

An Augmented Reality based approach towards Furniture Shopping

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Abstract: *In the furniture industry, all the companies have been involved in furniture designing, manufacturing, distributing, and selling decorative household equipment. But the furniture industry is one of the major industries facing challenges these days. The researcher has gone through the existing and current furniture selling applications. The researcher has done interviews, observations, and questionnaire distribution among furniture sellers and clients during the process of identifying the problem. So, purchasing the best suitable furniture item according to the customer expectation is the main challenge that people has faced during online purchases. That means, it can be challenging to visualize how furniture will look in our homes and work with the décor already in place. Researchers pointed out that augmented reality can quickly resolve this problem. The usage of augmented reality in industrial applications is still relatively limited in a world where technology rules. Augmented reality is a field of image processing that deals with the combination of the real-world and virtual environment. Researcher has used ARCore plugins through the furniture item visualization. Users will be able to see how the item will appear in their space in real-time. The researchers' aim was to implement an application for smartphones to assist customers who purchase interior items directly online by allowing them to virtually see how their area will look after making the purchase. After implementation, researcher compared this developed system with the related current world applications and scenarios in the system evaluation process. Those system evaluations shows that the proposed system will be more supportable to make the current furniture industry more profitable.*

Keywords: *Augmented Reality, AR Furniture, ARCore*

1. Introduction

Each household and its individuals of it have an essential need for furniture. Nonetheless, the majority don't browse furniture stores frequently. If people need to invest money and give it more thought before purchasing it, it makes absolute sense. Since customers rarely return, the shop should occasionally alter its products to maintain its customers' experiences enjoyable. In this project, the center will provide clients who need furnishings with the best possible experience. The concept is based on Sri Lankan furniture stores that use well-known furniture manufacturers there. Here, the researcher will talk about the typical practice of implementing current systems when discussing the entire perspective of the online furniture store. Such an online furniture store application often allows users to search through the various pieces of furniture that are offered by the retailer. A customer must register with the system once they want to check out. A selection of furniture items in various models and designs are available in that store. Users can browse the products by category because there are numerous products in each one. The consumer has the option to add a product to his shopping basket if he likes it. Users could then complete the payment. Finally, customers have payment options. So other than above mentioned normal procedure this will improve the customer interaction by adding the feature of taking the real-time experience of the object. The special feature of this application is, that the application can

detect the measurements of the real surface area and adjust the 3D furniture model in accurate scaling. The major objectives of the research are, to recognize and compare the features of the existing and current furnished eCommerce applications, understand the usage of ARCore, and make use of the Sceneform SDK, which includes a PBR (physically based renderer) to facilitate the process of presenting products in the actual world and take the accurate scaling of both the 3D furniture model and the surface area in which it will be placed.

2. Literature Review

A. Feature extraction of existing and current applications

These findings further support the idea of implementing the furnished e-commerce AR Application. The work of "Houzz Interior Design Ideas" by Reuksupasompon, P et al (2017, pp.1-6) is an AR furniture store application that allows users to place virtual furniture products in their surroundings. The procedure behind this application is simple. The application requires users to first take a snap of any preferred location of their home, then position the virtual furnishings by hauling it to the ideal place and planning the presentation utilizing two fingers to resize the furniture product. Furniture will appear on the top of the selected background, with the ability to move and resize the overlay image. The strengths of this application were, that it is very easy to use, it simply shows the user the way of working and it can be downloaded easily because of less storage. Limitations of this application where this application does not support 3D views. It still uses flat 2D images and does no scale relative to the real word environment. The present study by Cruz, E. (2019) makes several noteworthy contributions to getting a 3D view of furniture products and it can be automatically scaled to fit the size of a real-world environment at a 1:1 ratio. It is an IOS application which is named "Furniture Drop: AR Room Planning App" invented by Asher Vollmer. This application uses the ARKit framework which was recently developed by Apple. It can integrate the iOS device camera and motion features which help to create an immersive experience of augmented reality in an application. When discussing the constraints of this application it only supports a limited number of devices.

More recent attention has focused on the IKEA application which Ozturkcan, S. (2021) is a famous IOS application developed by using ARKit SDK. It helps customers to do a product review before they obtain it by scanning any specific product, customers will then get associate AR expertise. By incorporating AR within the promoting strategy, mechanically a buzz is formed concerning the whole since the technology goes on the far side of the standard tools that area unit utilized by marketers, it provides associate expertise as on the brink of the important issue as is.

One study of Jerome's Furniture company they examined on the "Jerome's furniture Smart Shopper" Besecker, B & Marxent (2019) is an application created by them. The strength of this application is wherever this application permits users to rotate the chosen virtual model and perceive it at a special angle. Application has the flexibility to mechanically scale the virtual object and drag it. However, these applications square measure poorly in position detection and poor in object and surface scaling.

The Roomy, Hanni A.R (2016) convenient app was designed for skilled designers. It has the flexibility to convert second pictures to 3D scenes. Shoppers will have the read the article on furniture and decoration in AR and buy the things.

One of the biggest online merchants within the USA and the world is Overstock.com, Inc (2020). Through its websites and app, the business offers the available article of furniture, merchandise for the house, and created designs. Customers will utilize the stock.com app to use increased reality modeling to examine the furniture and alternative ornament elements that can work into the general house style. Photorealistic 3D models accurately represent the products' size, texture, and practicality. The Overstock app is critical because it delivers particular in-app expertise, together with special coupons and offers, searching suggestions, Club O account-related advantages, bit ID access, and more. Interior design is approagamifiediedly by DecorMatters application ApkDeal. (2022). This no-cost app offers a few pictures of empty rooms that you can decorate by placing furniture in the simulation world. Upload pictures of your actual furniture into the application, then stand back and observe as it creates a 3D model of your area to include a picture of your own home. Professional designers frequently utilize Homestyler, Tong, H. et al. (2019), but novice interior designers and homeowners can also benefit much from this program. With Homestyler, customers can take a picture of their present space and have it rendered in 3D, taking augmented reality-powered design one step further. They can then choose things to add to an environment with a few quick taps. You can quickly swap out parts within the program, change layouts, and move objects around. This is a great option for those wishing to completely rebuild the space because it enables customers to see the entire space at once. Professional designers were the target audience for the Roomy App, Hanni A.R,(2016). It can turn 2D photos into 3D environments. Customers can view furnishings and décor in augmented reality and buy things.

Table 1. Summary of the features of the applications

Application	Strengths	Limitations
Houzz Interior Design Ideas (Reuksupasompon, P et al 2017, pp.1-6)	Very easy and fast to use. Support a wide variety of devices.	Does not support 3D views. It still uses flat 2D images and does no scale relative to the real word environment.
Furniture Drop: AR Room Planning App. (Cruz, E.,2019)	Supports getting a 3D view of furniture products and it can be automatically scaled to fit the size of a real-world environment at a 1:1 ratio.	Only supports a limited number of devices. Issues in taking the accurate measurement of the surface and the item.
"Jerome's furniture Smart Shopper" (Besecker, B & Marxent, 2019)	Support 3D rotation Support automatic scaling	Poor in position detection.
Wayfair (Vazquez, C., Tan, N., & Sadalgi, S.,2021)	Focuses on offline showrooms and the shopping flow.	User experience is really bad in the terms of UI design.
Housecraft (Critic, A., 2022)	This ARKit app has nice visual feedback that shows you the progression of the scan. Once the app can complete the scan, this is the time when you can start putting 3D models in the scene.	Ability places a few items once on the surface.
EQ3 (Roberutsu.com. 2022)	AR reception by refreshing their work area item page and making a spring up with a QR code that exhibits imaginative style.	Loss in Surface detection. Issues in taking the accurate measurement of the surface and the item
IKEA Place (Ozturkcan, S.,2021)	3D images are quite accurate and can convey real-life sizes. Drag and drop functionality. Accurate Scanning.	Complexity in usage.
Roomy (Hanni A.R,2016)	It can convert 2D images to 3D scenes. Clients can view the furniture and décor in AR and purchase the items.	Complex to use. Much heavy application. Issues in taking the accurate measurement of the surface and the item
DécorMatters (ApkDeal.,2022)	Can upload their furniture and decorations Design their rooms by themselves	Focus mainly on 2D models.
Homestyle (Tong, H. et al,2019)	This application can convert the photo of your room into a 3D scene where you can place a 3D model into your picture offline.	Having bad user interfaces.

