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FURNITURE TRY ON APP USING AUGMENTED REALITY

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Abstract: The purchase of furniture objects without visiting the shops was conceivable, however it was unrealistic to check how the item really examines home construction. Presently, In our proposed framework, it is workable for users to purchase the furniture objects sitting in the home without visiting the shops. The fundamental reason for the "Furniture try on app using Augmented Reality" is to advance an android application for attempting different furniture in a virtual way utilizing a portable which upholds AR cameras. The application will dispense with the human Endeavors by truly visiting the furniture store which is an extremely tedious movement. Plus, it may be simpler to involve this method in Online shopping as a possibility for clients to give a shot the furniture things in their room they are remembering to purchase and permit the user to imagine the room how it will care for setting furniture in it. This framework will assist the client with survey the furniture object for all intents and purposes in genuine climate prior to purchasing the item. Because of this framework the user will come to know how his home design would take care of purchasing the furniture object. This framework would let the user attempt various mixes of articles practically without actual development of furniture objects. These will help the purchaser to decide how to arrange furniture in home construction.

Keywords: Augmented Reality, Online Shopping and Furniture Objects.

I. INTRODUCTION

1.1 PREAMBLE

The idea of purchasing items from the phone just can happen on account of the creation of the web. Furniture plan in a house or in an office can be monotonous work assuming that there is an excessive number of furniture to be put in the room or on the other hand just individuals don't know how to design the furniture. Individuals can either draw up the room and furniture in paper or use PC applications that help individuals or they can simply orchestrate furniture immediately to perceive what it looks like, what's more fits in the room. In our proposed framework, we will utilize the idea of AR to assist with peopling view the furniture in their room without really putting it in the area. We present an intuitive furniture format Android application that makes a difference clients organize their furniture by straightforward activities like sliding, squeeze in, squeeze out, and so forth This will extraordinarily limit the buyer's time and exertion. In simple a user catches the picture of a certifiable item, also the fundamental stage identifies a marker, which triggers it to include a virtual item top of this present reality picture and shows on your camera screen.

1.2 AUGMENT REALITY

Augmented reality (AR) is an interactive experience of a real-world environment where the objects that reside in the real world are enhanced by computer-generated perceptual information, sometime across multiple sensory modalities, including visual, auditory, haptic, somatosensory and olfactory. A R can be defined as a system that fulfils three basic features: a combination of real and virtual worlds, real-time interaction, and accurate 3D registration of virtual and real objects. The overlaid sensory information can be constructive (i.e. additive to the natural environment), or destructive (i.e. masking of the natural environment). This experience is seamlessly interwoven with the physical world such that it is perceived as an immersive aspect of the real environment. In this way, augmented reality alters one's ongoing perception of a real-world environment, whereas virtual reality completely replaces the user's real-world environment with a simulated one. Augmented reality is related to two largely synonymous terms: mixed reality and computer-mediated reality.

1.3 AR FOUNDATION

In augmented reality, the distinction is made between two distinct modes of tracking, known as marker and markerless. Markers are visual cues which trigger the display of the virtual information. A piece of paper with some distinct geometries can be used. The camera recognizes the geometries by identifying specific points in the drawing. Markerless tracking, also called instant tracking, does not use markers.

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Instead, the user positions the object in the camera view preferably in a horizontal plane. It uses sensors in mobile devices to accurately detect the real-world environment, such as the locations of walls and points of intersection. Augmented Reality Markup Language (ARML) is a data standard developed within the Open Geospatial Consortium (OGC), which consists of Extensible Markup Language (XML) grammar to describe the location and appearance of virtual objects in the scene, as well as ECMAScript bindings to allow dynamic access to properties of virtual objects. To enable rapid development of augmented reality applications, some software development kits (SDKs) have emerged.

