Virtual Dressing Room Using Augmented Reality

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Introduction

The Artificial environment created with software Online equivalent of an in-store changing room. Enables shoppers to try on clothes virtually. First application known as WSS developed by Zugara. Known as fitting room or magic mirror. Due to the rapid growth of technology development, our daily life is heavily affected by smart systems which facilitates our activities. For instance, online shopping grew up very fast. People are getting more used to online shopping, online auctions, etc., to purchase their interested products. This way of transaction has become the main trend and it brings great convenience to customers. However, an issue for buying clothes online is that client cannot try the product be for he/she get that product. The feeling after dressing on affects the client decision about buying the clothes. Therefore, there is an increasing demand to develop virtual dressing room to simulate the visualization of dressing. Therefore, most of researchers in previous works are taking the approach to map a 2D texture to the user's body, and build an Avatar (model). However, we takea simpler approach to handle with it. As the user stands in the front of the Kinect, his sizes measuring in real time, image mapping occurs. Virtual Dressing Room is an environment which provides the facilities to the customer totry their dresses virtually. As online customers prefer to buy products online and also want to experience the appearance of dresses. Moreover, lot of customers on special occasions desire to have virtual dressing rooms to save time and fatigue. Due to large number of customers in boutiques, it's been a difficult task for the customers to buy the products and try their favorite dresses in a try room.

Objective

The objectives of this project are:

(a) To develop an augmented virtual dressing room application.

(b) To design a system that allows the virtual and augmented reality of a person to try (Superimpose) the different types of selected clothes model available in the store.

(c) To fit virtual garments onto human body according to the extracted body skeleton joint positions, body measurements and garment measurements.

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Methodology

Main Requirement for this project is Kinect sensor provides three streams: image stream, depth stream and audio stream and Skeleton API provides information about the location of users standing in front of the Kinect sensor array, with detailed position and orientation information.

- Extracting the information of the user through video capture.

- Detection of Face (nose, ears, eyes) and Body Part of User (upper body part and lower body part).
- Positioning of 2D cloth, goggles, earrings, Accessories by using the skeletal tracker and coordinates.
- Creating the web page using css and html and generating the link.
- Integrating link with the source code.
- Selecting the accessories of user choice.
- Output is seen on the screen of selected material.

An application with user interface is developed to check different types of clothes and other accessories. The user interface allows the user to choose and purchase dress and fashion kit.
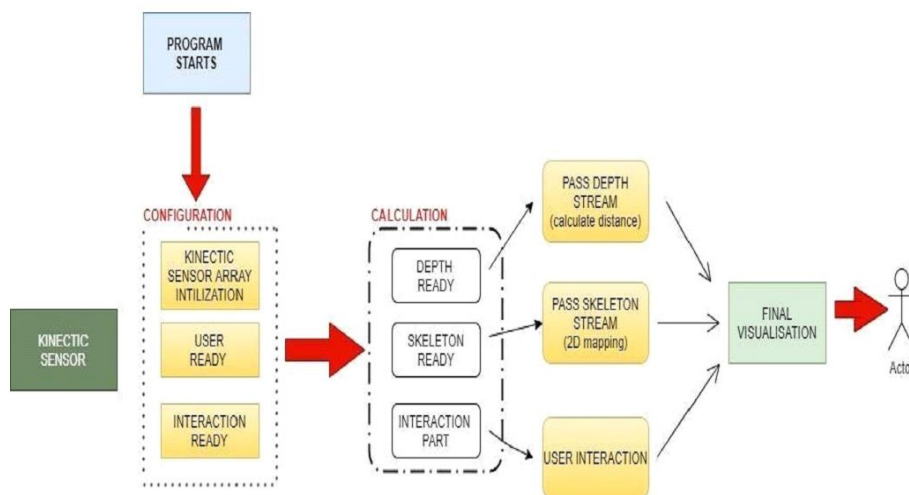
Figure: System Architecture of Virtual Reality

Kinect Sensor:

Kinect contains two cameras (one infrared camera and one video camera) and a special infrared transmitter that produces a grid of dots that measure the distance of objects from the Kinect and to compose a "depth map" of the image. Kinect sensor mainly provides three streams: image stream, depth stream and audio stream, with

detected range from 1.2 to 3.5 meters.

Skeleton API:

Skeleton API provides information about the location of users standing in front of the Kinect sensor array, with detailed position and orientation information as in figure below, basically it calculates the coordinates of important points of body (knee, hip, shoulder, feet) i.e x coordinate and y coordinate that help in conversion of 3D body into 2D model.

Results and Conclusion

(a)   User will be able to choose his favorite clothes according to his size.

(b)   It will be a "user friendly" application so that he/she can try it virtually.

(c)   An easy navigable, user-friendly Web app for the user to use.

(d)   A person travelling to shop and then buying clothes is a tedious task in this COVID-19 Pandemic.

(e)   Overall, the presented virtual dressing room seems to be good solution for quick and accurate try on of clothes virtually.

(f)   Here the virtual dressing room application requires only a front image. For each product to superimpose it onto the user and the 2D graphics of the product seem to be relatively satisfactory and practical for many uses.

Future Work

(a)   The Our future plans for this project will be developing a web application that can detect the clothes after the shopping.

(b)   We will try to implement this to detect pants, shoes etc.

(c)   We want to ensure that our project should be a baseline for the future research work that will be done around this topic.

(d)   We will try implement this for jewelry, hats and other things too.

(e)   We will also try to implement Online Virtual Lab.