Design and Implementation of Trail Room Using Virtual Mirror

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***Abstract*— Virtual trial rooms are used in malls and any shopping center. Wearing different type of clothes in a shopping center for several time is a tedious activity and we have to spend more time on it. In some cases, like online shopping, it is not possible to try and verify the fabric. Our aim is to reduce the time and work on the availability of garments and to take a try on clothes by making a virtual changing are a climate. The point is to assemble an intelligent and exceptionally reasonable virtual mirror on which the client can attempt materials without wearing it actually. In this review, Microsoft SDK is used to follow the client's developments, coordinate the attempts and give profound impact to the human body and clothes.**

***Index Terms:* Virtual mirror, Virtual Trial Room, Microsoft Kinect Sensor, Skanect Sensor.**

I.INTRODUCTION

Usually, people require more time for shopping. Trying on different clothes for several times in stores is very time consuming and tedious work. In online shopping, the customer may not receive the actual product that has been ordered or the delivered clothes may not fit the customer. In such a case the customer is not satisfied with the product. Thus, a virtual trial room is an idea where individuals purchase garments without really wearing them. Inferable from innovative advances, internet shopping has become extremely famous as of late. Virtual trial room project offers help for internet shopping by offering the place to choose the garments and see how it physically fits on them without consuming more time. The identification of client and the body parts is the major step in the system. The idea is when a client goes into the shop for purchasing the clothes he needs to stand in front of the virtual mirror, take a picture and select the clothes from the provided catalog just with the help of his hand movements. With the help of a virtual trial room, the client will now be able to see the clothes superimposed on his picture. Body detection algorithm is utilized for recognizing the body parts of clients by superimposing the picture with the chosen dress and afterwards it is shown on the system screen. A client can interact with the setup by choosing virtual clothes on a screen with the help of hand movement. This paper proposes a methodology for virtual trial rooms utilizing Kinect.

II.METHODOLOGY

Room setup

Initially, a software has to be implemented in which the client will be able to try virtual clothes. The kinect sensor is used to capture the client's posture. The size estimation technique using kinect is done for accurate fitting of clothes on the client.

Tracking of client

The client ought to remain before the kinect sensor. With the help of RGB color sensing and depth sensing kinect sensor detects the human remaining before the sensor. Kinect sensor identifies the joints of the human body that are visible. The skeleton points and joints are mapped utilizing kinect coordinate planning. The skeleton joints that are distinguished and anticipated are joined to frame the full skeleton construction of the human.

Clothes

The clothes used by the client here are 3D object files and these files are created using skanect software.

Skanect makes 3D scanning and makes it easy to 3D scan different kinds. Using sizing and fitting algorithms 3D objects files are placed over the client.

Interaction of cloth

The material is fitted over the human body utilizing the skeleton joints of the client. The chest size of the client is estimated by working out the distinction among shoulder and the height of the client is determined by tracking down the contrast between the neck and the hip.

Skinning of cloth

The fabric is fitted precisely to the client's body by utilizing skinning. By the specific mapping of every vertex of the skeleton joints with the marks of the 3D dress, the dress is impeccably superimposed over the body of the client.

III.LITERATURE SURVEY

Nikita[1] et al this paper mainly focuses on design and implementation of the virtual dressing room. In this user is recognized in the image and selected cloth is superimposed on the detected picture. For client recognition, a face detection algorithm is used. Haar classifier is used for face detection. Skin detection algorithm is used to identify the correct face and to remove the unwanted object from the detected picture. Next step is detecting the lower body for superimposing the clothes using a haar classifier. Euclidian distance technique is used to measure the space between the client and camera.

Arik[2] et al the author proposes a virtual fitting room which can simulate the clients motion with rigging technology in Blender 3D modeling. The calibration process makes it easy to fit the clothes exactly into the client's body. The Euclidian distance method provides an average accuracy rate of 81% for male and 69% for female.

Vipin[3] et al this paper explains about the system in which the client can choose the clothes with respect to their requirement without using the trail room. With the help of VTR application the client can choose and try the clothes. This application imposes the 3D dress on the live client. QR module is used to take the screenshots of the clothes and it can be saved into his/her devices.

Aladdin[4] et al this paper presents the virtual dressing area utilizing kinect sensor. In this application it is feasible to extricate the client body from various sort of video, skin color detection and arrangement of models. To recognize the joints for positioning, scaling and rotation the author utilizes modules. The model is superimposed on the client. The issue with this paper is the arrangement of the client material models.

Sreemana[5] et al this paper depicts the edge detection technique of Gradient-based and Laplacian based Edge Detection. A versatile edge-detection algorithm is important to give a flexible solution that is versatile to the fluctuating noise levels of these pictures to assist with recognizing the valid pictures. The performance of the Canny algorithm relies intensely upon the flexible boundaries, which is the standard deviation for the Gaussian channel. Canny's edge detection algorithm is computationally more costly than Sobel, Prewitt and Robert's operator. Canny's edge detection algorithm performs better compared to all other operators.

Poonam[6] et al this paper describes various image segmentation techniques. After experimental results, it is found that canny yield has the best results. The overall presentation of different edge detection techniques is done with a picture by utilizing MATLAB programming. It is seen from the outcomes that LoG and Canny edge detectors produce practically a similar edge map. Canny outcome is better one when looked at than any remaining methods.

Vlodo[7] et al this paper presents a real-time facial features tracker. Face posture and facial activities are assessed utilizing nonlinear Kalman filters. As the following facial focuses are steady and exact, the author makes use of the tracker in an augmented reality application which permits clients to make the changes on face. The result shows that the tracker is good only for a limited amount of head rotations. The improvement that can be done on this application is to develop a technique for automatic estimation of the 3D initial head posture.

Yolco[8] et al this paper describes an image processing method for a virtual mirror system. The first is to create theinformation base recorded by skeleton presenting. At run time, a client chooses clothes from an index.. The system scans the information base for appropriate pictures and shows

them to the client. The system works precisely, including the client fitting of cloth resizing features. As a way to expand the program functionality, utilizing a standard camera to record skeleton joint pictures is being thought of, instead of Kinect.

Phillip[9] et al this paper describes facial feature detection. This requires breaking down the whole picture. The next step is using the remote faces to detect individual features. Since each piece of the picture used to distinguish an element is a lot more modest than that of the entire picture, identification of every one of the three facial highlights takes less time on normal than identifying the actual face. The mouth detection has a lower rate because of the base size expected for identification.

Tiago[10] et al this paper presents a natural method for controlling the place of a quad rotor, through a human-machine interface (HMI), in light of a motion sensor, which utilizes the developments of the body to order the versatile stage. The trial results were obtained by utilizing the Microsoft Kinect Sensor, and in the wake of procuring the information, the control commands are shipped off the quadrotor ArDrone Parrot to direct it.

IV.CONCLUSION

The problem faced by customers while shopping is they need to spend more time on trying clothes to check for the variety of clothes. The proposed idea will be helpful to overcome this problem with the help of a virtual trial room. We present a virtual trial room utilizing the kinect sensor. In this approach the client is extracted from the picture with the help of a kinect sensor. 3D locations are utilized for joints to position, scale and turn to adjust the 3D material models with the client. Later skin color detection on video is utilized to eliminate the undesirable things from the image. Towards the end the model is superimposed on the client. Kinect sensor is utilized to plot joints of the human body and the information is utilized to deliver the picture of clothes over the client's body, which eliminates the physical try of clothes and helps to save time.

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