1.4 OBJECTIVE

- Allow users to visualize furniture in their own space through augmented reality (AR), providing a realistic and interactive experience. Enable users to customize furniture dimensions, colors, and materials in real-time to see how different variations would look in their environment.
- Help customers better understand how furniture will fit and look in their space, reducing uncertainty and improving purchasing decisions. Provide a platform for users to virtually stage their homes with multiple pieces of furniture to see how they complement each other.
- Develop a mobile application that allows customers to use AR features conveniently on their smartphones and tablets. Design an intuitive and user-friendly interface that makes it easy for customers of all ages and tech-savviness to use the application.

1.5 SCOPE

Develop an Augmented Reality (AR) application that allows users to visualize and interact with virtual furniture in their real-world environments using smartphones or tablets

- Users can place 3D models of furniture in their own space to see how it fits and looks in real-time.
- Options to change furniture dimensions, colors, materials, and finishes.
- Detailed descriptions, prices, and dimensions available for each furniture item.
- Tools to measure room dimensions and ensure accurate fitting of furniture.
- Integration with software like Unity or Unreal Engine for creating and rendering 3D models.

II. SYSTEM SPECIFICATION

2.1 HARDWARE TOOLS

- Android Phone

2.1 SOFTWARE TOOLS

- Unity 3D
- Blender
- Android Studio

III. SYSTEM ANALYSIS

3.1 EXISTING SYSTEM

The user will actually want to see the furniture practically in their home construction as opposed to going for the actual work of buying and putting the furniture in their home climate. The fundamental issue looked by the client needs to take estimation and check for the appropriate size of the item that accommodates their home climate. Our application will permit the user to see the item they need to buy as per their requirements and home climate.

Disadvantage

- Static perspective on plan which can't pass on.
- Can't decide if the furniture will fit our requirements.
- Data like tallness and expansiveness can't be known.

3.2 PROPOSED SYSTEM

The proposed framework involves Markerless Augmented Reality as a reason for upgrading client experience and for a superior impression of things. Marker less following is a strategy for positional following - the assurance of position and direction of an article inside its current circumstance.

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This is a vital element in expanded reality (AR), making it conceivable to know the field-of-view and viewpoint of the client - taking into account the climate to respond likewise or the arrangement of expanded reality content as per genuine world. While marker-based techniques for movement following utilize explicit optical markers, marker-less positional following does not need them, making it a more adaptable technique. It additionally evades the requirement for an arranged climate in which fiducial markers are set. The fundamental reason of the proposed framework is to overlay advanced 3D models on top of genuine articles utilizing a camera.

Advantages

- Immersive Shopping Experience
- Efficient Shopping Process
- Detailed Product Information
- Flexibility and Accessibility

IV. SYSTEM DESIGN

4.1 FLOW CHART DIAGRAM

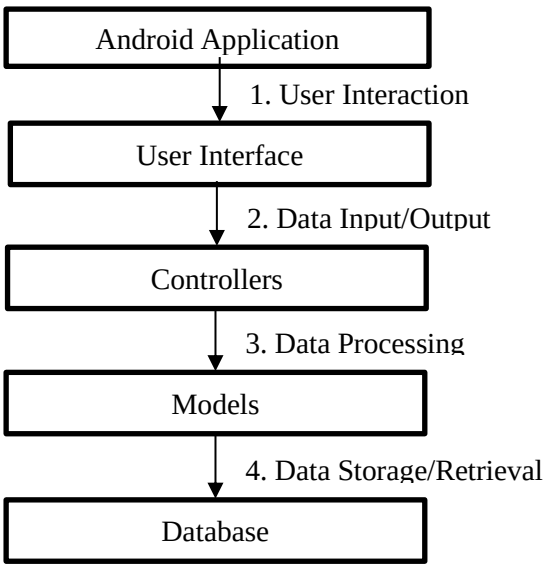

FIG 1. Flow Chart Diagram

4.2 BLOCK DIAGRAM

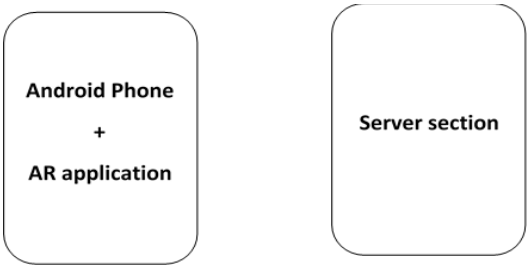

FIG 2. Block Diagram

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V. METHODOLOGY

5.1 MODULE

5.1.1 Product Catalogue Module

This module manages the database of furniture products available for visualization in AR. It includes product details such as name, description, dimensions, price, and images.

