



FURNITURE TRY ON APPLICATION USING AUGMENTED REALITY

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Abstract : In early days, to purchase 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.

IndexTerms - Augmented Reality, Object Manipulation, Rendering

I. INTRODUCTION

Nowadays people are ready to buy things from their phone. 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.

II. PROBLEM STATEMENT

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.

2.1 Existing System

The applications which are presently being utilized are slower in picture catching and give low goal, which further debases the client experience and client deals with issues and needs to sit tight for the picture to process appropriately, even the illustrations of the items utilized for furniture are lower in goal.

The primary disadvantages in the modes of existing framework are:

- 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.

2.2 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. 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.

- This Application will utilize AR upheld cell phone to examine the living region and show the expanded furniture object to check whether or not it changes and that aids in better picking the right furniture for our needs.
- Increased items are the virtual articles (3D Model) which are like furniture device created utilizing Auto work area Maya[8] and Substance painter.
- Autodesk Maya is a product which offers an exhaustive innovative list of capabilities for 3D PC movement, demonstrating , reenactment, delivering, and compositing.
- The subsequent stage includes setting up light, shadow, and camera situating of these models utilizing different parts of Unity 3D.
- Then, the furniture model is chosen and the chose model is delivered and handled to be stacked on the filtered surface by Google AR Core.
- Planning of 3D model onto the cell phone screen happens which chooses the aspects of the model which is then delivered and shown onto the screen

2.3 Requirements Specification

2.3.1 Software Requirements

Working framework : Android 8.0 or more

Tools

- Unity 3D
- Google cloud for database

2.3.2 Hardware Requirements

- RAM Capacity : 4GB
- Memory : 120 MB
- Graphics Card : 1 GB
- Accessories : Smart phone with AR support

2..3.3 Software Specification

Unity3D is a "game advancement biological system", it incorporates a climate for the turn of events of intelligent 2D and 3D substance including a delivering and material science motor, a pre arranging connection point to program intuitive substance, a substance exporter for some stages (work area, web, portable) furthermore a developing information sharing local area.

III. LITERATURE SURVEY

The examination survey for augmented reality innovation has raised advancement of different applications in the field of software engineering. In this writing audit, it shows how the execution of expanded reality in different fields utilizes Unity 3D.

*The assumption for the customer would have no comprehension of the item except if they see the item face to face. The increased reality which has the capacity to project 3D pictures will come as an answer to make a superior comprehension for the client of the item (Malaysian Communications and Multimedia Commission 2018).

*Santosh Sharma, Yash Kaikini, Parth Bhodia, Sonali Vaidya have proposed a strategy named "Marker less Augmented Reality based Interior Designing framework", which involves Markerless Augmented Reality as a reason for upgrading client experience and for a superior view of things. It enjoys benefit of no need of markers in the surface region and drawback is Object is lined up with camera so it moves as we move a camera

3.1 Comparison

S.NO	Title	Author	Technique	Year
1.	Real Time Vision Based Camera Tracking For AR Application	Dieter Koller, Gudrun Klinker	An web application where client need to put the marker in a room where they need to evaluate furniture things	2015
2.	Marker less Augmented Reality based Interior Designing System	Santosh Sharma, Yash Kaikini, Parth Bhodia, Sonali Vaidya	It involves Markerless Augmented Reality as a reason for upgrading client experience and for a superior impression of things	2018 2018
3.	Use of Augmented Reality in furniture industry	Elizabeth Carvalho, Gustava Macaes, Isabel Varajao, Nuno Sousa, Paulo Brito	Format coordinating strategy to reference picture to inflexible article	2015

IV. METHODOLOGY IN AUGMENTED REALITY FOR FURNITURE INDUSTRY

4.1 Architecture

The framework essentially utilizes a mobile phone camera which supports Augmented reality to gather what is considered to be the genuine scene view seen by naked eye and stacks the 3D furniture models on the screen shown. Above all else, we really want to arrange the scenes in Unity 3D[6] for User Connection point of use like buttons, text regions, foundation picture and virtual item determination. Later we fabricate 3D furniture models via Autodesk Maya and import the models into Unity 3D. Through recognizing and following the surface region, the camera gets pointers utilizing Google AR Center and builds up projection models, finally stacks the imported 3D virtual model in the True view. Since Android PDA has a contact screen interface, we can put the furniture by sliding screen.