B. Comparison of ARCore and ARKit

When going through the technologies used in existing and current furniture apps for taking the real preview of the furniture, there are mostly used augmented reality technology to visualize the furniture items. The investigation shows that the usage of ARCore and ARKit took a prominent place. So, the researcher has gone through a comparison of the importance of the features of the ARCore and ARKit.

A range of commercial use-cases are presented to AR developers by the ability of ARReferenceImage in ARKit and Augmented Images in ARCore to recognize and superimpose 2D virtual photographs over original images in real-time. Both of these tools are compatible with many mobile frameworks, and both are capable of detecting changes in illumination and gaining access to motion sensors. But when it relates to mapping, ARCore surpasses ARKit. Through the collecting and storing of 3D environment data, ARCore's larger mapping dataset enhances the speed and consistency of mapping. The amount of local condition information and data stored by ARKit is less. However, this discrepancy was masked by the ARWorldMap functionality that debuted in ARKit 2.

As here researcher going to develop an android application, ARCore has the features which are supporting for building the android approach than comparing the supportability of the ARKit. Additional features are plane detection, point detection, light estimation, hit testing, image tracking, 3d object tracking, face tracking, and identification of environmental problems. So, the researcher identified that ARCore is better for using to ease the tasks and achieve the best performance in this implementation.

Supported features	AR Foundation	Google ARCore SDK for Unity	Unity ARKit Plugin	ARKit for Android	ARCore for Android
Plane Detection (Vertical)	✓	✓	✓	✗	✓
Plane Detection (Horizontal)	✓	✓	✓	✗	✓
Feature Point Detection	✓	✓ + Oriented Feature Points	✓	✗	✓
Light Estimation	✓	✓ + Color Correction	✓ + Color Temperature	✗	✓
Hit Testing (Feature point and plane raycasting)	✓	✓	✓	✗	✓
Image tracking	In development	✓	✓	✗	✓
3D Object Tracking	In development	✓	✓	✗	✓
Environment Problems	In development	✗	✓	✗	✓
Worlds Maps	✓	✗	✓	✗	✓
Face Tracking	✓	✗	✓	✗	✓
Cloud Anchors	In development	✓	✗	✗	✓

Table 2. Comparison of features of ARCore and ARKit

3. Methodology

For this study, it is far more effective for the researchers to use the research onion model as an explicit research approach. Enhancing the performance of the android application for the furniture industry is the basis for the research's guiding principles. The researcher uses a positivist research philosophy and holds the belief that only factual knowledge can be learned by observations and measurements. The researchers utilized a deductive strategy in this study to explore by looking at the furnishing e-commerce applications that were created and used by the experts. Researcher adopt a strategy to identify the issues in the current systems. The hypothesis of this approach to increase the user interaction of the furniture e-commerce application by taking the real-time preview of the furniture item according to the accurate scaling. The researchers employed a variety of research techniques, including

surveying the target audience, comprehending the algorithms and grounded theories that were applied, having a clear grasp of the existing situation, and concentrating on the most effective way to fix the problems at hand. The ethnographic method of addressing the clients' backgrounds, customs, way of life, behavior, shared distinctions, and various points of view. Time horizon takes a major part in research for a while, here a cross-sectional time frame was used. The researcher used some techniques in data collection and data analysis were discussed below. To appropriately determine the processes of furniture selling applications, and users' requirements, quantitative and qualitative methodologies are applied.

The sample population of the study consists of customers and the furniture shop administration, they are the main stakeholders of the app-using process. By utilizing primary sources, such as semi-structured interviews, in-person interviews, questionnaires, and direct observation of the chosen sample, the community's first-hand perceptions were primarily gathered. Secondary sources are used as the second method of information collection. Based on the comments already given by the customers, app viewers, and furniture shop administrators, secondary data was gathered. Additional details about the current systems can be found in personal records, client histories, and service records. By looking at comparable systems and fact-finding methods, the requirements for the mobile-based feedback system are gathered during the literature review. Agile methodology is used during the development of the system as it reduces the developer's effort and time required to detect and correct the errors.

A. Proposed System Background

Here the researcher specifies the software requirements which were needed to build the project, the concepts which could be applied, and a brief explanation of the overall outcome of the procedure of the project.

A. Android SDK

Important implications for developing applications for the Android Platform are provided by the Android SDK (Software Development Kit).

The following are some of the Android SDK's key elements:

- SDK Build Tools: This is a combination of all the tools needed to build every individual application component.
- Android Emulator: This is a virtual device used to test the android application in the development environment itself.
- Platform Tools: These are the tools that offer assistance for using the current Android API with an application.
- SDK Platform: The application's intended API level (Android level)
- Google APIs - By offering APIs which were supporting the building interfaces which is important in simplifying the app implementation.

B. Sceneform SDK

OpenGL API which is used in the creation of 2D & 3D vector graphics is generally needed to build AR applications in android. So Sceneform SDK makes supportable for the process naturally fluid and enables users to create dynamic AR applications without having to learn about OpenGL.

Scene from SDK is made up of three main parts: a physically based renderer provided by filament, a high-level scene graph API, and an Android Studio plugin that integrates the SDK with Android Studio for the aforementioned development process.

C. Scene graph

A scene graph is simply a data structure that is employed in vector graphics applications. Nodes are a 3D graphics technique that can be used to specify the connections between virtual objects. In this furnished application, transformable nodes will be used to anchor the 3D objects into the scene, along with scaling and transformation ability.

D. Physically Based Rendering

It is a form of rendering approach that ensures the accuracy of the lighting for all 2D and 3D models in the display. Thus, PBR enables the enhancement of textures, shadows, reflections, and other environmental effects to depict objects in the environment. Different surface kinds, including metals and hardwood surfaces, look lifelike.

E. ARCore

ARCore allows Android smartphones to use augmented reality (AR) features without the need for any additional sensors. The usage of sensors which available for developing ARCore-related project. ARCore has improved Tango, which was previously utilized to allow augmented reality on Android devices. With the aid of the on-device cameras, ARCore uses the scenes to import 3D objects into the application and create models in real-time that are projected into the environment. In ARCore, three fundamental ideas are applied: Object tracking, Light Estimation and Environmental understanding.

4. System Design

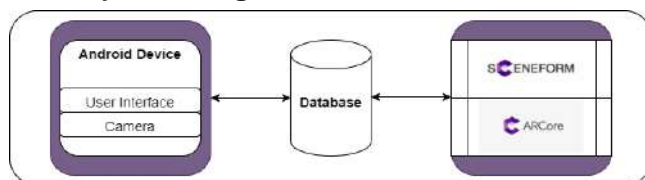


Figure 1. System Architecture

A. Camera & Android Device

To run this application with proper functioning there should be a mobile device with Android 7.0 or higher API level 24 which has high-quality features.

B. User Interface

The layout of the user interface should be sufficiently interactive with the user. The application should follow the standard procedure and interfaces of the E-commerce application.

C. Database

The database must be consistent to record information about users, transactions, and products, therefore firebase was selected for this furnished application. Firebase is ideal for testing the various components of the application. As Firebase is free of any data restrictions and easily compatible with mobile applications.

D. Sceneform

Accurate and realistic scenes may easily be rendered in AR and non-AR apps thanks to Sceneform. The main scene form dependencies that are available for adding the project were scene form core, plugin, UX, and assets. Instead of making a unique asset file (.sfb) for each model, this method integrates with Google's ARCore and produces a model at runtime.

E. ARCore

The researcher takes several procedures to display the model through ARCore. Below, the author briefly discussed the workflow for displaying the AR model.