5.1.2 AR Visualization Module

This is the core module responsible for rendering furniture products in AR. It utilizes AR technologies like ARKit (for iOS) or ARCore (for Android) to place virtual furniture realistically within the user's physical space.

5.1.3 User Interface Module

This module handles the graphical user interface (GUI) elements, including menus, buttons, and controls, allowing users to navigate the application, select furniture items, adjust settings, and perform other interactions.

5.1.4 3D Model Management Module

This module manages the storage, retrieval, and loading of 3D models of furniture items. It may involve optimizing 3D models for AR rendering, handling file formats, and ensuring smooth performance across different devices.

5.1.5 Augmented Reality Tools Module

This module provides additional AR tools and features to enhance the AR experience, such as scaling, rotation, and placement guides for precise positioning of furniture items in the real-world environment.

5.1.6 Integration Module

This module facilitates integration with external systems or platforms, such as e-commerce websites, inventory management systems, or payment gateways, to synchronize data, process transactions, and update product information.

5.2 WORKING

- **Launch the AR App:** Open the AR application on your compatible device, such as a smartphone or AR glasses.
- **Enter the Virtual Supermarket:** Use the app's interface to enter the virtual supermarket environment.
- **Navigate Through Aisles:** Explore different virtual aisles by physically moving or interacting with the app's navigation controls.
- **Inspect Products:** Approach virtual product representations to inspect detailed information, including images, prices, and nutrient levels.
- **Add Items to Cart:** Select desired items by interacting with the app, and observe as they are automatically added to your virtual shopping cart.
- **Review Cart Contents:** Access the virtual shopping cart to review the selected items, quantities, and associated details.
- **Continue Shopping:** If desired, continue exploring the virtual supermarket, adding more items to your cart.
- **Navigate to Checkout:** Use the app's navigation to reach the virtual checkout area or designated point.
- **Payment Process:** Initiate the payment process by interacting with the virtual payment counter. Confirm the total amount payable.

VI. CONCLUSION

The development of a "Furniture try-on app using Augmented Reality" represents a significant advancement in the realm of furniture shopping. By leveraging AR technology, users can now virtually try out various furniture pieces in their own homes without the need to visit physical stores. This not only saves time and effort but also provides a more immersive and realistic shopping experience.

VII. FUTURE ENHANCEMENT

While the current version of the app serves as a valuable tool for furniture shopping, there are several avenues for future development and improvement. Some potential areas of focus for future work include:

- Continuously updating and expanding the catalogue of available furniture pieces to offer users a wider selection and cater to diverse tastes and preferences.

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- Enhanced Realism: Improving the realism of the virtual furniture placement by refining AR technology and incorporating advanced rendering techniques to create more lifelike representations.
- Integration with Interior Design Software: Integrating the app with existing interior design software platforms to provide users with additional tools and features for designing and visualizing entire room layouts.
- Customization Options: Introducing customization options that allow users to modify furniture colours, materials, and dimensions to better suit their individual needs and preferences.
- User Feedback and Analytics: Collecting user feedback and analytics data to continuously refine and optimize the app based on user preferences and usage patterns.