Fig.1 System Architecture of Application

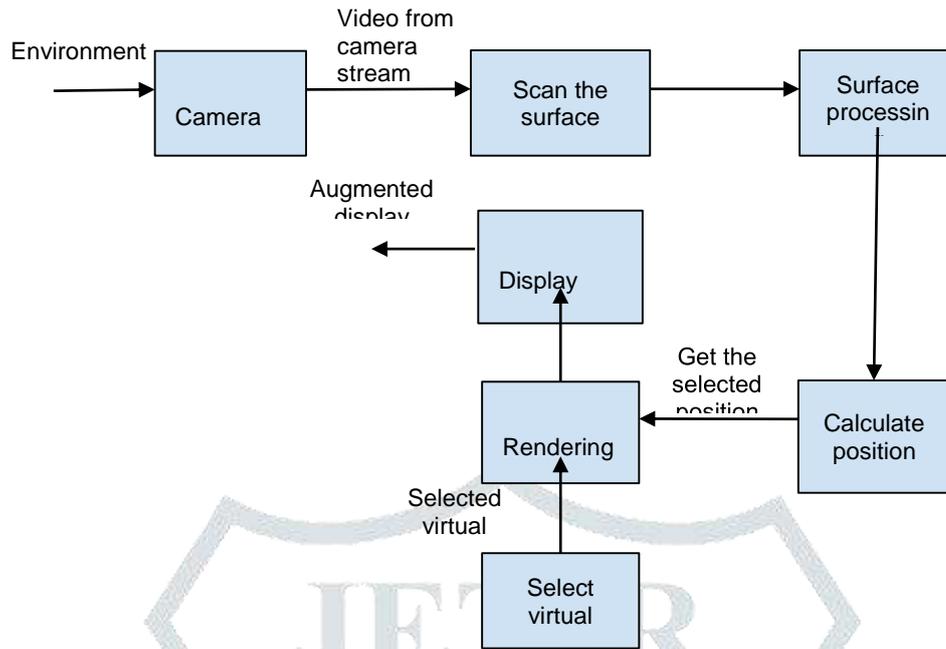
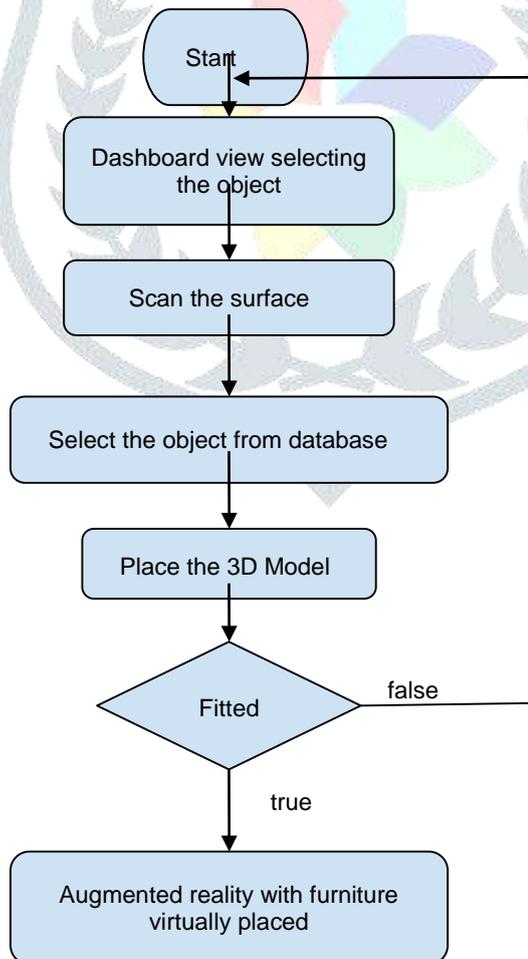


Fig.2 Flowchart



Modules

The application execution comprises four modules.

