AR Watch Try – On Application for Android Devices

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Abstract: In recent days Augmented Reality is an emerging trend in marketing and sales strategies. Augmented reality ads are immersive, which means they help marketers create a certain emotional connection with customers. Unlike images or banners, for example, AR ads are interactive and lifelike consumers can see and even interact with them. Now-a-days people prefer online shopping rather than the traditional window shopping and Augmented Reality allows brands to give customers unique experiences with the convenience of tapping into their mobile devices. So the main purpose is to build an "AR Watch Try-On application" is to develop android application for trying different watches in a Virtual way using a mobile which supports AR camera. This application can be used on Online Watch Shopping websites and applications such as Titan, Fastrack, Sonata and so on. The application will eliminate the human efforts by physically visiting the Watch shops which is very time-consuming activity. User can try out multiple watches and different varients of those watches.

Key words: Augmented Reality, Emerging trend, Augmented Reality ads, interactive and lifelike, Virtual component, AR camera, Time Consuming Activity.

Introduction

Augmented reality has been a hot topic in software development circles for a number of years, but it's getting renewed focus and attention with the release of products like Google Glass. Augmented reality is a technology that works on computer vision-based recognition algorithms to augment sound, video, graphics and other sensor-based inputs on real world objects using the camera of your device.

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It is a good way to render real world information and present it in an interactive way so that virtual elements become part of the real world.

Augmented reality displays superimpose information in your field of view and can take you into a new world where the real and virtual worlds are tightly coupled. It is not just limited to desktop or mobile devices.

A simple augmented reality use case is a user captures the image of a real-world object, and the underlying platform detects a marker, which triggers it to add a virtual object on top of the real-world image and displays on your camera screen.

LITERATURE SURVEY

The research for augmented reality technology has brought up development of various applications in the field of computer science. In this literature review, it shows how the implementation of augmented reality in various fields using unity 3D.

[1] Santosh Sharma, Yash Kaikini, Parth Bhodia, Sonali Vaidya has proposed technique named "Marker less Augmented Reality based Interior Designing system", which uses Marker- less Augmented Reality as a basis for enhancing user experience and for a better perception of things. It has advantage of no need of markers in the surface area and disadvantage is Object is aligned with camera so that it moves as we move a camera.

[2] Snehal Mangale, Nabil Phansopkar, Safwaan Mujawar, Neeraj Singh has proposed technique named "Virtual Furniture Using Augmented Reality" which is a web based application where user, have to place the marker in a room where they want to try out furniture items. The user's webcam will be on and through the webcam they will capture the live feed of the room. Application captures the image and passes through predefined marker detection algorithm. Algorithm is based on image processing techniques using color and other properties as the input to detect the marker. User initially selects the furniture to be placed from the given database. The application superimposes furniture on the original image with the center coinciding with the markers center in both directions. Furniture objects are overlaid on to the two dimensional image frame acquire from webcam. This will appear as if it is actually placed in the real world. And finally the user can view how the area looks with the furniture present.

[3] Khushal Khairnar, Kamleshwar Khairnar, Sanket kumar Mane, Rahul Chaudhari has proposed a technique named "Furniture Layout Application Based on Marker Detection and Using Augmented Reality" to develop an application where user have to place the marker in a room where he want to try out furniture items. The user's webcam will be on and through the webcam he will capture the live feed of the room. Then application search the marker using fiducial marker detection algorithm.

EXISTING SYSTEM

Traditional methods of designing include advising and assisting customers who have relied upon a combination of verbal explanations and 2D drawings through online shopping application. However, this medium of approach clearly restricted to the limit of explanations provided to customer for the particular model of a watch and makes him less efficient and confused to buy the watch.

The main drawbacks in the mediums of existing system are:

- Static view of design which is unable to convey
- Cannot determine the watch will fit to our needs.
- Information like size and comfortability can't be known.

PROBLEM DEFINITION

As the customer purchases various types of watches through online, but in online it shows only photo or 2D image and cannot be determined whether it is suitable for them or not. So, to overcome that we can use this application to check whether the watch is suitable or not by placing it in their own hand using augmented reality images.