VIII. RESULT

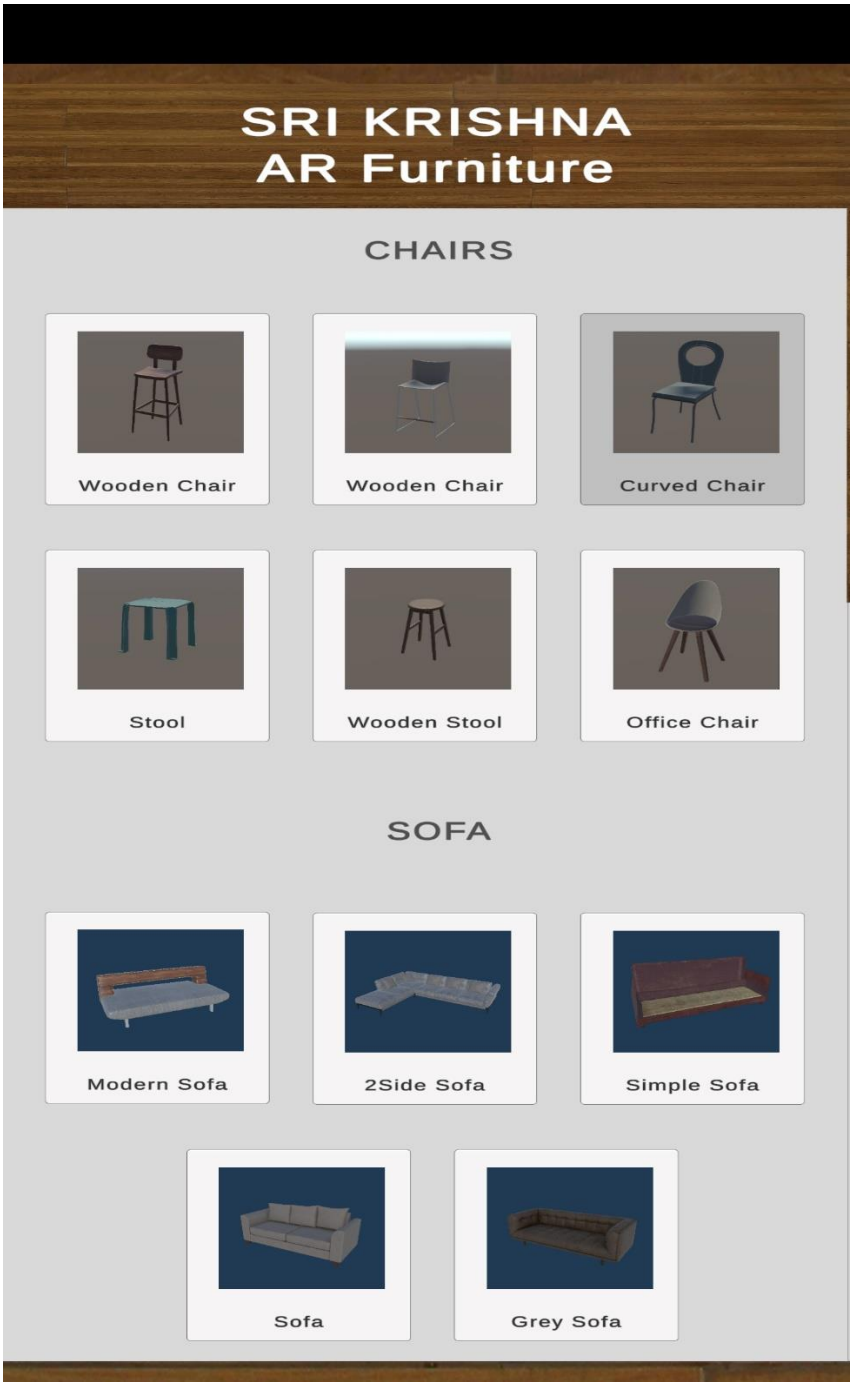

FIG 3 Result Page 1

