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## INTERIOR DESIGN USING AUGMENTED REALITY

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### ABSTRACT

AR technology has become an integral part of interior design, allowing designers and clients to visualize and experiment with different design elements in real-time. AR technology provides designers with tools to create virtual spaces and place virtual objects within them, making it easier to visualize how different design elements would work in a given space. It also makes it easier for designers to collaborate with their clients remotely, reducing the need for in-person meetings and site visits. AR technology has several benefits, such as reducing the time and cost associated with traditional design processes, as designers and clients can visualize and experiment with designs without the need for physical prototypes or mock-ups. Interior design is an art and science that involves the planning and designing of interior spaces to make them functional, aesthetically pleasing, and conducive to the activities they are intended for.

However, with the emergence of new technologies, such as augmented reality (AR), interior design has been transformed into a more immersive and interactive experience. AR is a technology that overlays digital information and objects onto the real world, creating an interactive and engaging experience. AR has revolutionized the way designers and clients interact and collaborate, making it a more immersive, engaging, and personalized experience. AR is expected to become more prevalent and will continue to transform the way we design and create interior spaces.

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### I. INTRODUCTION

AR technology is now being used in a variety of fields, including interior design, to enhance the design process and make it more efficient and effective. AR technology provides designers with a range of tools that allow them to create virtual spaces and place virtual objects within them. Clients can then interact with these virtual objects in real-time, allowing them to see how different colors, textures, and layouts would look and feel in their space. The use of AR technology in interior design has several benefits, including the reduction of time and cost associated with traditional design processes. AR technology also enables designers to create more personalized and tailored designs that meet the specific needs and preferences of their clients. In conclusion, AR technology has transformed the way designers and clients interact and collaborate, making it a more immersive, engaging, and personalized experience.

### II. LITERATURE SURVEY

AR technology is expected to become more prevalent and transform the way we design and create interior spaces. This literature survey aims to explore the existing research on the use of AR in interior design and its impact on the design process and user experience. Kan et al.(2021) explored the use of AR in the retail environment, concluding that AR technology improved the shopping experience by providing users with an immersive and engaging experience. Syahputra et al.(2020) provided valuable insights into the potential benefits and limitations of using augmented reality in interior design. The study highlights the need for further research in this area to develop standardized tools and guidelines that can improve the efficiency and effectiveness of augmented reality in interior design.

Sharma et al. (2018) explored the use of AR in the retail environment, concluding that AR technology improved the shopping experience by providing users with an immersive and engaging experience. Mangale et al. (2016) developed an AR-based interior design system that enabled users to visualize and experiment with different design options in real-time. The literature survey reveals that automatic interior design in augmented reality is a rapidly growing field of research. The proposed approach uses Marker-less Augmented Reality as a basis for enhancing user Experience and for a better perception of things. Marker less tracking is a method of positional tracking that allows for the determination of position and orientation of an object within its environment.

