

SizeAR – Online apparel trial system for customers using AR

Jayashree Katti
Pimpri Chinchwad College of
Engineering, Pune, India

Dev Bansode
Pimpri Chinchwad College of
Engineering, Pune, India

Gaurav Duhlani
Pimpri Chinchwad College of
Engineering, Pune, India

Saloni Bokare
Pimpri Chinchwad College of Engineering, Pune,
India

Sneha Boga
Pimpri Chinchwad College of Engineering, Pune,
India

ABSTRACT

During this Covid 19 pandemic situation many of the people are shopping clothes and apparels through Online E commerce websites. But by shopping these clothes and apparels through online E commerce websites the people or the customers do not get a clear overview of how a particular cloth or apparel looks on themselves, they do not get a clear idea of the size, fit or color of a particular cloth or apparel. Survey suggests that most of the returns in E commerce websites are caused because the size, fit or color of a particular cloth or apparel was inappropriate. This paper presents a system using Augmented Reality as a feature in E commerce websites so that the customers would get an AR try on feature of clothes or apparels on themselves so that they get a clear overview of the size, color or fit of a particular product.

Keywords

Augmented Reality, E commerce websites, Size, Fit, Color

1. INTRODUCTION

1.1 Augmented Reality

Augmented Reality (AR) is one of the latest technology trends going on at the current time in the world. Augmented Reality overlaps digital media and information onto the real world, as if they are actually present with people. Using AR will help users to get an experience of an imaginary world. AR opens up new opportunities for devices to be helpful by letting its users experience digital media in a way similar to ones experience the real world [5]. It lets one view things visually, simply by pointing the camera towards a thing.

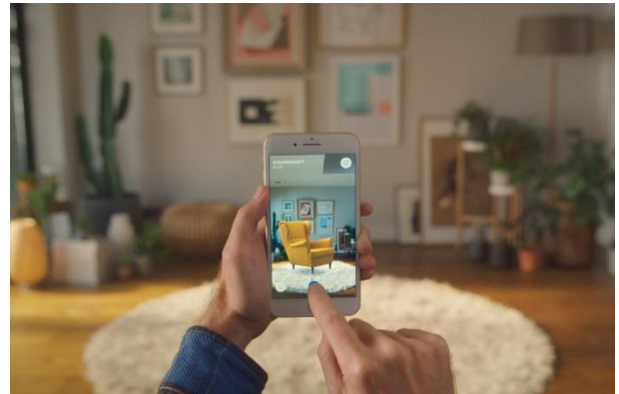


Figure 1: Ikea AR Application [9]

AR applications are currently been used by most of the people in the world. For example, AR app named IKEA where a user can get a visual look and experience of how a desired furniture will look in his/her own house, Lenskart's app and website offer a 3D try on feature which uses AR to help users to give a visual look of how eyeglasses will look on them. Now-a-days, for placing 3D objects precisely in one's space directly from a searched website or chrome tab, Google Search uses AR. Also, with the help of Live View feature in Google Maps, one can quickly align self and know which direction one should head towards with directions displayed right on top of mobile screen which is an amazing Augmented Reality application.

1.2 Virtual Reality

The motive of virtual reality is to superimpose one's reality with some new virtual computer generated setup. It could be a game or an environment where one walks around or a video that is being played in the surrounding when one looks around but the idea is to make the brain believe that the illusion created is the actual reality. VR was first used in the flight training program in Airforce and its flight simulator which is highly reliable, cheaper and much easier to use for new pilots, who usually practice stuff like fighting drills and shooting objects and ejecting and crashing without actually costing them millions of dollars for planes and that's a perfect use of VR.



Figure 2: VR Application in Airforce [10]

Virtual Reality uses VR headsets to create a simulator environment and helps an individual to immerse into it to experience an entirely different reality. A lot of companies are investing billions of dollars in the VR technology sector. Some of the best VR products are Oculus Quest, Nintendo Labo VR kit, Sony PlayStation VR, Lenovo Mirage and many more.

1.3 MixedReality

Mixed Reality is a mixture of physical and digital worlds, revealing the connections between human, environment and computer relationship. This innovative reality is based on advancements in processor vision, graphical processing power, presentation technology, and inputsystems.