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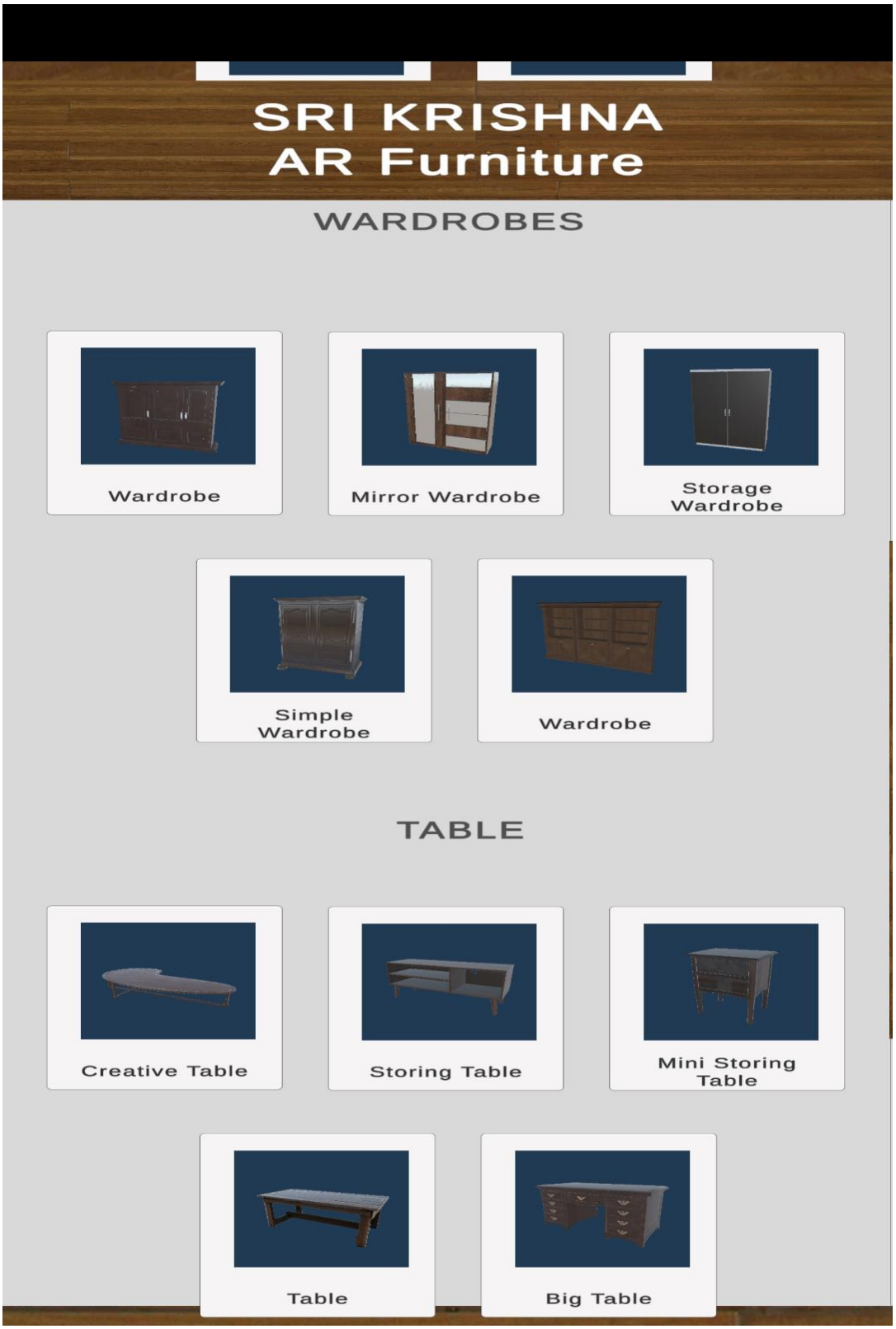

