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## Virtual Wardrobe System

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**Abstract:** The Virtual Wardrobe system is designed to reduce the losses incurred by the sellers when the customer decides to return the clothes or wearable apparel purchased online when incorrect or undersize garments are delivered to them. This system plans to replace the traditional way of shopping by simply viewing the pictures of the garments and wearable apparels.

**Keywords:** Photogrammetry, Magic Mirror, Virtusize, Xbox Kinect.

### I. INTRODUCTION

Virtual wardrobe system is a state of the art technology which has the capability of enhancing the shopping experience of the user and at the same time reduce the losses incurred by the sellers when the customer decides to return the clothing or any other wearable apparel purchased by them. It is similar to the magic the mirrors shown in fairy tales, people use mirrors to check the appearance of their clothing on them, this system enables the user to check the fitting of a selected garment on them by the use of motion capture cameras like kinect or by use of a 3d model of the customer.

### II. TRADITIONAL SYSTEM

#### I. Traditional Shopping experience

In the existing system the customer who wishes to buy a garment or wearable from an online portals has to view the images of the items displayed and purchase them by looking at the available sizes which are displayed in the web pages, it is not possible for the customer to find out whether the garments fits or not, therefore in the case of mismatch in measurements of the delivered items, it is returned by the customer and it often results in wastage of time and the seller, in turn, will incur losses.

#### I. Disadvantages

As there is a possibility that the items purchased by the user will not fit perfectly, many of the potential customers avoid shopping online for garment and apparels. as the sellers incur

losses due to the return policy of online shopping portal many small-scale sellers are not interested in

registering for selling items online. As a result, many multinational firms which are not affected by the losses incurred are using this opportunity to sell their expensive products because of their brand values this results in the slow and steady disappearance of native sellers.



Figure 1: Traditional shopping experience

### III. VIRTUSIZE

Recently many European shopping portals have added a new feature called Virtusize in which the customer manually enters their measurement and compare it to the dress they selected or they can compare a Virtusize enabled dress with the selected one. it generates a 2D image of the person matching the given measures and checks the fitting of the fitting of the dress. using this method the fitting of the selected garments can be approximately found.

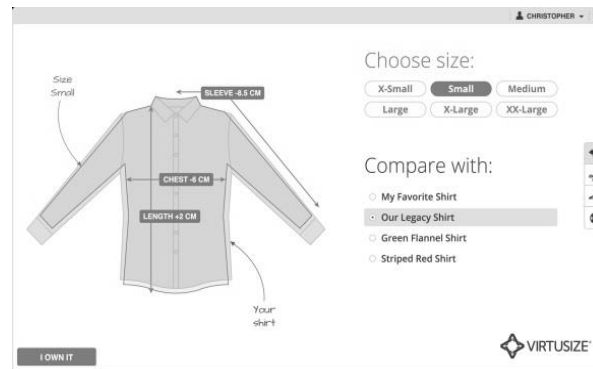


Figure 2: 2D image generated by virtusize

#### I. Disadvantages

- The user has to remember the exact measurement of his body.
- After selection of the dress, only the measurements can be entered and checked for perfect fitting
- It gives only a 2D representation of the given measurements which can only be very limited detail.
- The virtual fitting is capable of showing the aesthetic appeal of the dress on the person
- This technology is still in its infancy and it is currently available with only a handful of online shopping portals
- The aesthetic appeal of the garment or apparel selected cannot be seen by the user, it is similar to a 2d sketch of the measurement given.

### IV. MAGIC MIRRORS

It is one of the recently introduced technologies available at premium retail outlets, where the users can see the fitting of the garments in a virtual environment where the user avatar is created upon the customer arrives at the dressing room.

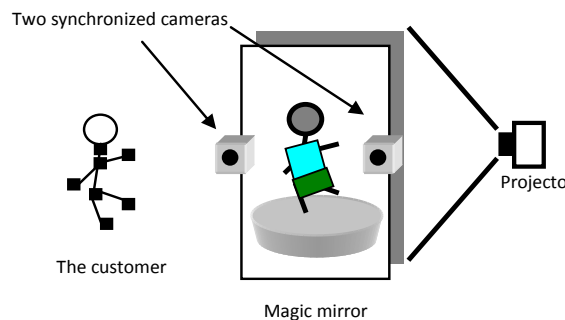


Figure 3: Demonstration of magic mirror system

#### I. Advantages

The customer can check the fitting of the garments without wearing them. It saves a lot of time.

#### I. Disadvantages

- Specialized dressing room must be designed for this purpose
- The virtual avatar created may not perfectly match the person.

### V. VIRTUAL WARDROBE SYSTEM

Virtual Wardrobe system incorporates all the features available in the above-discussed systems and also have some additional features. The various tools which are required for adopting the system in the currently existing system are a simple motion tracking device such as Xbox Kinect.

