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3D AR MOBILE SHOPPING EXPERIENCE

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ABSTRACT

In the early days, it was possible to buy furniture products without going to a store, but it was not possible to see how the object would look in a home structure. Users may now purchase furniture products from the comfort of their own homes without having to go to a store. The main goal of the "3D AR Mobile Buying Experience" is to develop an app that allows users to virtually try out different furnishings using a smartphone with an AR camera. The application will reduce the need for humans to go to a furniture store, which is a time-consuming process. Furthermore, it may be easier to apply this technique in online shopping as a way for users to try out furniture items in their room that they are considering purchasing and to picture how the place will appear after the furniture is placed in it. Users can digitally try out numerous combinations without having to physically move furniture.

Keywords: Augmented Reality, Online Furniture, E-Commerce, Marker-Less AR.

I. INTRODUCTION

Augmented reality is a technology that allows us to experience objects in the actual world in a virtual way. It gathers a diverse set of user experiences. We want to design an Augmented Reality-based solution for the look and feel of various furniture items without the time-consuming approach that now exists. The main goal of this project is to create an application for various furniture products. People will be able to shop for furniture without having to go to a store using this online application, which will allow them to visualize the room or space where they wish to put their furniture. Also, after racing furniture in the room or space, achieves the exact look you want. Users can digitally try out various combinations of furniture components without having to physically move the items. Our goal is to improve the time efficiency and accessibility of furniture try-on by using an augmented reality application to create furniture layouts.

II. LITERATURE SURVEY

The creation of numerous applications in the field of computer science has resulted from the study of augmented reality technologies. This overview of the literature reveals how Unity 3D has been used to integrate augmented reality in numerous sectors.

Santosh Sharma, Yash Kaikini, Parth Bhodia, and Sonali Vaidya presented "Markerless Augmented Reality based Interior Designing System," which employs markerless augmented reality as a basis to improve user perception and experience. It has the advantage of not requiring surface area markers, but the disadvantage is that the object is aligned with the camera and moves as the camera moves.

Snehal Mangale, Nabil Phansopkar, Safwaan Mujawar, and Neeraj Singh presented "Virtual Furniture Using Augmented Reality," a web-based application that allows users to set a marker in a space where they wish to check out furniture items. The user's webcam will be turned on, and they will be able to see the live video of the room through it. The image is captured and passed through a specified marker detection technique by the application. To detect the marker, the system is built on image processing algorithms that use color and other features as input. Initially, the user chooses the furniture to be put from a database. The application superimposes furniture over the original image in both directions, with the marker in the center. The two-dimensional visual frame acquired from the webcam is overlaid with furniture objects. This will have the appearance of being put in the actual world. Finally, the user may see how space appears with the furniture in place.

Khushal Khairnar, Kamleshwar Khairnar, Sanket Kumar Mane, and Rahul Chaudhari have proposed a

way for building an app that needs the user to set a marker in the area where he wants to check out furniture called "Furniture Layout Application Based on Marker Detection and Augmented Reality." The webcam of the user will be turned on, and he will utilize it to record a live feed of the room. The application then uses a fiducial marker recognition algorithm to find the marker. Using a direct linear transformation algorithm, determine the location of the marker. The user will choose whichever furniture object he wishes to try out from the database. The application will then superimpose a 3D item on top of it. Three-dimensional objects are superimposed on a two-dimensional visual frame captured by the camera. This will appear in the same way as it would in the real world. Finally, the user has the ability to view the room and object from various perspectives.

III. PROBLEM STATEMENT

Users buy many types of furniture online, but online applications only display images and do not allow the user to determine the size of the furniture in the room. While some web apps are built on augmented reality, many aren't designed for real-time processing, while others are restricted to a single image plane. To get around this, customers can use the “3D AR Mobile Buying Experience” application to see if the furniture is adjustable or not, and then place it in their living space, such as their home or office, using augmented reality images.

IV. PROPOSED SYSTEM

An Augmented Reality solution for visualizing furniture from a website catalog into the user's space for a more immersive shopping experience. To place, 3D augmented furniture objects projecting on the surface (Horizontal, Vertical, and Angled) based on client interest by simply pointing on the surface.

- AR Integrated E-commerce experience to place 3D augmented furniture products on the surface based on customer interest, just by pointing on the surface.
- Customers can engage with the product directly, simulating a real in-store experience.
- Customers can modify different properties of a piece of furniture in real-time and explore features and descriptions of a product to have a good user experience.
- To improve the user experience and perception of objects, the system employs Markerless Augmented Reality.
- Markerless tracking is a type of positional tracking that determines an object's position and orientation in relation to its surroundings. This is a crucial component of augmented reality (AR), as it allows the environment to adjust to the user's field of vision and viewpoint.
- While marker-based techniques of motion tracking require specific optical markers, marker-less positional tracking does not. As a result, it's a more adaptable strategy.