Our application is a step in this direction, allowing users to view a 3D rendered model - a virtual resemblance of the watch which can be viewed and configured in real time using our Augmented reality application.

This study proposes a new method for applying Augmented Reality technology to watches, where a user can view virtual watches and communicate with 3D virtual watch data using a dynamic and flexible user interface.

PROPOSED SYSTEM

With the approach of augmented reality application, this can be easily achieved. People today are well versed with the technology and are operating smartphones which support AR. Thus, the concept of creating a watch try-on application brings the designer step closer to being technologically advanced.

With the recent emergence of better cameras and more accurate sensors in soon-to- be mainstream devices. In our current implementations of application, we use Vuforia Framework to accurately detect the real- world environment, such as the locations of walls and points of intersection, allowing users to place virtual objects into a real context.

The proposed system uses Image tracking Augmented Reality as a basis for enhancing user experience and for a better perception of things. In Image tracking the user points his phone to an image, the app scans and recognises that image and overlays a 3-D model on top of that image.

The basic premise of the proposed system is to overlay digital 3D models on top of target image using a camera.

- This Application will use AR supported mobile phone to scan the target image and display the augmented watch object to check whether it adjusts the users hand and preferences of their needs.
- Blender is a software which offers a comprehensive creative feature set for 3D computer animation, modeling , simulation, rendering, and composition.
- The next step involves setting up light, shadow, and camera positioning of these models using various components of Unity 3D.
- Next, the watch model is selected and the selected model is rendered and processed to be loaded on the scanned target image by Vuforia Framework.
- Mapping of 3D model onto the smartphone screen takes place which decides the dimensions and appearance of the model which is then rendered and displayed onto the screen.

FLOW DIAGRAM
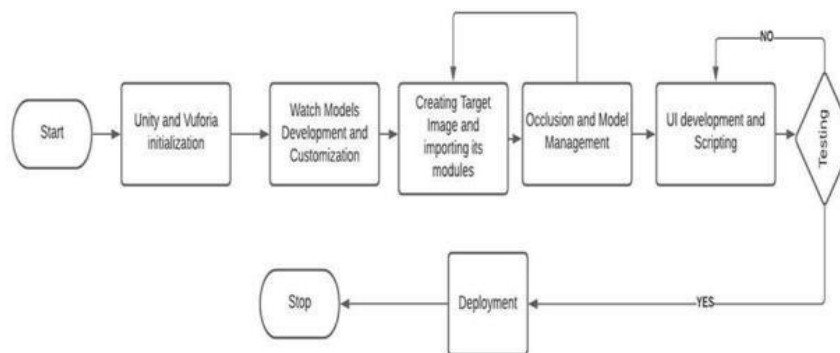
MODEL IMPLEMENTATION
Creating Augmented Reality Objects.

First, we should establish virtual models with the help of Blender software to create 3D furniture models, the models mainly use Polygon and NURBS modeling methods, the animation mainly uses key frame and expression animation technology. After establishing models in Blender, four important information of the model will be stored in the file of each model, they are the model's vertex coordinate, texture coordinate, normal coordinate and the total number of polygons, these data are the main data when rendering model.

Application will store them in memory and read them to render models when calling rendering function. The data quantity of the model is very huge, so we need a loading module of the model to make it loaded into program conveniently. Later we export the model data, the file exported by Blender is .obj file, which stores above information, next convert the information to file which is available in program by model loader and obtain the model data

by calling head file. After loading model data, we can render and display it in the scene through Unity 3D.

As shown from the above image it shows how the 3D objects are developed for this application using the Blender. In the figure it shows the front view and 3D view of the object that is been created.