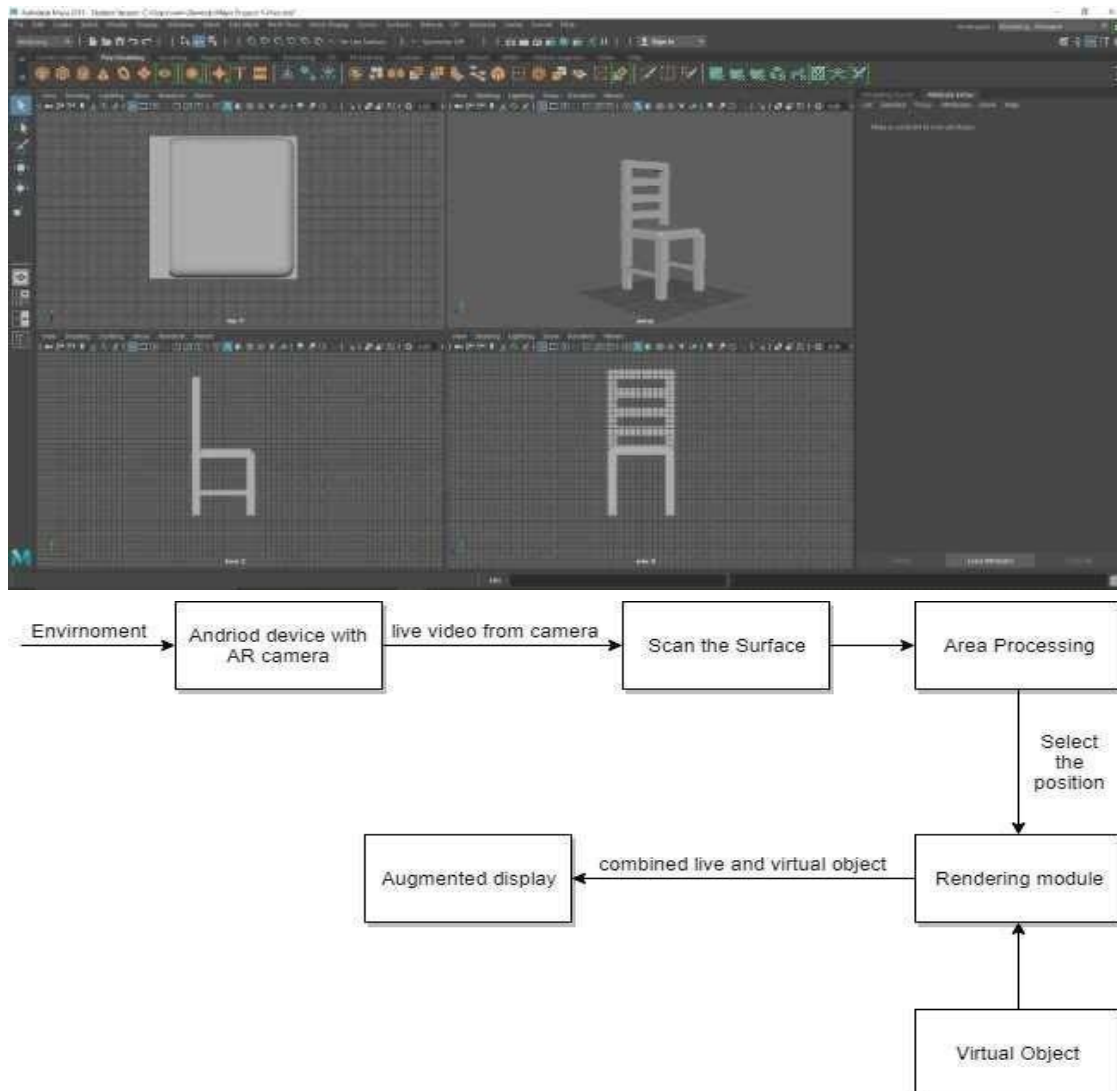
### III. PROPOSED APPROACH

The proposed system uses Marker-less Augmented Reality as a basis for enhancing user Experience and for a better perception of things. Marker less tracking is a method of positional tracking the determination of position and orientation of an object within its environment. This is a very important feature in augmented reality (AR), making it possible to know the field of view and perspective of the user allowing for the environment to react accordingly or the Placement of augmented reality content in accordance with real world. While marker based Methods of motion tracking use specific optical markers, marker less positional tracking does not require them, making it a more flexible method. It is important in AR, as it allows for the environment to react accordingly or the Placement of augmented reality content in accordance with real world.