V. TECHNOLOGY STACK

Front-End

- Flutter: for producing stunning natively built mobile, web, and desktop applications from a single codebase.
- Dart: It is a programming language for client development, such as web and mobile applications. It can also be used to create servers and desktop applications. Dart is a C-style object-oriented, class-based, garbage-collected language.
- Tools: Android Studio, Unity

Back-End

- ARCore/ARKit/Sceneform SDK for compiling 3D objects and implementing Augmented Reality.

VI. WORKING MODEL

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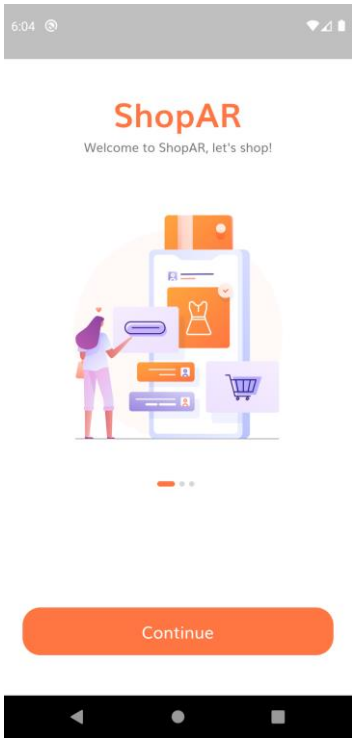

Fig. 1: Onboarding Screen

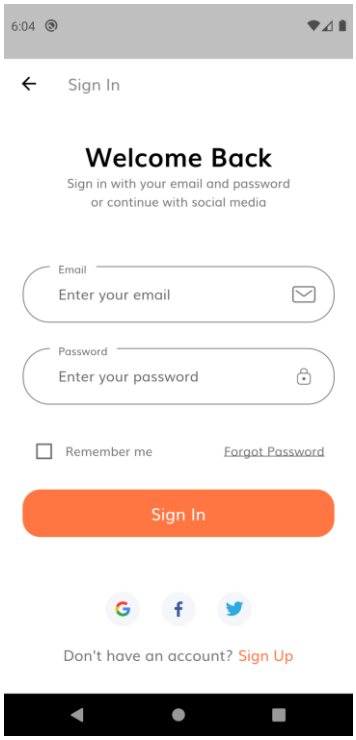

Fig. 2: Sign In Screen

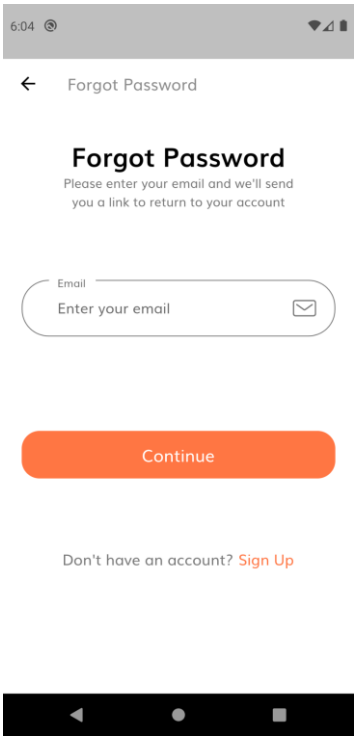

Fig. 3: Forgot Password Screen

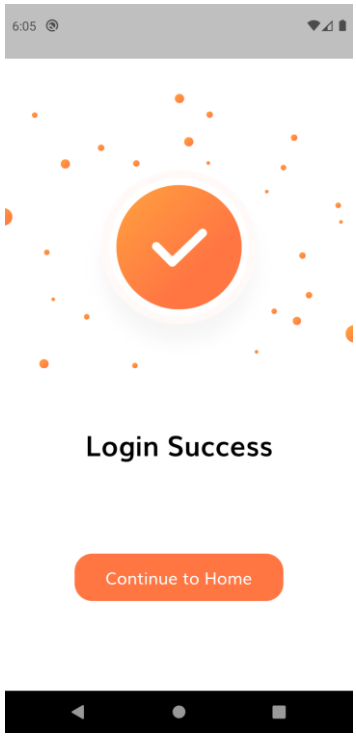

Fig. 4: Login Success Screen

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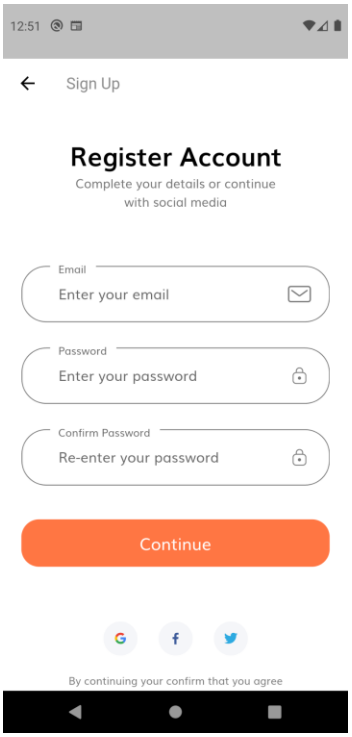

Fig. 5: Sign Up Screen

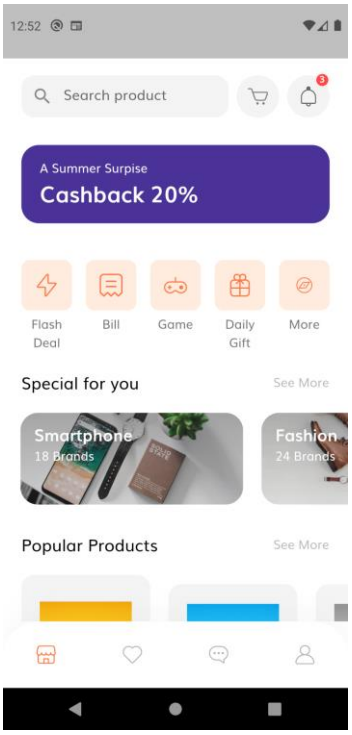

Fig. 6(a): Home Screen

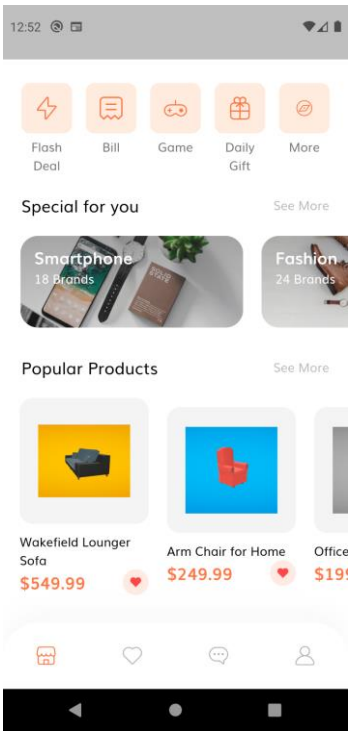

Fig. 6(b): Home Screen

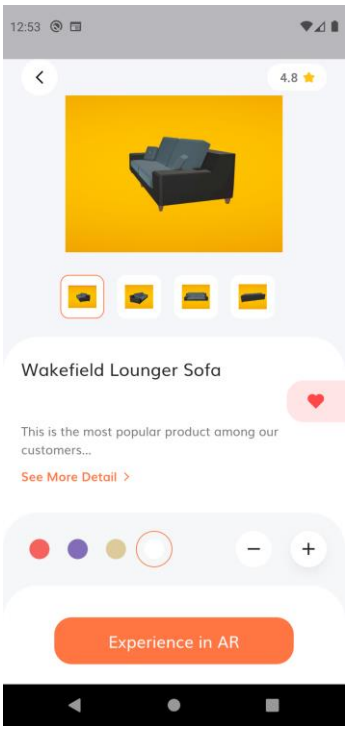

Fig. 7: Product Detail Screen

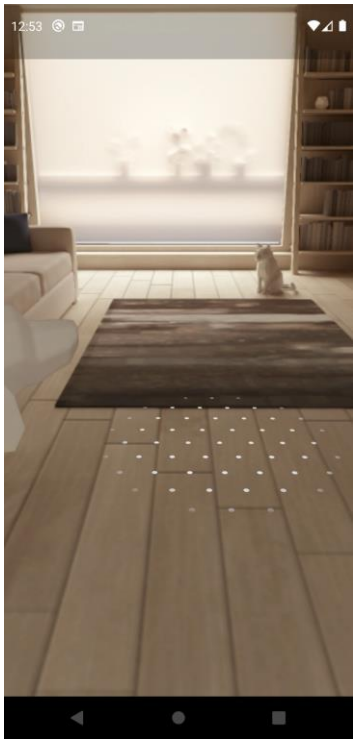

Fig. 8: Finding Plane to place Furniture Item

Fig. 9: Experiencing Furniture Item after placement

VII. CONCLUSION

This system will allow buyers to virtually see furniture items in a real-world setting before purchasing them. The buyer will be able to see how his home structure will look after purchasing furnishings thanks to this technology. This system would allow the user to digitally try out numerous combinations of objects without having to physically move furniture. These will assist the buyer in determining how to arrange furnishings inside the structure of the home.

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VIII. REFERENCES

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