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# AUGMENTED LIVING SPACES YOUR VISION, OUR REALITY

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*Abstract:* This paper presents a novel application of Augmented Reality (AR) that aims to transform the marketing and presentation of real estate properties. Using cutting-edge augmented reality technology, the app offers interactive space exploration and seamlessly integrates property measurements to create a dynamic and immersive user experience. Users can tailor their experience to their preferences with carefully designed room layouts and wall designs. Additionally, the app offers insightful infrastructure recommendations to help users make well-informed decisions about improvements or alterations to their properties. Incorporating realistic objects into virtual designs improves them and helps prospective buyers see themselves in the space. A seamless user experience is enhanced by features that are easy to use and intuitive navigation. The application holds great importance for real estate professionals as it streamlines sales procedures and enhances property displays. With its extensive furniture database and customizable experiences, the AR real estate app is expected to raise the bar for industry standards and improve user immersion. This project, which was completed in Android Studio using the ARCore plugin, demonstrates a dedication to both technological innovation and useful application in the real estate industry. The AR real estate app works to stay at the forefront of innovation by implementing continuous improvement initiatives, such as integrating user feedback and updating technology, in order to meet the changing needs of users and industry standards.

***Index Terms*** **- Augmented Reality (AR), Real estate properties, Interactive space exploration, Property measurements integration, Dynamic user experience, Tailored room layouts, Wall designs, Infrastructure recommendations, Realistic virtual objects, Seamless user experience, Sales procedure optimization, Extensive furniture database, Customizable experiences, Android Studio, ARCore plugin, Continuous improvement.**

## I. INTRODUCTION

Introducing a cutting-edge application for interior design using augmented reality that will transform the way properties are marketed and presented. With this advanced tool, users can seamlessly blend the virtual and real worlds, creating an immersive experience unlike anything they've ever experienced. Users are able to interact with imagined spaces by precisely measuring property dimensions and incorporating them into dynamic augmented reality visuals. With its carefully considered room layouts and easily customizable wall designs, the application can accommodate a wide range of tastes and preferences. It also offers insightful infrastructure recommendations, enabling users to decide on improvements or modifications to their properties with knowledge. Realistic components like furnishings, appliances, and décor pieces add to the realism of virtual designs and make it easier for prospective purchasers to picture themselves in the room. The application makes it easier for real estate professionals to showcase properties in an engaging and creative way by providing them with an intuitive interface and user-friendly tools. With this state-of-the-art augmented reality real estate app, see how properties will be visualized and how customers will interact in the future. Moreover, the app's versatility goes beyond real estate agents, which makes it a useful resource for homeowners wishing to visualize possible renovations and explore design options. Users can use the app's features to interactively and simply bring their design ideas to life, whether they're redesigning an office space or planning a cozy home interior. This cutting-edge augmented reality app raises the bar in real estate marketing by providing a comprehensive solution for homeowners and real estate agents looking to improve their interior design skills. This software gives users the ability to visualize their ideal living spaces with never-before-seen convenience and realism thanks to its seamless integration of augmented reality technology and useful features.

## II. LITERATURE SURVEY

Users may interact with virtual furniture using the Augmented Reality (AR) application covered in this study, changing its colors, styles, and placements. With the help of this tool, customers may customize their furniture configurations according to their tastes and the size of their rooms. The program gives users alternatives for efficiently arranging their furniture by offering a wide variety of furniture configurations suited to different room sizes. The study shows that users can create beautiful furniture arrangements with the AR application's interactive capabilities even if they have no prior experience with interior design [1]. Another noteworthy