FIG 4 Result page 2

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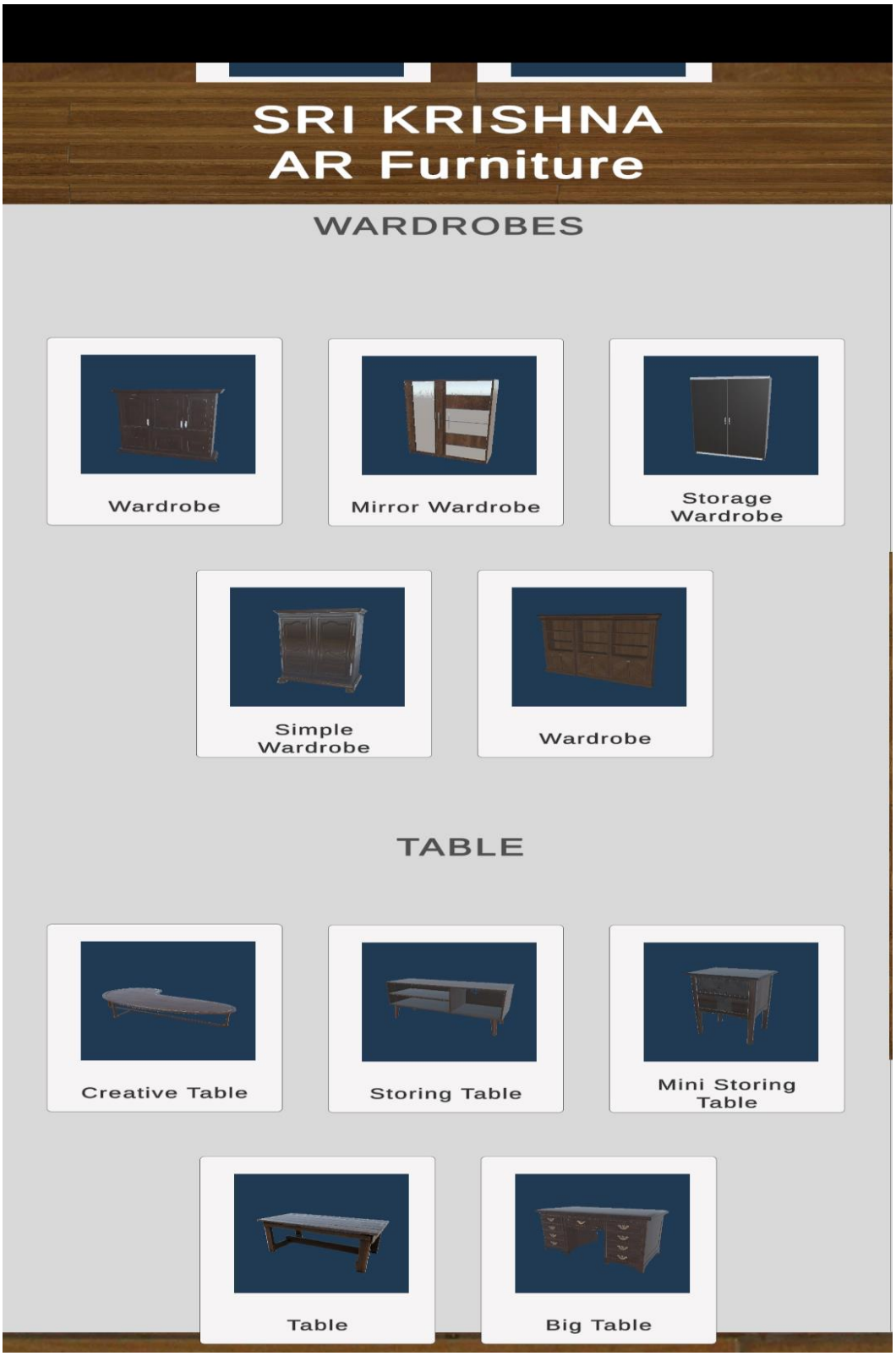

