



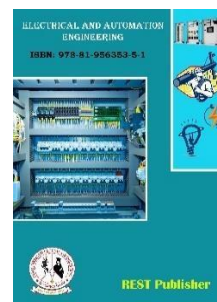
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Novel Application of Furniture Product Using Augmented Reality

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Abstract: A tool for individualized consumer pleasure is augmented reality, particularly when it comes to the interior and exterior of furniture. Customers truly want to be able to visualise how the products will appear in their homes or places of business. The consumer or user wants to visualise virtual content for interior design concepts in real time, which AR enables. This study suggests a novel method for integrating augmented reality (AR) technology into interior design, allowing users to share information about 3D virtual furniture and view it on a flexible, dynamic user interface. One way to think of augmented reality technology is as a blend of actual space and virtual items. In an AR environment, the user can observe and modify the virtual furniture in real-time on the screen.

Keywords: virtual reality, virtual furniture, augmented reality

1. INTRODUCTION

Augmented Reality is considered as a promising technology. With immersive solutions for varied ideas, this technology offers users and customers an AR experience. The furniture-based industry is also introducing new concepts for furniture enterprises thanks to augmented reality technology. With AR's assistance, they will be able to market their furniture successfully. AR enables users to view an object's colour, size, and other characteristics in greater detail. The user can take a photo of the space or location, check out different paint options based on their preferences, or play with 3D models of different objects in the virtual world on their mobile phone's screen. This allows them to envision or discover new interior design options, colours, objects, wall stickers, curtains, etc. Also, users can receive recommendations for stores where they should purchase specific goods.

2. METHODOLOGY

The app is created with the intention of giving customers the technology they need to streamline their home design and buy furnishings in a straightforward method. It is great for people who are unsure of what would look well in their space or where educational institutions, public transportation, typical stores, etc. are located. When hands are present, ultrasonic sensors trigger a pump to spray hand sanitizer on anyone who comes into contact.

1. System requirements:

Hardware Configuration:

- Processor - I3/Intel Processor
- RAM - 8GB (min)
- Hard Disk - 1 TB

Software configuration:

- Operating System: Windows 7+

- IDE: Android Studio
- Libraries Used: Volley, Recycler view and Card view.
- Database: PHP server

2. Software Requirements:

Android is an operating system, middleware, and a number of important applications for mobile devices. In 2005, Google Inc. acquired Android Inc., the company that originally created the software. The Linux kernel serves as the foundation for the Android operating system. The creation and distribution of Android was a joint effort between Google and other Open Handset Alliance participants. The main focus of the Android Open-Source Project (AOSP) is the upkeep and further development of Android. The most popular smartphone operating system in the world, Android is primarily utilised by a wide range of consumers across the globe. The Android SDK offers the resources and APIs needed to create Java-based applications for the Android platform. There is a sizable developer community producing applications for the Android Platform ("apps") Operation framework permitting factor exercise and volition.

