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THE LITERATURE SURVEY BASED ON VIRTUAL FITTING ROOM

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Abstract—This survey paper purposes a real time implementation of the virtual fitting by different methods and technologies. The shopping system has many problems. There are huge numbers of customers and few numbers of trial rooms are in the shopping malls. To overcome these problems virtual fitting room is being implemented. The virtual fitting room plays an important role in real time implementation. This system provides us virtual reality of shopping and is easy to select the cloth. By using various methods and technologies it is implemented and gets improving. This paper visualizes the improvements in the virtual fitting room**.**

Keywords- virtual reality, Kinect sensor, augmented reality, skin detection, classifier,feature extraction.

I. INTRODUCTION

Virtual reality is an artificial environment which is created with software and presented to the user in such a way that the user suspends belief and accepts it as a real environment. On a computer, virtual reality is primarily experienced through two of the five senses: sight and sound.Augmented Reality and Virtual Reality are two hot topics which are trending in the world of technology, but there is more to it than what meets the eye. It could possibly redefine the way we 'see' and 'touch' things in the future. It has garnered so much attention in recent times and the trust of so many tech-giants, who are investing top dollars in developing this technology. A virtual dressing room is the online equivalent of the near-ubiquitous in-store changing room [1].It enables shoppers to try on clothes to check one or more of size, fit or style, but virtually rather than physically. A fit technology may be categorized according to the problem that it resolves or according to the technological approach. Shopping for clothes is a common daily activity both in-store and online. An in-store shopper usually tries on some selected clothes and examines how well they fit. While an online shopper usually checks how well the clothes fit the models in the online pictures [2]. A clothes shopper will usually make a decision after he/she perceived the visual image of a given garment. Moreover, rather than deciding by themselves, some shoppers would like to ask for his/her friends' opinions by sharing those pictures.Trying on clothes in stores today is one of the most time-consuming tasks. Usually long waiting periods have to be taken into account, while standing in front of full fitting rooms. Furthermore, additional time is lost when taking clothes on and off. Reducing the time and helping people to put on a large collection of garment in reduced time and preventing people from skin disease is a main motivation for virtual room fitting. Using of modern technology hardware as well as software the try-on experience can be drastically improved.[3,4]

II. RELATED RESEARCH

1. NutanKumari and SurabhiBankar,proposed the application which is used to improve accessibility of trying clothes and maximizing the time efficiency by introducing a virtual fitting room environment. The system users can use from their home itself. The system which makes use of web camera to detect human body .Inorder to superimpose the cloth image on the human body, resizing of the image is done in this paper. The obtained result shows that this device will capture the real-time motion pictures[1].

Algorithm:

This system consists of 5 main modules: User extraction, skin segmentation,haarclassifier,integral image, classifiers cascaded.

Step 1: Using the camera, the user image is captured and extraction is done.
Step 2:After extracting the image, the threshold is given only on the pixels. Then the areas on the background which is similar with the skin colour are not processed.
Step 3: Object detection is done using Haar classifier.
Step 4:Rectangular features of an image is calculated using an intermediate representation of an image. If the original image is essential image then the integral image is computed.
Step 5: The extracted image is used to find the accuracy of the classifier. It can detect human faces at a rate of five frames per second.

2. UmutGultepe and UgurGudukbay,proposed the virtual fitting room framework using a depth sensor. They have applied the bone splitting technique as it looks like a real render the body parts near the joints. They developed a system which is used to measure the users dimension in real time. The obtained results can be used in many applications in shopping malls [2]. The procedure used in this system is,

Algorithm:
To develop the system the following *Step*s have been followed,
Step 1: The body bone information is extracted from the input.
Step 2: Body measurements are used to estimate the location of joints and bones.
Step 3: Depth map filtering is done. Depth mapping is analysing the Image in depth in order to estimate the size.
Step 4: Body dimension estimation for cloth resizing is done in order to obtain the body height and shoulder width.
Step 5:Motion smoothing: under this process position filtering and rotation filtering and constraints is processed.
Step 6: Finally bone splitting is applied.