advancement in AR technology is the creation of the E-Adbhuta architecture, which simulates interior design. This architecture creates immersive 3D representations from 2D photographs by utilizing image markers and the Vuforia API. User involvement and immersion levels are improved by the E-Adbhuta architecture, which lets users change the textures, colors, and appearances of virtual items. It is simpler for interior designers to show furniture ideas to stakeholders, which facilitates better decision-making and communication [2] Augmented reality with markers is used to enable architecture-related features such as intelligent building layout based on 2D imagery and marker recognition. To improve visualization and design communication, the program positions 2D photos correctly and inserts suggested building ideas into actual scenarios. Users may interact with virtual objects in real-time and change their sizes and positions to fit their preferences thanks to marker-less augmented reality technology. Users have freedom and control over their interior design projects using this module [3]. Systems for interior design that employ projection, like DesignAR, provide customers a broad room coverage and easier installation. These technologies create and evaluate three-dimensional (3D) spatial data, offering suggestions for interior design designs in real time. Through the use of 3D mapping technology and pan-tilt mechanics, DesignAR improves user experience and streamlines interior design procedures [4]. The architectural design business has seen a transformation with the incorporation of augmented reality, which has allowed architects to display AutoCAD models and envision designs in three dimensions. This invention raises the standard of design, fosters teamwork, and makes client involvement easier. The user experience is made simpler with QR-based activation, which makes it simple to access augmented reality material on many mobile devices. All things considered, augmented reality technology has emerged as a crucial instrument for contemporary design, spurring creativity and raising customer satisfaction [5].

## III. NEED OF SYSTEM

The creation of the stated augmented reality (AR) furniture placement system fills a crucial demand in the interior design, real estate, and furniture design industries. This cutting-edge system provides users with a smooth and immersive experience. It was developed with Android Studio, integrated with the AR Core plugin, and uses free sample models. Users may digitally arrange furniture models in the required spot by launching the app, selecting the models from a dropdown list, and using the camera to scan the chosen placement area. Users can spin and see 3D models from any angle using this technology, giving them a thorough idea of how the furniture will fit into their area and appear. This method offers unmatched versatility and ease of use, with the ability to put numerous things at once and handy choices to clear individual or all placed objects. Because of its adaptability, it is useful not only for those who want to see how their interior design ideas would appear, but also for real estate agents who want to show off their houses and furniture store owners who want to display their goods. In the end, this method is an effective tool for improving decision-making since it lets consumers digitally examine furniture before making a purchase, which simplifies and improves the user experience in general.