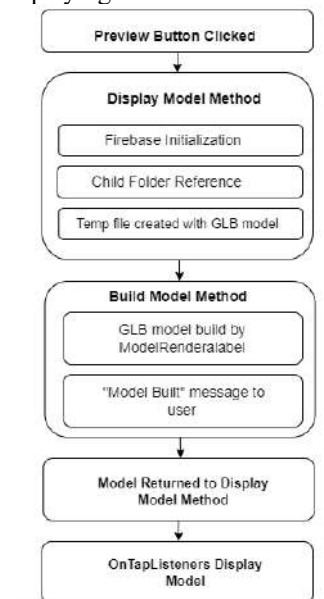


Figure 2. Block diagram to display AR model

- a) Real-Time Preview Button Press: After reviewing the product details of the app, Customers can access the AR fragment page by clicking on this button.
- b) Applying the DisplayModel method
 - a) Initialization of the Firebase database.
 - b) 3D model attached to the child node of the scene graph.
 - c) A temporary file with the. The global extension is made, into which the model file will be downloaded.
- c) BuildModel Method: The 3D model is constructed at runtime using the build model method after the model file is downloaded from the database and received into the temporary file.
 - a) The BuildModel method's ModelRenderable constructs the 3D model using the file supplied at runtime.
 - b) A node in the scene graph has the model associated with it.
 - c) The model is then delivered to the technique that displays models.
 - d) The user receives a notification letting them know the model has been built.
 - e) On Tap Listener: The model is simply shown on the tapped node in the AR fragment when the on-tap listener is enabled. Transformable Node is utilized, making it

feasible to resize and move the model horizontally over the scene graph.

5. User Flow

A. Login/Register

Customers and Admin should register for this system by themselves by entering their username and password as they preferred. Those usernames and passwords are used to log in to the system. If required users can change their passwords after login into their account. The login function should be used to access system users to log into the system. Users should already be with their usernames and passwords.

B. Home Page

After the successful login, the user can view the home page displayed with all the categories, subcategories, promotions, and offers of the furniture products.

C. Categories

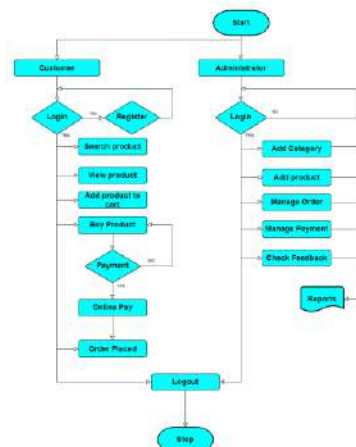
The categories page is available with main categories and subcategories. The administrator has the authority of all the crud operations of handling the category page. The user can easily browse through each of those categories. When clicked on each one opens a recycler view that pulls items from the database using the specific category name.

D. Product Selection

When a product is chosen from the recycler view on the home page or any of the categories, the product details activity, which contains the product's details, opens. The activity gets the product id from the prior activity as an extra intent string. Product name, description, price, image, and connection to the AR object contained in the firebase storage are all fetched by the product details class.

E. AR preview

Before taking the preview of the object, the user should measure the surface area in which the object is going to be placed. It can be done by adjusting the width and height of the cuboidal shape that appeared in the user's area. Then the user can gain an idea of the size of the furniture which is suits for this place. Then users have the ability to search through the different sizes of the same product. This is the main function that this application makes differs from other applications. Then users have the ability to gain a real preview of the furniture item. Additional functions beyond the previewing were 3D rotating, adjusting the sizes, scaling, drag and drop ability and detection of the horizontal surface for placing the furniture item.



F. Checkout:

Customers can add a product to their cart after thoroughly inspecting it. The product and the person whose information was added to the cart are both added to a database when the add to cart button is clicked. At the bottom of the cart page, the total is visible. If the customer is happy with the merchandise, they can check out. The administrator has the ability to preview the details of the products.

6. Implementation

This furniture application is deployed in 3 states as explained below.