3. ShreyaKamaniet.al.,proposed the application of virtual trail room by using an augmented reality. In the virtual room, user can virtually try their clothes. In this system, the user pose can be estimated using the Microsoft Kinect. The main aim of this project is to create the dressing room using an augmented reality [3]. The steps followed in this system is,

Algorithm :
Using the Kinect sensor, the user skeleton is being detected and tracked. To visualize in a real time motion they have used the 3D game engine. The trail room is setup using the following steps [3]
***Step* 1:** User tracking: user pose is tracked using Kinect device.
***Step* 2:** The user size is estimated.
***Step* 3:** The tracked user is dressed using the 3D meshes.
***Step* 4:** To create the environment more real, they have measured the light conditions of the RGB image and average intensity is taken from the user.

4. FurkaIsikdogan and GokcehanKaraproposed the application of virtual trail room by using Kinect sensor. Their approach was mainly based on the user extraction from the video stream and skin color detection. The main methodology used in this system was background removal and detection of skin color. The obtained results were experimentally done that indicates the system works at 80% performance in the range of rotation [4].The methods used for background removal and skin color detection are

Algorithm :
***Step* 1:**Pre-processing:In this method the user is extracted and the depth of the user is calculated. The skin segmentation is done by converting RGB into YCbCrcolor space.
***Step* 2:** Tracking: Training method of the data is created over 500k frames. It is used to eliminate the data which consists of same poses.
***Step* 3:** The user position is detected and rotation is made in order to super impose.
***Step* 4:** Scaling is done regarding the user height and weight.

5. Qi Sun, et.al.,proposed the approach regarding parameter based. In addition they have generated the human avatar system. They have designed the virtual shopping system. In their system the user can rotate themselves for scanning without need of their postures [5]. The methodology used in this system is,

Algorithm :
***Step* 1:** Without keeping the pose user can scan them by rotating.
***Step* 2:** After this estimation the human model is created.
***Step* 3:** Human joint is tracked in depth by Kinect.
***Step* 4:**Inorder to estimate the width, find the Euclidean centres of bone line segment.

6. Sungil Kang, et.al.,proposedagesture tracking method using 3D blobs and a skeleton model for interactive application. A disparity map is obtained from stereo matching based on general purpose computation on graphics processing unit and they generate 3D foreground blobs using depth information. The distribution of 3D blobs is applied to determine the human position combined with the face and torso detection. The skeleton model for an upper body is fitted successively to a median axis in the area with more 3D blobs from the shoulder parts to the hands [6].The algorithm used in this system is,

Algorithm :
***Step* -1:** GPU based depth estimation and 3D blob generation.
***Step* -2:** Human detection and 3D skeleton model fitting.
In order to detect the human being and compute his/her head location, they are applying three methods:
(i) Face detection,
(ii) Torso detection, and
(iii) Head region estimation.
***Step* -3:** Tracking and motion trajectory.

7. Frederic Cordier,et.al., proposed the system which is based on a web application that adjusts the mannequin according to the measurements of the human body, resizes the cloth and in addition allows a realistic simulation due to physics. In order to generate an avatar, the eight length measurements have to be entered by the user. Based on that the particular segments of the avatar are adapted by deforming the skeleton as well as using interpolations[7].The eight basic measurements are done in order to form avatar. They are

Algorithm:
1. Stature: Vertical distance between the crown of the head and the ground.
2. Crotch length: The vertical distance between the crotch level at centre of body and the ground.
3. Arm length: The distance from the shoulder line intersection over the elbow.
4. Neck grith: The girth of the neck-base
5. Chest / bust girth: Maximum circumference of the trunk measured at bust/chest height.
6. Under bust girth: Horizontal girth of the body immediately below the breasts.
7. Waist girth: Horizontal girth at waist height.
8. Hip grith: Horizontal girth of the trunck measured at hip height.

CONCLUSION

In this survey the idea of the virtual dressing room methodology and its improvements have been discussed.The methods presented in this survey yield usable results for estimating the pose and shape of a human body.Even though some aspects are the main drawbacks in the existing system. The future work can be done in the areas of super impose and scaling.

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