FIG 5 Result page 3

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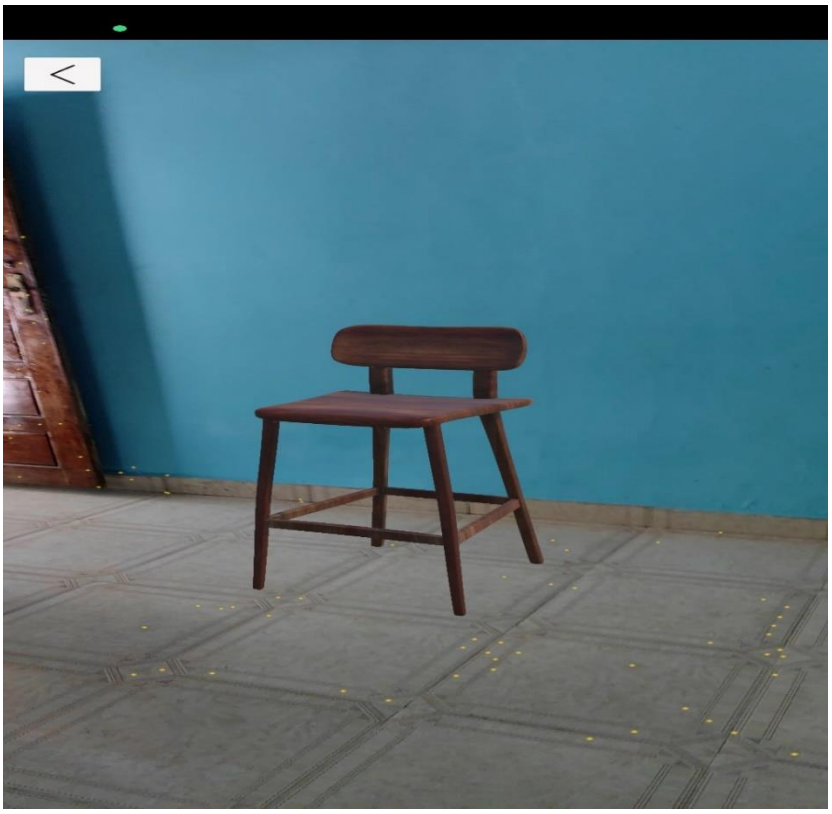

FIG 6 Output

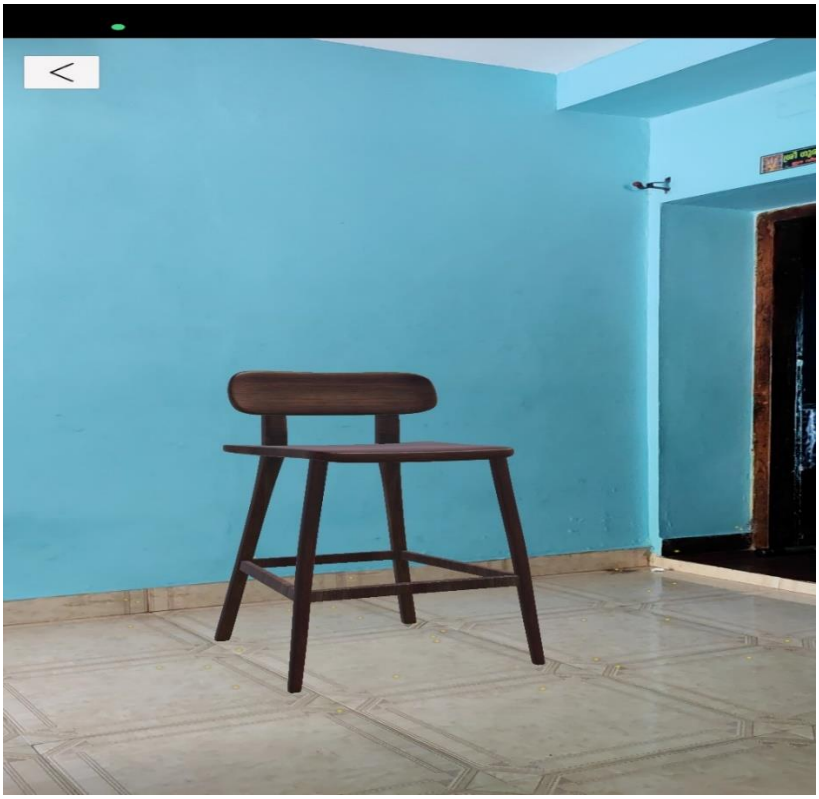

FIG 7 Output

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