

# **FURNIAR: INTERACTIVE FURNITURE VISUALIZATION**

## **Micro Project Report**

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## **BONAFIDE CERTIFICATE**

Certified that this micro project documentation of “FurniAR: Interactive Furniture Visualization” is the bonafide work of “**ANUSRI A (22CDR006),BARATH N (22CDR011 ), BHOBESH ADHITHIYAN S G (22CDR012)**” who carried out the project under my supervision. Certified further that to the best of my knowledge the work reported here does not form part of my other thesis or dissertation on the basis of which a degree or awarded was conferred on an earlier occasion on this or any other candidate.

Submitted on \_\_\_\_\_

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# FURNIAR

## AIM

This project aims to create an augmented reality (AR) app that lets users scan common furniture items with their device's camera to receive detailed, interactive 3D information. By using image recognition, the app identifies the furniture type and displays a 3D model. This educational tool offers an immersive, engaging experience, making users to visualize furnitures through interactive AR technology.

## ABSTRACT

This project focuses on developing an augmented reality (AR) application that enables users to scan images of common furniture items—such as beds, flower pots, chairs, and sofas—using their device's camera, instantly providing them with detailed, interactive 3D models. Leveraging image recognition technology, the app identifies each furniture item and presents an accurate 3D model, enhancing user engagement and providing a visually immersive experience. This innovative approach to furniture visualization is useful for both educational and practical applications, offering an interactive way for users to explore furniture design and placement through AR technology.

## SCOPE AND OBJECTIVES

- **Furniture Recognition with Image Processing:** Develop an AR app that uses image recognition to identify various types of furniture items—such as beds, flower vases, chairs, and sofas—from images or illustrations.
- **3D Model Integration:** Display a detailed 3D model of the recognized furniture within the AR environment to provide users with a realistic visualization.
- **Enhanced User Engagement:** Provide an interactive, immersive experience for interior design enthusiasts and students.

- **Informative Content for Learning:** Offer details on each furniture item's design and features for enhanced learning.

## **HARDWARE & SOFTWARE REQUIREMENTS**

### **Hardware Requirements:**

- Computer or Mobile Device with AR Support
- Good Lighting Conditions

### **Software Requirements:**

- Operating System
- Unity Platform
- 3D Model
- Vuforia Engine

## **EXISTING SYSTEM**

- App like **Google Lens** identify furniture through image recognition, providing names and brief descriptions but lack immersive AR features or 3D visualization.
- Apps like **IKEA Place** allow users to view 3D models of furniture in real spaces, creating an interactive experience but without identification or educational content.
- Most existing apps lack a comprehensive approach that combines furniture identification, interactive 3D models, AR visualization, and detailed information about design or materials in one platform.

## **DRAWBACKS**

- Most apps don't combine furniture identification with interactive 3D models and detailed informational content on a single platform, reducing the app's educational and practical utility.
- Existing apps may face challenges with accuracy in diverse environments, especially in low lighting conditions, affecting the reliability of image recognition and AR visualization.

## PROPOSED SYSTEM

- Allow users to identify various furniture items with a quick scan of an image.
- Display pre-built 3D models of furniture (e.g., bed, chair, sofa, flower vase) in the user's environment through AR for an immersive view.
- Provide relevant details about each furniture item, such as design features or materials, to enhance the user's experience and understanding.

## ADVANTAGES

- **Enhanced Learning Experience:** The app provides an interactive and immersive way to view furniture, making it useful for interior design education and practical applications.
- **Engagement through AR:** With augmented reality, the app offers a more engaging and memorable experience compared to traditional design methods, capturing users' interest.
- **Portable and Accessible:** Available on mobile devices, the app allows users to explore furniture items anytime and anywhere, making it convenient and versatile.
- **Real-Time Interaction:** Users can interact with 3D furniture models, enabling a hands-on approach to understanding furniture design, placement, and aesthetics.

## PROJECT DESIGN

The project design utilizes an AR platform for furniture identification, where the device camera scans images of furniture items. The recognition engine processes the image, identifies the furniture piece (e.g., bed, chair, sofa, flower vase), and displays an accurate 3D model in the AR environment. The user interface features a scan option and an AR view where users can interact with the 3D models. This design ensures an immersive and engaging experience,

combining real-time recognition with interactive 3D visualization for practical and educational purposes.

## **IMPLEMENTATION OF THE PROJECT**

The implementation of the project utilizes a no-code AR platform to facilitate seamless furniture recognition through the device camera. When a furniture item (such as a bed, chair, sofa, or flower vase) is identified, a detailed 3D model of the item is displayed in the AR environment. The app includes an intuitive user interface with a scan option and AR view for interaction with the 3D models. Performance is optimized through rigorous testing to ensure smooth operation, and the app is fine-tuned for deployment on mobile app stores for wide accessibility.

## **CONCLUSION**

This project overcomes the limitations of existing systems by integrating furniture recognition, augmented reality, and interactive 3D models into a single app. Offering detailed information about furniture design and features, along with immersive AR visualization, it provides a unique and engaging way to explore furniture. With cross-platform support and interactive features, it appeals to interior design students, decorators, and furniture enthusiasts, enhancing design education and making it more accessible, engaging, and informative.

## **FUTUREWORK**

The future plan for this project involves expanding the furniture database to include more types of furniture, enhancing educational content related to design and materials. Improving recognition accuracy in various lighting conditions will ensure reliable identification. Incorporating animations, such as furniture adjustments or placement demonstrations, will increase interactivity. Additionally, implementing social sharing features will allow users to share their

furniture designs and experiences. Integration with voice assistants for a hands-free, interactive experience will also be considered to improve user engagement.

## SCRIPTS

```
using System.Collections;
using System.Collections.Generic;
using UnityEngine;
using UnityEngine.SceneManagement;

public class SceneChanger : MonoBehaviour
{
    public void ChangeScene(string sceneName)
    {
        SceneManager.LoadScene(sceneName);
    }
}
```

```
using System.Collections;
using System.Collections.Generic;
using UnityEngine;

public class ScaleInOut : MonoBehaviour
{
    public GameObject Object; // The object to scale
    public float Scale = 0.001f; // Amount to scale by each
    button press

    // Increase object scale by a specific amount
    public void OnPressZoomIn()
    {
        Object.transform.localScale += new Vector3(Scale,
        Scale, Scale);
    }

    // Decrease object scale by a specific amount
    public void OnPressZoomOut()
    {
        Object.transform.localScale -= new Vector3(Scale,
        Scale, Scale);
    }
}
```

```
using System.Collections;
using System.Collections.Generic;
using UnityEngine;

public class rotateObject : MonoBehaviour
{
    public GameObject objectRotate;

    public float rotateSpeed = 50f;
    bool rotateStatus = false;

    //rotate object function
    public void RotateObject()
    {
        if (rotateStatus == false)
        {
            rotateStatus = true;
        }
        else
        {
            rotateStatus = false;
        }
    }

    void Update()
    {
        if (rotateStatus == true)
        {
            //rotate object with speed
            objectRotate.transform.Rotate(Vector3.up,
            rotateSpeed * Time.deltaTime);
        }
    }
}
```



## SCREENSHOT OF THE PROJECT



## GITHUB LINK AND QR CODE

Github Link:

<https://github.com/BARATH-NAGARAJ/FURNITURE-AR-VR>

QR Code:

