V-Trial For Real-Time Shopping Experience

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Abstract - A virtual trial room is the online equivalent of an in-store changing room. It enables shoppers to try on apparels to check one or more of size, fit or style, but virtually rather than physically. V-Trial system will allow the customers to quickly browse through a variety of apparels in a matter of minutes. They can shortlist a few products that they actually want to try, thereby decreasing the load on the actual trial rooms. Along with that, the vendors will also be able to show the upcoming fresh stocks to the customers, which can further boost their sales. The project has developed a webpage which allows the customer to choose apparel and show the user how it will fit on him. This proposed system can allow the customers to experience real-time shopping while sitting in their living rooms. Proposed system is cost-effective as it does not make use of any expensive hardware or peripherals.

Keywords — Virtual reality, e-commerce, database, face recognition, superimposition

I. INTRODUCTION

The development of the computer as a tool in almost every domain of human activity is a remarkable attainment in the last decade. Introduction of human-friendly interfaces are becoming more and more popular in almost all domains. The development of the computer as a tool in almost every domain of human activity is a remarkable attainment in the last decade. Introduction of human-friendly interfaces are becoming more and more popular in almost all domains. There are various issues regarding the trail rooms in stores. It is very important to check the security and privacy of the trail room setup. Also many times it becomes inconvenient to try number of clothes especially when there are crowded shops. It turns into unpleasant experience when there are tiresome lines, numerous restrictions and enormous crowds.

Inadequate number of trial rooms and large number of customers results in quite a lot of waiting time for customers, ultimately resulting in dissatisfaction. Due to security reasons, there is also a restriction on the number of garments that can be taken at one instance of time for trial. Multiple trips from the shelves to the trial rooms increase the overall shopping time. In case of online shopping Virtual trial room allows you to try as many costumes you want to try sitting at your place.

II. LITERATURE SURVEY

The idea of virtual reality is not new due to the growing interest in augmented and virtual based application, [1][2]. The previous applications implemented this by taking a static image and overlaying clothing over the image[3][4].

The Virtual Fitting Room (VFR) application is a human friendly interface, which allows trying new clothes using webcams or smart phones. In this, three stage algorithm is used: detection and sizing of the user's body, detection of reference points based on face detection and augmented reality markers, and superimposition of the clothing over the user's image. The proposed algorithm is implemented as a universal Java applet using Open CV library functions and it can run in real-time on existing mobile devices.[5] The Multi-sensor body scanners combined with new algorithms and social media technologies have started a revolutionary shift away from the classic desktop paradigm and into the direction of intuitive, natural interaction where people interface with the technological world through hand gestures, speech and body language [6]. This article reviews recent examples of Virtual Fitting Rooms (VFRs) and supporting technologies which facilitate the shopping experience by letting customers to try-on apparel and/or mix and match accessories without being physically present in the retail shop. These platforms are not only powerful decision tools for the on-line shopper, but also contribute to the fun factor of in-store shopping. Writing professional virtual reality applications remains an inevitably complex task, since it involves the creation of a software system with strict quality and timing constraints dictated by human factors. Given the goals of virtual reality, this complexity will probably be always there [7].

III. OBJECTIVE

Using V-Trial, a lot of load will be reduced in malls and local retailer shops. The customers will be able to quickly view the dresses which will eventually save the time of trailing. The main objective of this proposed system are

