IKEA Clone App using AR Core

Abstract:

Nowadays information and communication technology support the development of human interaction with physical, computer and virtual environment such as science, commercial, banking, education, etc. Augmented reality is a field of computer research which deals combination of reality with computer related data. In early days if we users wanted to buy a furniture object without visiting the shops it was possible but it was not possible to check how the object actually looks in home structure. Now in our proposed system, it is possible for user to buy the furniture objects sitting in the home without visiting the shops. The main purpose of the project is to develop a windows application for trying different furniture in virtual way. The application will eliminate the human efforts by physically visiting the furniture store which is very time-consuming activity.

Existing System:

Deepak Uplaonkar, Saurabh Saoji, Surbhi Paranjape, Nikhil Andhalkar, Rajni Chorge, Rohit Jainapur has proposed a technique augmented reality system for the home furniture layout based on fiducial marker detection. In "Virtual Furniture Application based on Augmented Reality" paper. They took furniture objects as a data set. The advantage was that it was easily understood and handle. But the only disadvantage was that it was only useful for single object.

Vaibhav Raut, Umesh Sanap, Tejas Holam, Pranav Dubey has proposed a technique augmented reality system for the home furniture on android phone based on planar object tracking. In "Furniture Layout AR Application Using Floor Plans Based on Planar" paper. It had time efficiency and also high scalability also flexible. But the object could be viewed only in 2D pose.

Proposed System:

We are going to develop an application where user have to place the marker in a room where he want to try out furniture items. The user's webcam will be on and through the webcam he will capture the live feed of the room. Then application search the marker using fiducial marker detection algorithm. To identify the position of marker using direct linear transformation algorithm. Whichever furniture object the user want to try out he will select that object from the database. Then the application will superimpose 3D object. In three dimensional objects are overlaid on to the two dimensional image frame acquire from webcam. This will appear as it is actually placed in the real world. And finally the user can view the room and object from different angles.

Software Tools:

1. Unity Hub
2. Unity 3D Engine
3. Vuforia AR SDK
4. AR Core
5. Android SDK and NDK
6. Java JDK

Hardware Tools:

1. Laptop
2. Operating System: Windows – 11
3. RAM: 16GB
4. ROM: 4GB
5. Mobile supports AR Core
6. Fast Internet Connectivity