**Virtual Dressing Room**

**Project Proposal**

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# Introduction

This project is aim to develop Virtual Dressing Room system for gents wear shops by building an application for virtual fitting.

Virtual Dressing Room enables shoppers to try on clothes to check one or more of size, fit or style, but virtually rather than physically. Real 3D Simulation fitting room combines the features of 3D solutions and photo-accurate fitting rooms. Using photo and simple body measurements, the solution generates a 3D mannequin, which accurately visualizes customer in chosen apparel items. Normally, the system suggests an appropriate size for entered measurements, but customer can also choose other sizes to estimate their fit.

Clothes are very huge area to cover in this project, so we decided to limit over clothes to men wears with the time frame we have to develop the application. We hope to develop virtual dress point to support men’s shirts, t-shirts and trousers. The areas to be covered are, Virtual fitting room as main component, provide interface to select other clothes in the shop and suggest clothes which match with the user’s skin tone. To suggest clothes an “Artificial intelligence” will be used. We provide user to choose clothes which exactly fitting among various clothes in the shop. And also the map of the showroom will be provided to make easy to choose clothes. Then the user will be able to fit on various clothes and try any clothe from the shop without wear it.

# Background

Shopping for clothes has become a very time consuming and annoying task now a day. Also it is a boring experience for some people. To buy single dress or an accessary, people tend to fit on so many clothes and this is a very time consuming task. Sometimes there are very expensive clothes at shopping complexes that are not allowed to fit on before buying. When people buy these clothes and after wearing them if they find out that the clothing does not suits them well, it become a total waste of time and money. The need for a virtual dressing room has arisen among modern day people because of the above mentioned matters.

There can be getting new experience about this virtual dressing room with different options to manage the time and also to save money. As well as organization has a very good opportunity to market their products in Sri Lankan market because there is no any competitors are using this system.

Virtual dressing room system develops for the gent’s wear that are shirt and trousers. The system can be most suitable for gent’s wear shopping complex to develop their market and to grow up other than the competitors which can be a strategic decision of their marketing environment.

Customer also can get very funny experience with the virtual dressing room system other than the shopper. So system is developed to target these area as well as to introduce for the clothes market.

# Problem statement

Time is very important in today's society. Many People are spending busy life with their job and other works. It is difficult to find a time for shopping for them. When people are shopping they have to limit their shopping session to one or two shops with the time they have.

To identify problems furthermore, we conducted a survey and found several problems people have. The major problems are People waste their valuable time in clothe shops and Most of them cannot find the right choice for themselves. Some dresses are not fit for their sizes. In the seasons clothe shops are full of crowds. People have to spend hours in fit-on room queues.

Analyzing survey data we found that average people spend 40 minutes in textile shops. Some people shops more than 4 times per month and in that case they waste about 2.5 hours. Furthermore they spend average 10 minutes in fit-on room for one clothe. In the survey 31% people does not like to use fit-on room. Average 16 % found harassment in fit-on rooms. 41% people getting help of sales assistance to find clothes. Our survey results show that 48% people wait for the season for session. That cause to make full crowd in shops. Considering above results and to prevent above problems it is worthy to introduce to the field. Thus virtual dressing room concept is new technology for sri lanka, Introducing this concept will be huge advantage to the industry.

People spend their valuable time in the textile shops for select right dress. Some dresses are not fit for the customer sizes. Very crowds times are available in the cloth center. After fitting on the dress, dresses are becoming dirty we must be prevent this situation using this virtual dressing room. Virtual Dressing Room that support overcome the above problem in that situation. Some people spend lots of times for selecting dresses and fit on that, but using dressing room we make customers select dresses fast.

In the survey result, 36% customers looking for some kind of dress, but they cannot find the location of dress in the shop. When we have map of the clothe location it will be easy to find the location of dresses. Fit-on same dresses several dresses it can be dirty and damage. Fit in rooms not enough when shop is full of crowd in the seasons.

Overcome above problems we introduce a new virtual dressing room.  Using this we can overcome above problems.

# Literature review

**Different types of researches explore the area of helping making decisions.**

**Real-time virtual fitting with body measurement and motion smoothing**

**Umut Gültepe, Uğur Güdükbay Bilkent University, Department of Computer Engineering, Bilkent, 06800 Ankara, Turkey**

We present a novel virtual fitting room framework using a depth sensor, which provides a realistic fitting experience with customized motion filters, size adjustments and physical simulation. The proposed scaling method adjusts the avatar and determines a standardized apparel size according to the user’s measurements, prepares the collision mesh and the physics simulation, with a total of 1 s preprocessing time. The real-time motion filters prevent unnatural artifacts due to the noise from depth sensor or self-occluded body parts. We apply bone splitting to realistically render the body parts near the joints. All components are integrated efficiently to keep the frame rate higher than previous works while not sacrificing realism.