- Cost-effective: The gadget used for virtual view is head-gear which is comparatively less expensive.
- Customizable: The designs of the garments wore by mannequins can be suggested by the customers of their desired choice.
- Category: V-Trial provides the customers different categories (Formal wear, casual wear, Western wear, Ethnic wear and more) to simply the shopping experience.
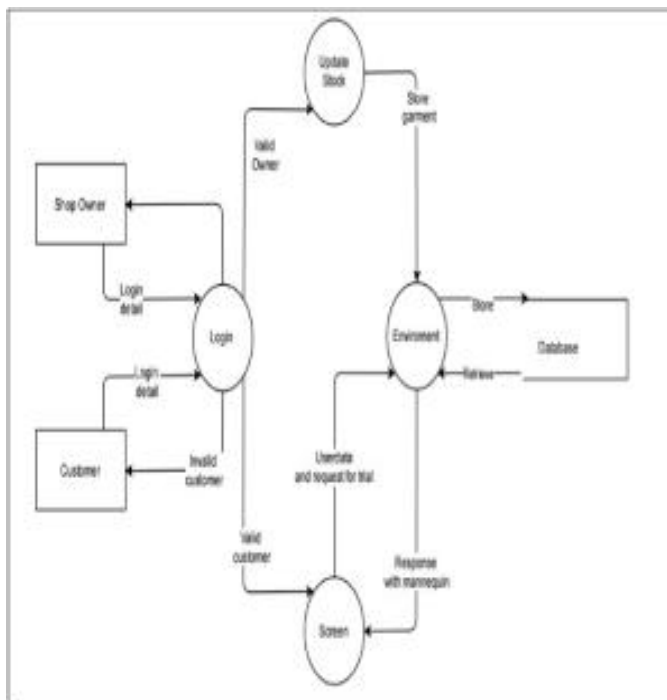
IV. SYSTEM ARCHITECTURE

Fig.1. System Data Flow Diagram

Fig.1 explains the complete dataflow of the system. This includes vendor's login, user's login, the webpage (screen and environment) and the database. The connectivity between these system components is achieved using four modules. The total workflow is divided into following modules

1. GUI using .NET

An e-commerce website for the customers as well as the vendors is designed using .NET. The front end is designed using asp.net and csharp.net. Using this GUI, the customers can view all the latest products, add or remove products from cart and try the products. The vendor can upload new products along with all their details (cost, availability, etc.). The vendor can also remove outdated products from the website. The vendor has a special login details for doing so.

2. Database using SQL

The database stores all the login credentials of the customers, vendors as well as the admin using MsSQL server. It also stores detailed information about all the products featuring on the website.

3. Face detection

When the customer selects "TRY THIS" option from the GUI, this module is activated. The system detects the face of the user captured by web camera using face detection in plugin.To detect the face haar feature based cascade classifier is used [8][9].

4. Superimposition of the accessories on the detected face

Once the face detection process is complete, the system will superimpose the selected apparel on the face of the customer. Technologies in JavaScript like phone gap and Cordova are used for superimposition. This will give the customer a fair idea about how a certain item will appear on his/her face.

5. E-commerce module

Once the customer has selected the products which he/she wants to purchase, they can select the "BUY NOW" option to proceed to payment. The customer can enter the required details for successful payment and purchase of the product. Once the customer purchases a certain product, the vendor can be given a notification regarding the purchase.

V. SYSTEM WORKFLOW

The system workflow is different for the vendor, customer and admin.

1. Admin

The admin can add or remove any vendor or customer from the database. The admin has all the administrative rights regarding the e-commerce website.

2. Vendor

The vendor has a different login than that of the customer. Using this login, the vendor can access the webpage. Once logged in, the vendor can perform various activities like viewing all the current products for sale, removing or adding certain products, changing the prices of various products, setting up notifications regarding future product availability.

3. Customer

If the customer is visiting the webpage for the first time, he/she will have to sign up and create login details. Once this is done, the database is updated to store the customer information. Once logged in, the customer can vie all the products available for sale. The customer can add or remove products from the cart there is an option available in the cart using which the customer can try all the products in the cart. The customer can select the "BUY NOW" option to proceed to payment.

VI. CONCLUSION

In present time, there are many application servicing us the service of online shopping. In online shopping, the mannequins used to display the clothes are of perfect size

and shape. The apparels worn on them look different when actually tried by the customers. To avoid this dissatisfaction, this project has successfully implemented V-Trial. Using this platform, the customer can get a fair idea about whether certain products will look good on them or not. Without visiting the shops and waiting in endless queues, the customer can get a complete shopping experience sitting at home.

VII. FUTURE SCOPE

Implemented system is designed to work with web camera. Because of this, it has limitations regarding body detection. The future scope of this project would be to modify it so that it can perform body detection flawlessly and superimpose apparels on the entire body.

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