Figure 3: Microsoft HoloLens [11]

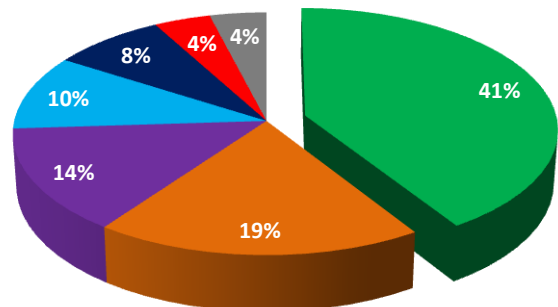
Mixed Reality (MR) is similar to Augmented Reality (AR) and that it sits in the spectrum between virtual reality and physical world. Some people like to think of mixed reality as being augmented reality or AR 2.0 as they both basically consist of virtual objects on top of the physical world. Figure 3 shows a Microsoft HoloLens in which it can be seen that a man is interacting with some type of speaker interface on top of the desk. In mixed reality the goal seems often times to closely tie objects and interfaces to the physical objects as they exist in the real world.

2. LITERATURE SURVEY

Augmented Reality (AR) is the latest and emerging technology which produces a connection or interaction between the real world for a user and computer-generated data while creating a 3D experience and real time interface. Part of

a study focuses on getting the knowledge of the effect of Augmented Reality on customer thought process and shopping experience; it presented an AR application to be used as a feature in shopping e commerce websites for a real time shopping AR experience for Clothes and Apparels[1] and also presents a Recommender system for the Apparels. Nowadays, Online Shopping has become a convenient way for people to shop as it saves time and efforts. Most of the people opt for shopping online on various e commerce websites like Amazon, Myntra and many more. There are many reasons for the return of the order from e commerce websites. But surveys say that almost 41% of online purchased items are returned, reason being the sizing issues because of unpredictable sizing systems or the color of the received order was not the same. The pie chart in Figure 4 shows a brief split-up of the reasons for returning items bought during onlineshopping.

Currently available E-commerce technologies do not provide enough product information or AR cloth/apparel shopping experience to consumers. So Augmented Reality (AR) technology as a feature might enhance the E-commerce websites by superimposing clothes/apparels on the customers/consumers [6]. By adapting this AR feature in E-commerce websites for cloth/apparel shopping might attract new shoppers, increase customer engagement, boost buyers' confidence, increase conversions, build brand loyalty, provide valuable consumer data and most importantly reduce return rates.



- The size, fit or colour was incorrect
- The product was damaged/broken/no longer functional
- The item wasn't as outlined in its description
- Customer disliked it
- Customer changed his/her decision
- Package arrived late
- Already bought one so don't want more

Figure 4: Reasons for Returning Items Bought Online

Online clothes/apparel shopping has some product associated risks like wrong fit of clothes/apparel [4],[6], different color, as customers/consumers cannot touch or physically see the items neither can have a physical try.

A recent research surveyed whether augmented reality fetches dependable cloth/apparel item details with regard to product performance, size, fit and how augmented reality technology affects perspective towards customers/consumers in cloth/apparel shopping experience and purchase objective during online shopping [1].

The research was planned for consumers and customers to visualize themselves on a mobile application implemented as a feature for e-commerce websites so as to ensure whether they all have a perfect fit and size for a particular cloth/apparel [8].

This AR feature in e-commerce websites can come up with enough details mostly for cloth/apparel size and visual appearances when making purchase choice. This can be helpful in initiate a specific design, improving sales, improving customer/consumer experience and reducing return rates, thereby making the customer feel the experience of “actually beingthere”. AR technology can detect an object with the help of camera and after detection and tracking it can superimpose a cloth/apparel [3].

Currently, virtual fitting rooms are in use by apparel retailer companies like ZARA, Park Avenue, etc. which provides customers a real life experience but the drawback for this is that the customers have to visit their local stores and do a virtualtry-on.

But this can be overcome by the use of AR Technology and making this feature available on finger tips of the user by providing them the facility to use it in their mobile phones. This can also lead this industry to grow up to billions of US dollars in upcomingyears.