- Making Augmented Reality Objects.
- Creating Scenes for User Interface.
- Place the Virtual Object on the Surface Area.
- Verification of Virtually Placed objects.

4.1.1 Making Augmented Reality Objects

In the first place, we ought to build virtual models with the assistance of Autodesk Maya programming to make 3D furniture models, the models principally use Polygon and NURBS demonstrating strategies, the liveliness primarily utilizes key casing and articulation activity innovation. In the wake of building up models in Autodesk Maya, four significant data of the model will be put away in the document of each model, they are the model's vertex coordinate, surface direction, typical direction and the complete number of polygons, these information are the primary information when delivering the model. Application will store them in memory and read them to deliver models when calling delivering capacity. The information amount of the model is exceptionally gigantic, so we want a stacking module of the model to make it stacked into the program advantageously. Later we send out the model information, the document traded by Autodesk Maya is .obj record, which stores the above data, next convert the data to document which is accessible in program by model loader and get the model information by calling head record. Subsequent to stacking model information, we can deliver and show it in the scene through Unity 3D.

4.1.2 Creating Scenes for User Interface

In this module we cause situations for each slide of utilization utilizing Unity 3D. The principal interface cooperates by sliding perusing and choosing the key. The principle interface contains a furniture model, fastens that assists with moving to the next show, to examine the surface area of the living room, depiction of model like length, width, stature and for purchasing the model on the web store. The furniture section stores the key of all furnishings, showing each furniture in turn and which likewise upholds sliding perusing. To execute these capacities, we cause the situation to show the proportion of Android show and add the buttons to the scene that aids in moving to straightaway. Later we import the 3D model created utilizing Autodesk Maya and functionalities like turning the seat while shown utilizing that article and add functionalities to move to the next scene.

4.1.3 Place the Virtual Object on the Surface Area

In this situation, we utilize the assistance of Google AR core bundle which will be imported in Unity 3D and alter the bundle that will assist us with examining the outer layer of the residing region where we really want to put the virtual item in reality. When the alterations to Google AR center has done, we will cause situation to such an extent that after the surface region is filtered and when the client tap on the touch screen then the virtual 3D model will be delivered or incorporated with the living region so client can check the article furniture model suits to our necessities. The client can drag-and-drop virtual furniture models as indicated by his ideal in the genuine scene by means of UI given at this stage.

4.1.4 Verification of Virtually Placed objects.

When the client imagines that the article is appropriate to his need, he can actually look at the depiction by choosing the data button that aids in depicting the width, stature and length of article. To see this portrayal, we cause one more situation that aids in showing all the required data. We add one more button that aids in diverting to online stores where the furniture is accessible to buy. We add another button that aids in pivoting objects by any point of 30°

V. PIMAGE DETECTION SCREENSHOTS

4.1 Home page

At the point when the application is sent off the landing page seems where we can be ready to choose the furniture model that is expected to purchase and confirm whether it suits our living region.

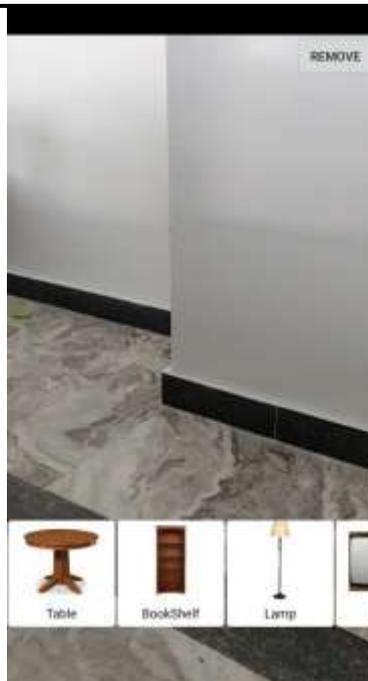


Fig .3 Scenes for user interface

4.2 Scanning Page

After the furniture object is chosen by tapping on the article that we pick. Next we move to the checking scene where we really want to filter the plane where the furniture object is to be set. Checking the surface will make the focus on the floor utilizing Google AR center.