**VIRTUAL TRIAL ROOM USING AUGMENTED REALITY**

**Shreya Kamani, Neel Vasa, Kriti Srivastava, D. J. Sanghvi College of Engineering, Mumbai 53**

This paper presents a Virtual Trial Room application using Augmented Reality which allows a user to try on virtual clothes. The user pose and depth is tracked using the Microsoft Kinect sensor and virtual clothes are aligned with the tracked user. The clothing moves and folds realistically and the lighting intensity of the cloth render is adapted to match ambient lighting conditions. The presented application improves on related augmented reality application by adding full user pose tracking and by using 3D clothing models combined with cloth simulation instead of 2D images.

# Objectives

This project is developing by 2015 Software Student group of the Sri Lanka University of Vocational Technology as the Final Project. Our Client is “Modern Fashions” located in Malibun Junction, Rathmalana, Colombo,Sri Lanka. The initial requirement is to implement a “Virtual Try On” system using Web Camera as its input device. Our Main Objective is developing Virtual fitting room to fulfill client’s requirements. This section explains the choice of using OpenCV as well as our concerns about the user interface design.

A Web Camera as an input device, Web Camera is not the right tool to be introduced into such a system which needs to track users’ positions, poses and gestures. But with resourses we have, we cannot go to high tech equipment like sensors. By using Camera to interact with the system, the user does not need to use any additional control devices. Therefore, interaction between the user and the system becomes more natural and convenient.

Virtual Fitting Room is an interactive system that mimics the real fitting experiences. Displaying user’s whole body image is a practical concern. Unlike a usual user interface, the screen requires a large portion of center space to display the user’s mirror image. Then, the remaining part of screen should be utilized effectively in order to display other information, such as instructions and functional menus. Detailed interface design is described in the system design section.

Besides the screen management issue, system interactivity needs to be concerned carefully as well. To be more specific, this system needs to focus on recognizing human body break points in a reliable manner.

# Methodology

# Software Prototype Model

### Evolutionary Prototyping

We propose to develop a functional prototype with minimal functionality in the beginning. By using evolutionary prototyping, the well-understood requirements are included in the prototype and the requirements are added as and when they are understood.

Use Prototype Application

Built Prototype Application

Develop abstract Specification

Application Adequate

Deliver

There are several textile shops we went to discuss about our proposed application to their shops. We used interview method to gather their requirements and to explain out proposed virtual dressing room application. A survey that contain different questions to get exact requirements for the application will be given to selected citizens in rathmalana area which are in different age groups. Then all gathered requirements will be analyzed and make abstract specification design.

Basic Prototype will be designed using diagrams and charts. Designed prototype will be developed with minimum functionalities.

The prototype will be deployed in the shop and more requirements will be collecting from the shop owner.

Once application adequate, the system will be delivered to the client.

This methodology helps us to,

* Increased user involvement in the application even before its implementation.
* Since a working model of the application is displayed, the client get a better understanding of the system being developed.
* Quicker user feedback is available leading to better solutions.
* Missing functionality can be identified easily.

# Resources Required

* Computers with below requirements
  + Processor : Duel Core or higher
  + RAM- 4GB or more
  + Monitor with 22 inch or higher.
  + Web Camera with more 5 megapixels.

# Progression Timeline

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| # | Task | December | January | February | March | April | May |
| 1 | Title Selection |  |  |  |  |  |  |
| 2 | Feasibility Study |  |  |  |  |  |  |
| 3 | Literature Review |  |  |  |  |  |  |
| 4 | Project Proposal and Preparation |  |  |  |  |  |  |
| 5 | Requirement Gathering |  |  |  |  |  |  |
| 6 | Requirement Analysis |  |  |  |  |  |  |
| 7 | System architecture design |  |  |  |  |  |  |
| 8 | Database designing |  |  |  |  |  |  |
| 9 | Interface designing |  |  |  |  |  |  |
| 10 | System implementation |  |  |  |  |  |  |
| 11 | Testing |  |  |  |  |  |  |
| 12 | Maintenance |  |  |  |  |  |  |
| 13 | Project final presentation |  |  |  |  |  |  |

# References (Adhere to IEEE referencing style)