How’s AR changing the e-commerce landscape? Check out thechart:



Figure 5: Statistical information about using AR in E commerce

This paper also presents an intelligent fashion recommender system, which is another feature that choosethe most appropriate apparel design arrangement for a particular customer to generate new personalized clothingitems.

This system combines fashion ideas and human opinion on an individual body shape and certified designers’ expertise.

The fusion of models can impart knowledge on a broader level to the fashion recommendation system, and makes it imaginable to assess if a particular type of body shape [2],[7] is appropriate to a needed fashion idea and which apparel design structure can enhance the appearance of a person’s body.

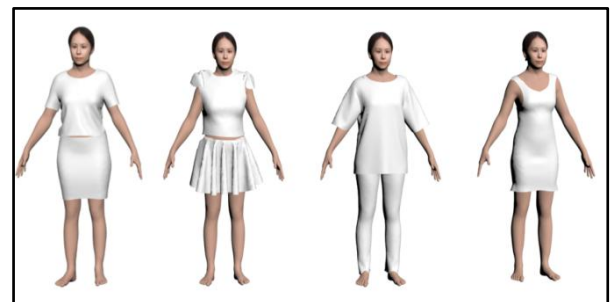


Figure 6: 3D Garment Template [12]



Figure 7: Textured Garment Model [12]

3. PROPOSED METHOD

This feature of AR will be used in the E-commerce websites for buying clothes and apparels. This feature can only be used when the consumer is shopping through a mobile device. There will be an option given for the AR try on feature for cloth and apparels. The consumer must point the mobile device camera at itself, it would be great if some other person points the camera at the consumer.

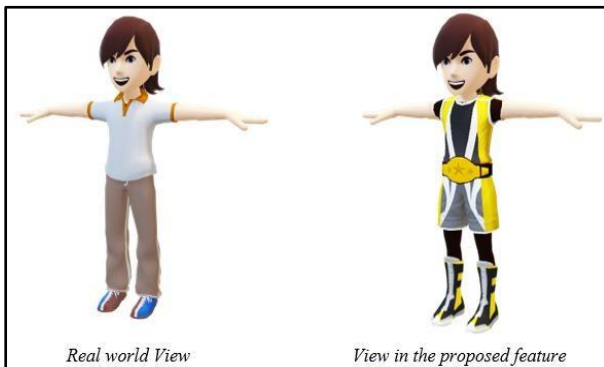


Figure 8: Overview of Proposed Work

When the camera points the consumer the selected cloth or apparel will be overlaid on the consumer and will direct the consumer whether the selected size or fit will be perfect or not. If a particular fit or size is not appropriate then the system would prompt to try a large or small size depending on the body type. Also, the system consists of a recommendation system for clothes and other apparels which would help the consumer to differentiate between a number of available options.

Using Augmented Reality, to build a feature of Recommendation system for E-commerce businesses can help the customers to visualize the fit of new suggested apparels on clothing, like watches, spectacles, sneakers, etc. This feature will help the customers to make fashion analysis onto which style would suit them more once they try on the recommended products. The recommended products can either be most purchased item along with the searched product or also work as a fashion recommender to all customers to get good user experience. The Figure 8 above shows an overview of the proposed work.

4. TECHNOLOGY USED

4.1 Unity 3D

A structure objective-built for AR enhancement allows developers to develop their own app then, utilize it across numerous mobile and vesture AR appliances. It includes essential features from each platform, as well as unique Unity

features that include photorealistic interpretation, physical science, device optimizations, and muchmore.

4.2 Vuforia

Vuforia makes implementing Augmented Reality app easy for anyone to get started without having to redevelop all the complex detection and tracking algorithms that are incorporated in the VuforiaSDK.

4.3 Google AR Core

It is a lightweight Android Augmented Reality platform that doesn't rely on external sensors. It uses a camera of a phone which has an inbuilt accelerometer, magnetometer and a gyroscope and fuses the sensors with APIs provided by GoogleARCore.

5. CONCLUSION

Augmented Reality can be used as a feature in E-commerce websites, for optical shopping, watch shopping, cloth shopping, apparel shopping and also for recommendation of particular size or fit.

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