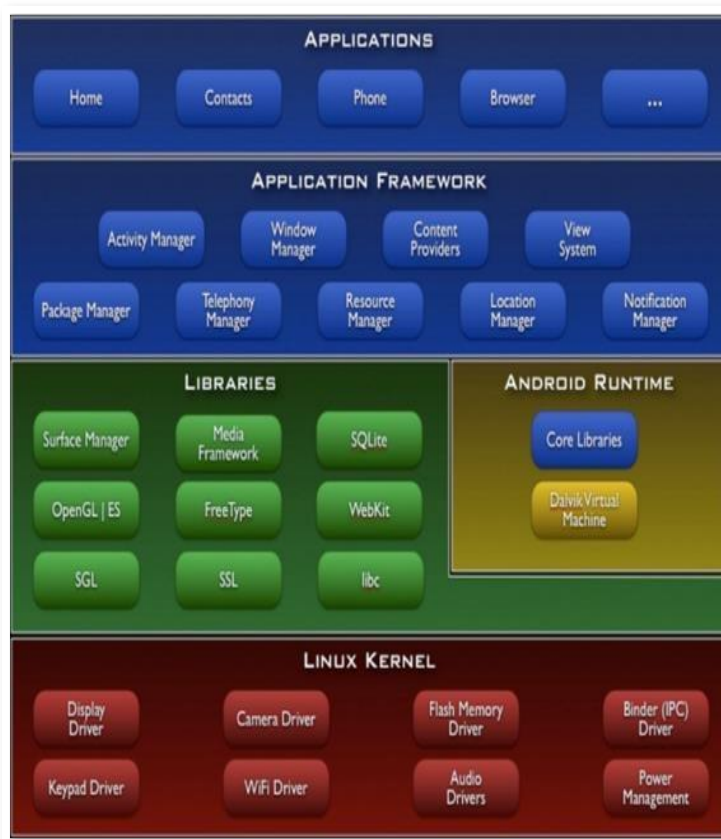


FIGURE 1. Android Architecture Libraries

- A Dalvik digital approach that is cellular bias- optimized
- Integrated cyber surfer largely based entirely at the public Web address system
- Enhanced images driven by a customised 2D image library; 3D images principally anchored entirely at the OpenGL ES 1.0 specification (tackle acceleration voluntary)
- SQ Lite for storing dependent records
- Media support for commonplace place audio, VHS, and still-image formats (MPEG4, H.264, MP3, AAC, AMR, JPG, PNG, GIF).
- Accelerometer, camera, GPS, and compass (tackle dependent).
- A rich development environment with a tool impersonator, debugging, memory, and performance profiling tools, and an Eclipse IDE plugin.