### IV. METHODOLOGY

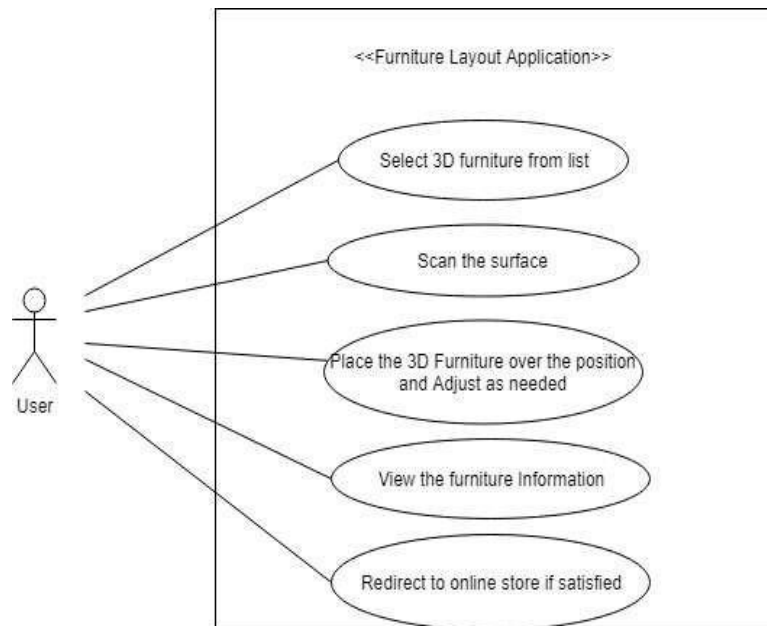
The system architecture uses mobile phone built-in camera to collect view as the real scene view observed by human eye and stacks 3D furniture models on the screen displayed. To build 3D furniture models, Autodesk Maya was used to build 3D furniture models and import them into Android Studio. Through identifying and tracing the surface area, the camera obtains pointers using Google AR Core and establishes projection models, at last stacks the imported 3D virtual model in the Real-world view. Because Android smart phone has touch-screen interface function, we can place the furniture by sliding screen.

#### System Architecture of Application



As shown from the above figure , it describes the architecture of the application that take the real view as input with the help of AR camera then process it with virtual object to get the resultant output as augmented display.

**Use case diagram**



As shown from the above figure , it describes the use case diagram of the application where the user interacts with application using Android device that supports AR camera. Initial we select the model in which we are interested then scan the surroundings using camera of device and place the model to verify whether it fulfill our needs, if satisfied we can move to online store. The actor here is the user and uses cases select 3D furniture, scan the surface, place the 3D furniture, view the information and redirect to online store if satisfied.

**V. CONCLUSION**

In conclusion, the main objective of this “Interior Design Using Augmented Reality” is to analyze the use of augmented reality to render the furniture model in real world. Augmented reality technology that allows the customers to decide and interact the furniture with the real world, offering new possibilities for furniture online shopping. It helps the customer to view and understand the furniture for his requirements. Due to this customer will come to know how their home structure would look after purchasing and placing the furniture object with multicolor option. These helps the buyer in determining how to setup the furniture in their home structure. Augmented reality support for furniture 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 furniture 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.

**VI. REFERENCE**

- [1] Billinghamurst, M. (2002) “Augmented reality in education” in New Horizons for Learning, 2nd ed., vol.3, New York: McGraw-Hill, 2010, pp. 123-135.
- [2] Khushal Khairnar, Kamleshwar Khairnar, Sanket kumar Mane, Rahul Chaudhari. (2015, Oct.). Furniture Layout Application Based on Marker Detection. International Research Journal of Engineering and Technology.
- [3] Mami Mori, Jason Orlosky, Kiyoshi Kiyokawa, Haruo Takemura. (2016, Sep.). A Transitional AR Furniture Arrangement System with Automatic View Recommendation. IEEE Adjunct[Online].
- [4] Snehal Mangale, Nabil Phansopkar, Safwaan Mujawar, Neeraj Singh. (2020, May). Virtual Furniture Using Augmented Reality. IOSR Journal of Computer Engineering. [Online].
- [5] Elizabeth Carvalho, Gustavo Mações, Isabel Varajão, Nuno Sousa and Paulo Brito. (2021, Nov.). Use of Augmented Reality in the furniture industry. Presented at Center for Computer Graphics. [Online].