A. 3D model Creation and Collection

The developer should collect the 3D models of furniture items of various categories such as chairs, tables, beds, etc. in glb format to be displayed in each item in the catalog. For the creation of the 3D model's developer used the Revit software and using websites.

B. User Interface Creation

The main pages of the furniture e-commerce application are the Login page, registration page, home page, categories page, product page, product details page, cart page, and payment details page. All the UI should be simply designed and developed according to the basic requirements of the clients. The process of this application is somewhat new for all the Sri Lankans. Therefore, for easy acknowledgment of all the people, developer used many techniques in developing UIs by showing the process of the application.



Figure 3. User Interfaces

C. Insertion of products into the categories.

After an assortment of product knowledge, an interface was created to change the process of uploading the info to the base database. The permission to feature any product knowledge to the information is proscribed to solely the administrator, whose credentials are often created on the server aspect of the base. The administrator is ready to log in through a separate login page and then the user login page. Upon thriving authentication and login, the administrator is ready to feature the merchandise information to the information through the add product page. The product added to the information will then be accessed by all registered users via the application itself.



Figure 4. The interface of product selection and cart

D. Tanking the measurements of the surface area.

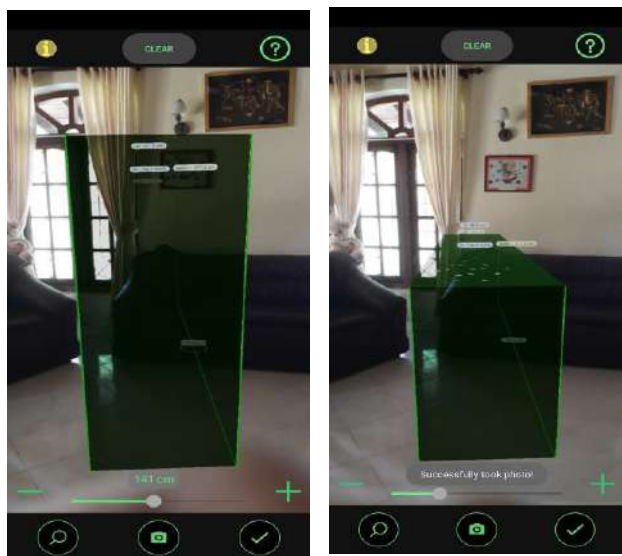


Figure 5. Interface of 3D model scaling

The app can take measurements of the area including the height, width can be measured. You can adjust the area size until it suits your preference. You can get marked the measurements of the area you going to keep the furniture item. Then when selecting the item customer can consider the size of the item also. It is a major advantage of this proposed application that the above-mentioned existing applications.

E. Screenshot of Chair AR model Prototype in AR Fragment.

The application's outcome, including the textures and colors, is of high quality and was made possible by the use of GLB models. Due to excellent light estimates, the chair's reflections and shadows in the AR fragment are accurate. The chair's leather can appear sparkling thanks to the use of PBR. Since the model was produced at runtime, it has an average density in terms of complexity. Devices with more processing power and a larger database bandwidth can be employed to achieve higher complexity models. Due to excellent light estimates, the chair's reflections and shadows in the AR fragment are accurate. The chair's leather can appear sparkling thanks to the use of PBR. Since the model was produced at runtime, it has an average density in terms of complexity.



Figure 6. 3D Real-time preview of furniture model

7. Results and Evaluation

For the evaluation of the accuracy of the system researcher has tested the furniture item in real time preview by keeping the mobile phone in every environment. Here given below is the evaluation of the 3D model real time preview features of the application.

Here researcher has taken the different angles of the object by placing it for the different places. Here given below are some of the sets of real time preview of the objects. It shows that the object identifies any plane surface accurately, the object can be rotate and drag into any place you want. Here researcher shows that the object can be place in both mid dark places and more bright places. The size of the object can be compared with the other equipment's in the surface. The size of the object can be adjusted by using the hand and always the size is displaying on the object as a percentage in size adjusting. Here researcher shows that the shadow of the object can place in each and every object. So, the researcher shows that this system has more accurate features of showing the real time preview of the furniture item.