## IV. FLOW CHART

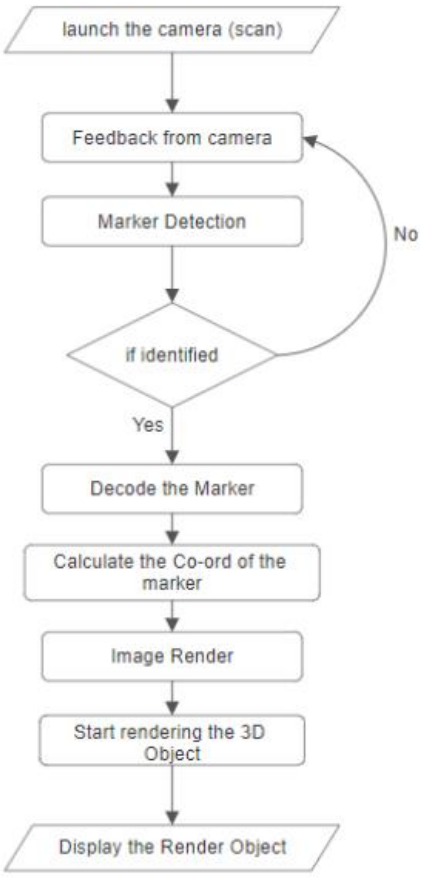


*Fig. 1 Flowchart*

## V. OUTPUT


*Fig. 2 Home screen of App*


*Fig. 3 Camera scan of play area*

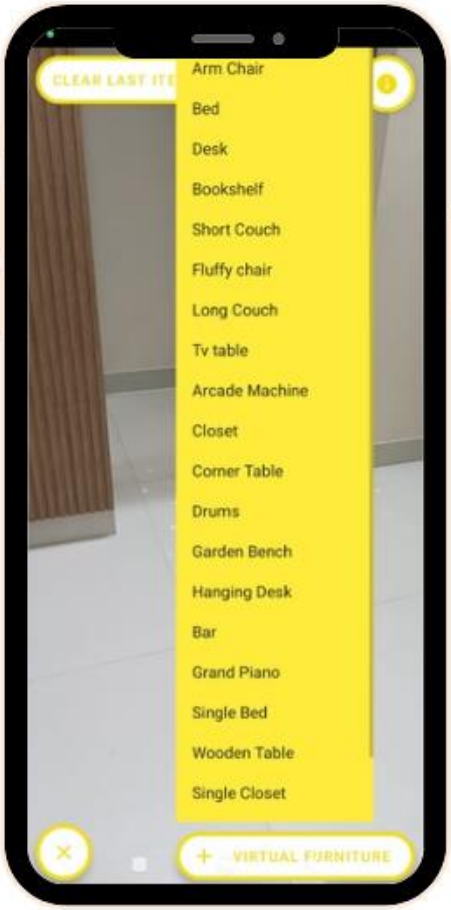


*Fig. 4 List of Furniture*


*Fig. 5 After Placing Furniture*

## VI. METHODOLOGY

**a.** *Requirement Analysis:*

Analyse user expectations and requirements in-depth for the ARCore Augmented Reality Furniture App. This entails gaining a thorough grasp of user preferences for features like real-time customisation and price information integration, as well as desired functionality and preferred engagement techniques inside the AR environment. Use market research, interviews, and surveys to interact with potential users—interior designers, homeowners, and furniture enthusiasts—in order to learn important details about their requirements and preferences.

**b.** *Platform Development:*

Use the Flutter framework for cross-platform programming to make sure that iOS and Android devices function together seamlessly. Integrate ARKit for iOS and the ARCore SDK for Android to enable augmented reality features with ease. Provide a user-friendly UI with simple navigation so that arranging and exploring furniture in augmented reality scenarios is a breeze. Make the user experience a first priority by emphasizing responsive design concepts, simple movements, and obvious visual clues to lead users through the features of the app.

**c.** *Content Diversification:*

Create a vast and varied database of furniture pieces in a variety of designs, colours, and materials. Items may include couches, tables, chairs, cabinets, and more. Work closely with reliable furniture dealers and manufacturers to obtain current product information and precise 3D models. Provide strong sorting, filtering, and search features to improve user browsing and make it easier for users to find desired furniture products quickly and easily.

**d.** *Personalized Experience:*

Use cutting-edge machine learning algorithms to examine past choices, user interactions, and preferences so that the app can offer individualized furniture recommendations. Make use of augmented reality (AR) capabilities to provide suggested products in the user's actual surroundings, facilitating improved decision-making and visualization. Provide systems for gathering and analysing user input so that the customized recommendation engine may be improved over time.

**e.** *Continuous Improvement:*

Install all-inclusive analytics tools to gather and examine information about app performance, AR session stats, and user behaviour. Examine this data on a regular basis to find opportunities for feature upgrades, optimization, and improvements to the user experience. Iterate the app in response to user feedback, new developments in technology, and developing market trends to make sure it keeps getting better and stays relevant in the cutthroat market for AR furniture apps.

## VII. CONCLUSION

The ARCore Augmented Reality Furniture App emerges from extensive research, innovative development, and user-centric design principles. The platform transcends conventional furniture purchasing experiences by seamlessly blending digital and real-world settings, a result of thorough analysis of customer requirements and expectations. Leveraging the capabilities of the ARCore SDK and the Flutter framework, a flexible and cross-platform solution has been crafted to cater to diverse user demands on both iOS and Android devices. With unparalleled convenience and precision, users can explore and visualize their ideal furniture selections from the app's extensive collection, augmented by tailored learning algorithms.

The ARCore Augmented Reality Furniture App underscores a dedication to quality and innovation as the trajectory of future advancements unfolds. The aim is to elevate user experiences by integrating feedback and harnessing novel technologies to extend the boundaries of augmented reality within furniture procurement and interior design. This will be achieved through ongoing refinement and enhancement of the product. Confidence is held in the capacity of the ARCore Augmented Reality Furniture App to redefine industry benchmarks and foster fresh prospects in the ever-evolving domain of augmented reality technology, fuelled by an unwavering commitment to quality, usability, and customer satisfaction.

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