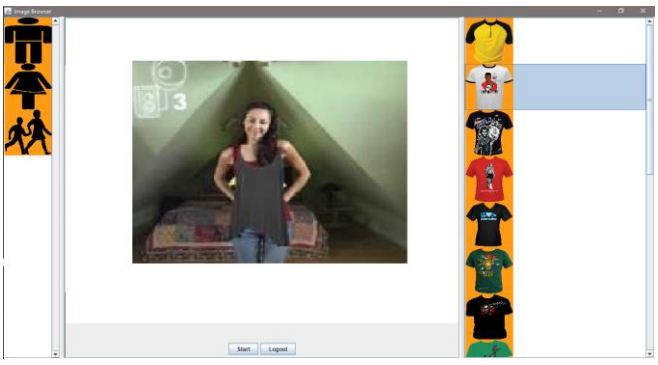
**Matyunin S et al.[4],** has attempted to improve the quality by filtering the information from the attached RGB camera. Also proposed method of filtering depth maps given by Kinect depth camera. Filter uses the output given by conventional Kinect cameras alongside the depth sensor to improve the temporal stability of depth map and fill occlusion areas. Regarding filtering input depth maps, the algorithm of the process uses the information about motion,color of objects from the video. This method can be tried as a pre processing stage before using Kinect output data.

**Tong J et al.[5],** describe a scanning system for capturing 3D full human models utilizing multiple Kinects to be used by virtual try-on applications. A key purpose of both virtual and real fitting rooms is giving the user the look and feel of clothing of a specific size on the user, so the user can choose the accurate size for themselves. Embedding the feature of matching clothing sizes with users requires capturing the user's body dimensions. More advanced frameworks construct avatars virtually with the input from one depth sensor. Altogether these works provide high detailed avatars and more accurate measurements, which could result in a suitable option for a made to measure type of framework, these processes require lengthy time to function with the real-time virtual fitting room application.

**Z. Yasseen et al.[6],** developed a sketch based garment design with quad meshes. they designed an easy to use sketch-based cloth modeling approach. Typically, the clothing process depends mainly on the meshing scheme that has to derive its geometry from the input boundary. Their quad meshing scheme is totally on discrete Coons patches but with arbitrary boundary input. They use the permanence principle to the topological solution which leads to more control over the input boundary polyline on the interior output polygonal mesh. Thus, facilitates the creation of folds which are strong in curvature at the boundary and diminishes towards the interior. These generated garments are then animated into a simulation system based on the concept of Finite Elements, using a re-discretionary of the generated mesh and a re-constructed metric of the cloth surface.

## 6. OBSERVATIONS

The intended application includes three categories which are for the following Men, Women, Kids and based on the selection criteria it allots the selections of the items suitable for the particular category. After which, the user is prompted with the start button once the user selects to start the web camera the image is clicked of that given user and the selected cloth can be tried following which the image result is shown on the screen.



## 7. CONCLUSIONS

We conclude that with this document we present a very time saving application and it doesn't require human efforts upto certain extent. The intended application can

be used by any non techie person. The model's UI is user friendly and provides a desirable addition for cloth stores. Overall, the intended project seems to be a good solution for quick and accurate try-on clothing virtually in a time saving manner and maybe used by the market increasingly in the coming years.

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