Figure 8. Evaluation of Real-time preview of furniture model

Researcher has done the evaluation process in different ways. Researcher has been compared the developed system with set of related real-world scenarios' functional and non-functional requirements. Researcher has shared the above implemented system with the furniture shops which were used to gather the requirements in the requirement analysis process.

The complete system evaluation results were mentioned below. Here the system has given for a set of furniture shoppers who are engaging in selling their furniture items using the applications. Here the sample population was eight furniture shops.

Note: the mean score is calculated from respondents' feedback on Five-scale questionnaire: 1 (Strongly Disagree), 2, 3, 4 and 5 (Strongly Agree).

Functionality of the system	Mean Score
Customer account management	4.1
Admin account management	4.2
Products category management	4.4
Products management	4.6
3D visualization of the furniture item	4.8
Cart management	4.8
Payment management	4.7
Reports management	4.5
Feature of 3D object visualization	Mean Score
Plane surface detection (Horizontal & Vertical)	4.8
Furniture model rotation	4.9
Resizing the furniture model	4.7
Light Estimation	4.7
Dragging the product for any environment	4.6
Object tracking	4.7
3D model scaling	4.8
Click and drop the selected product	4.8
Model place can adjust using the fingers	4.7
Cloud storage support	4.6

Table 3. System Evaluation Results

Given below is the features comparison of developed system with related real time applications which was done by the researcher. It shows the level of the developed system with other current systems.

Functionalities of the system	Develop App	IKIA	Homez	Roomy	Decor Matters	Wayfair	Home Craft	Ethan Allen KBHome	oMake	Jerome's Furniture Smart Shopper	Home Styler
Customer account management	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Admin account management	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Products category management	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Products management	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
3D visualization of the furniture item	✓	✓	✗	✓	✓	✓	✓	✓	✓	✓	✓
Cart management	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Payment management	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Reports management	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Features of 3D object visualization											
Plane surface detection (Horizontal & Vertical)	✓	✓	✗	✓	poor	✓	✓	✓	✓	✓	low
Furniture model rotation	✓	✓	✗	✓	✓	mid	✓	✓	✓	mid	mid
Light Estimation	✓	✓	✗	low	✓	mid	✓	✓	✓	✓	low
Recognize the gesture movements	✓	✗	✗	✓	✓	✓	✓	✓	✓	✓	✓
Object tracking	✓	✓	✗	✓	✓	✓	✓	✓	✓	✓	✓
Cloud Storage Support	✓	✓	✗	low	✓	✓	✓	✓	✓	✓	✓
3D model scaling	✓	✗	✗	✓	mid	✓	✓	✓	✓	✓	✓
Model can rotate using the fingers	✓	✓	✗	poor	✓	✓	✓	✓	✓	✓	✓
Showing the 2D measurements	✓	✗	✗	low	poor	✓	low	✓	✓	✓	low
Non-Functional Requirements											
Ease of use	✓	✓	✓	✓	mid	✓	✓	✓	✓	✓	low
Improve the customer expectation	✓	✓	✓	✓	poor	✓	✓	✓	✓	✓	low
No need of much knowledge	✓	✓	✗	✓	✓	✓	✓	✓	✓	✓	low
Reduce unnecessary costs	✓	✗	✗	✓	mid	✓	✓	✓	✓	✓	low

Table 4. System Evaluation Results

8. Future Works

This research has thrown up many questions in need of further investigation. Further work needs to be done to establish whether furniture items match the interior

architecture, match furniture products with the home types of equipment, and develop applications that make use of IOS clients.

9. Conclusion

Analysis of the evaluation of the results researcher shows that this system implementation will be more contributed mainly for the Sri Lankan furnishing industry as well as for the whole world. This application will enhance the marketing strategies of the furniture sellers and improves the customer satisfaction for engaging with online furniture shopping. Therefore, the furnished application works brilliantly in modern society where consumer convenience comes first. By utilizing AR, we can accomplish the objective of giving the real time preview of the system.

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