Fig 4. Fix Target

4.3 Place the object scene

When the surface arrangement is examined and gets the marks of that we can tap on the screen to put the furniture object any place we really want over the plane.

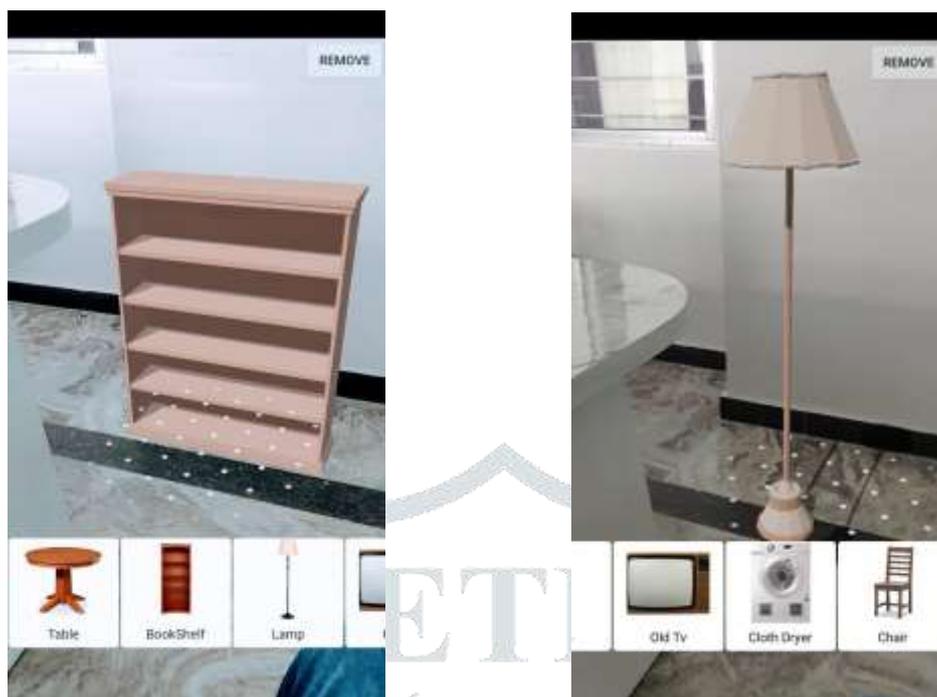


Fig 4. Verification of virtually placed objects

VI. CONCLUSION AND FUTURE SCOPE

6.1 Conclusion

The primary goal of this "Furniture Try On Using Augmented Reality" is to investigate the utilization of AR to deliver the furniture model in the real world. Augmented reality innovation that permits the clients to choose and interface the furniture with the genuine world, offering additional opportunities for furniture internet shopping. It helps the client to view and comprehend the furniture for his necessities. Because of this, clients will come to know how their home construction would take care of buying and setting the furniture object with multicolor choice. These aides the purchaser in deciding how to arrange the furniture in their home construction. Augmented reality support for furniture helps in making some new open doors for future exploration to expect groundbreaking thoughts in the field of web based shopping as clients will get benefit with these kinds of uses and gives superior agreement and decision making for buying furniture in an effective manner. Augmented Reality is a new developing innovation in the field of software engineering and will make us substantially more accommodating than the customary advances.

6.2 Future Scope

In future our "Furniture Try On Application Using Augmented Reality" dataset and extension will be versatile. The client may not exclusively have the option to evaluate different furniture protests however they can additionally evaluate this application by trying on clothes, goggles, watches, haircuts and so forth. It can likewise be utilized for different applications in shopping centers, interior planning, Medical Science and so forth. New innovation might appear in future that will help in creating 3D models consequently.

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