Developing Scenes for User Interface

In this module we create scenes for every slide of application using Unity 3D. The main interface interacts by sliding browsing and selecting the key. The main interface contains watch models, buttons that helps change colors, description of the watches like model name, price, varients. The watch column stores the key of all watches, display one watch at a time and which also supports sliding browsing. In order to implement these functions, we make the scene display to ratio of Android display and add the buttons to the scene that helps in moving to next scene.
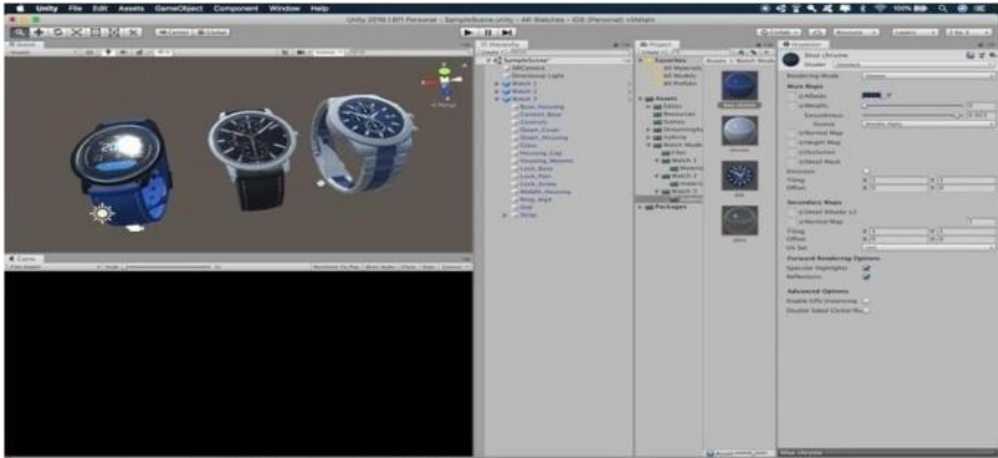
As shown in the above image, it shows the Unity 3D platform that is used to create scene for the watch model which is imported from Blender. For every model of the watch we will create an individual scenes and at final we combine all scenes.

Place the Virtual Object on the Surface Area

In this scenario, we use the help of Vuforia package which will be imported in Unity 3D and modify the package that will help us to scan the target image where we need to place the virtual object in in the real world. Once the modifications to Vuforia has done, we will create scene such that after the surface area is scanned and when the user tap on the touch screen then the virtual 3D model will be rendered or integrated with theuser hand so that user can verify the watch model suits to their needs. The user can drag-and- drop virtual watch model according to his desired in the real scene via user interface provided at this stage.

Verification of placed objects

Once the user thinks that the object is well suited to his need, he can check the description by selecting the information button that helps in describing the color, model and price of the watch. In order to view this description, we create another scene that helps in displaying all the required information. We add another button that helps in changing color of that model. For this change in color we use then program with C#.

OUTPUT SCREENS

Home page

When the application is launched the home page appears where we can able to select the watch models that is needed to buy and verify whether it suits the user and the target image is shown in the camera.

Placing the object scene

Once the target image is scanned and obtained the points of the image the watch is now visible on the screen and the UI with watch details are popped up. Along with that we get UI buttons that helps changing colors and Information of that watch is shown.

CONCLUSION

The main objective of this **"Augmented Reality Watch Try-on Application"** is to analyze the use of augmented reality to render the watch model in real world. Augmented reality technology that allows the customers to decide and interact the watches with the real world, offering new possibilities for online shopping. It helps the customer to view and understand the watches for their requirements. Due to this customer will come to know that they can buy watches from whenever and wherever they want. Augmented reality support for watches help in creating many new opportunities for future research to anticipate new ideas in the field of online shopping as customer will get benefit with these types of applications and gives a better understanding and decision making for purchasing a watch in an efficient way. Augmented reality is new evolving technology in the field of computer science and will make us much more helpful than the traditional technologies.

FUTURE SCOPE

In future our **"Augmented Reality Watch Try-on Application"** dataset and scope will be scalable. The user might not only be able to try out different watch models but they can also try out this application by trying on garments, goggles, hair styles etc. It can also be used for various applications in shopping malls, interior designing, Medical Science etc. New technology may come into existence in future that will help in developing 3D models automatically.

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