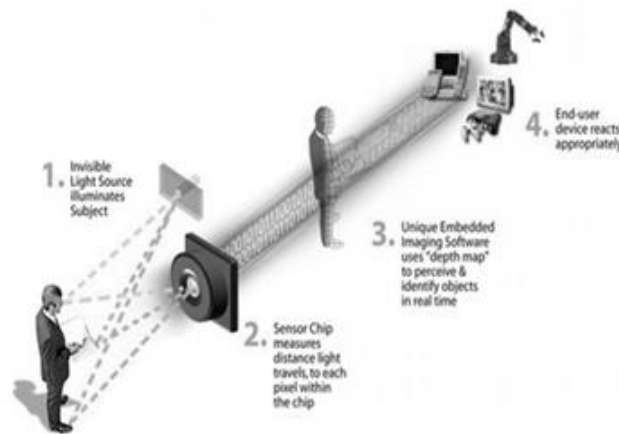
### VI. XBOX KINECT

After Xbox Kinect Kinect (codenamed in development as Project Natal) is a line of motion sensing input devices by Microsoft for Xbox 360 and Xbox One video game consoles and Windows PCs. Based around a webcam-style add-on peripheral, it enables

users to control and interact with their console/computer without the need for a game controller, through a natural user interface using gestures and spoken commands. The first-generation Kinect was first introduced in November 2010 in an attempt to broaden Xbox 360's audience beyond its typical gamer base.

### **I. Xbox Kinect's Working**

The Kinect camera is powered by both hardware and software. it generates a three-dimensional of the objects in the field of view and recognizes the human beings among those objects, Older software programs used differences in color and texture to distinguish objects from their backgrounds. PrimeSense, the company whose tech powers Kinect, and recent Microsoft acquisition Canesta use a different model. The camera transmits invisible near-infrared light and measures its "time of flight" after it reflects off the objects. Time-of-flight works like sonar: If you know how long the light takes to return, you know how far away an object is. Cast a big field, with lots of pings going back and forth at the speed of light, and you can know how far away the objects are from the field of view. Using an infrared generator also partially solves the problem of ambient light. Since the sensor isn't designed to register visible light, it doesn't get quite as many false positives. PrimeSense and Kinect go one step further and encode information in the near-IR light. As that information is returned, some of it is deformed - which in turn can help generate a finer image of those objects' 3-D texture, not just their depth.



**Figure 4: Working of Xbox Kinect**

### **VII. KINECT FUSION**

Kinect Fusion is a software which is used for construction high-quality 3d object scanning by the use of the Kinect for window sensor the user can paint a scene with the Kinect camera and simultaneously see, and interact with, a detailed 3D model of the scene. Kinect Fusion can be run at interactive rates on supported GPUs and can run at non-interactive rates on a variety of hardware. Running at non-interactive rates may allow larger volume reconstructions.

### **VIII. 3D MODEL GENATED BY FUSION**

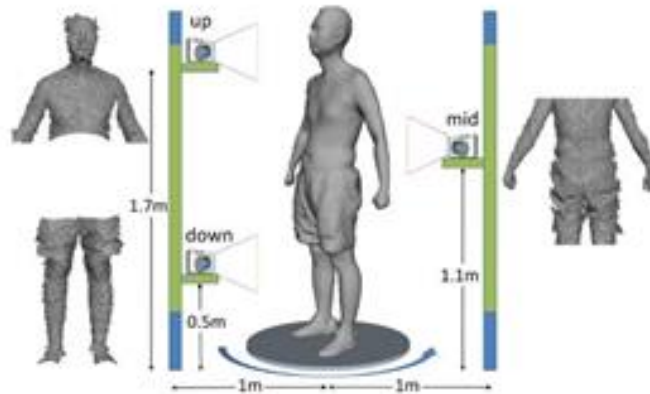
Kinect Fusion in action, taking the depth image from the Kinect camera with lots of missing data and within a few seconds producing a realistic smooth 3D reconstruction of a static scene by moving the Kinect sensor around. From this, a point cloud or a 3D mesh can be produced.



### **IX. GENERATION OF 3D HUMAN MODEL**

The proposed system will enable the user to, However, the depth data captured by Kinect over a certain distance is of extremely low quality. In this paper, we present a novel scanning system for capturing 3D full human body models by using multiple Kinects. To avoid the interference phenomena, we use two Kinects to capture the upper part and lower part of a human body respectively without overlapping region. A third Kinect is used to capture the middle part of the human body from the opposite direction. We propose a practical approach for registering the various body parts of different views under non-rigid deformation. First, a rough mesh template is constructed and used to deform successive frames pair wisely. Second, global alignment is performed to distribute errors in the deformation space, which can solve the loop closure problem efficiently.

Misalignment caused by complex occlusion can also be handled reasonably by our global alignment algorithm. The experimental results have shown the efficiency and applicability of our system. Our system obtains impressive results in a few minutes with low price devices, thus is practically useful for generating personalized avatars for everyday users. Our system has been used for 3D human animation and virtual try on, and can further facilitate a range of home-oriented virtual reality (VR) applications.



**Figure 5: Real-time 3d image generation**

## **X. PROPOSED SYSTEM**

The proposed system will enable the user to upload the 3d model of the users are constructed and stored under their login id similar to a profile picture of a social media web sites. when the user selects a new dress he or she will be provided with two options first option is to try out the dress on the virtual three-dimensional model of them or use any motion capturing camera to see the fitting of the dress similar to magic mirrors but at the convenience of staying in their living room or anywhere on the go.

### **I. Advantages**

- The user can check the fitting of the selected dress.
- Customer does not need to remember the measurements
- It can be easily incorporated into the existing system

## **CONCLUSION**

In This system would be a great addition to the existing online shopping portals, it would encourage many customers to buy and shop online.

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