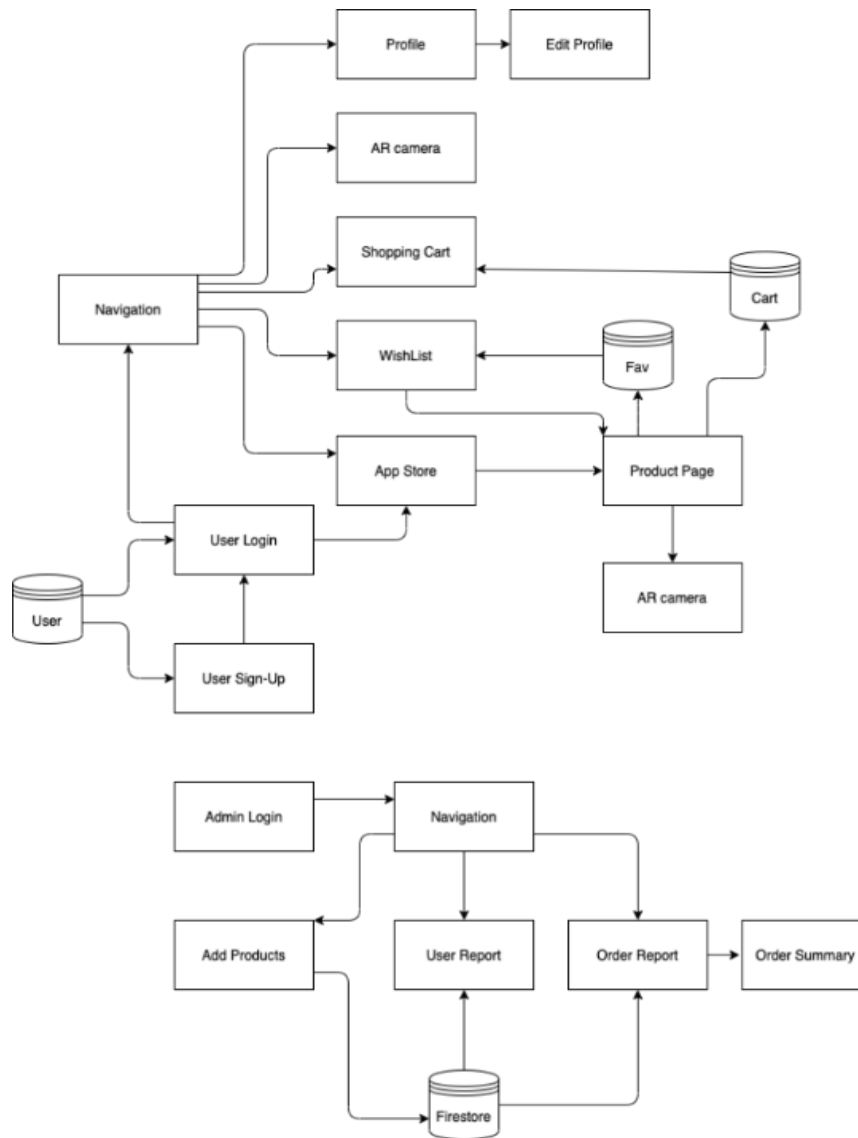


FIGURE 2. Furniture App implementation

3. SOFTWARES AND METHODS

ARM Architecture: The Dell Streak, Samsung Galaxy Tab, television, and other bias can all run the Android operating system on smartphones, netbooks, and tablets. A complete set of development tools is included in the Android software development kit (SDK). A debugger, libraries, a handset imposter (based on QEMU), attestation, and sample canons are some of them. From the android inventor website, the SDK can be downloaded.

SDK figure tools: These are all of the tools required to independently create the operation's component parts. Emulator for Android When a physical device is not available, it is used to test Android functionality on the actual development environment.

Platform Tools: These are the tools that provide assistance for using the current Android api. Doing the action requires the SDK Platform's Target API position (Android position).

Google APIs: by providing api for many interfaces, simplifies structure operations.

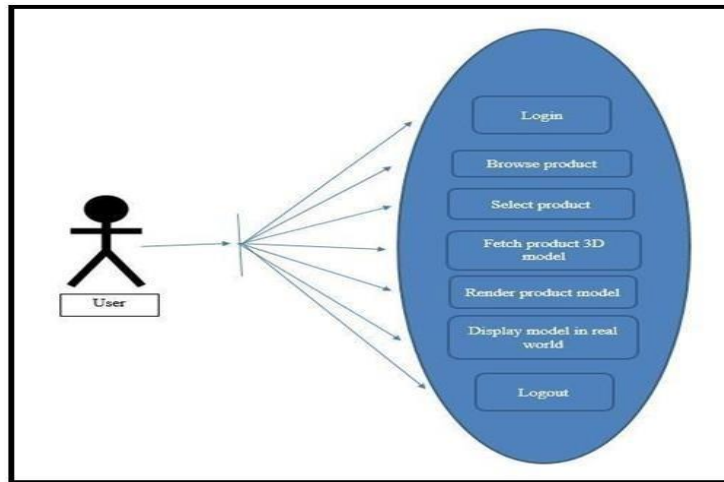


Figure 3. User interface with furniture App

USER FLOW:

Login/ Register: The stoner must register with the business using their phone number in order to ensure a safe and secure shopping experience. The stoner can use their phone number as their stoner id and the password they entered during registration to check in to the operation after successful enrollment.

Home Page: After a successful login, the stoner is honoured with a verified communication with their name on the home runner. The front runner showcases the fashionable selling item or any item that is currently being offered.

Select Product: A document holding the product details is opened when a product is mentioned from either the home runner or from any of the orders, and this document is referred to as the product details document. The effort receives the distinctive product id from the prior effort in the form of a redundant intent string.

AR View: The ARCore plugin locates the vertical points on which the model can be placed when the AR Fragment is opened, allowing the user to get a model- erected toast communication. The model, which is expandable and transformable to fit into any specific location of the client's home, may be displayed by tapping the points.

Checkout: The customer can add the product to their order after thoroughly inspecting it. The product and the data of the stoner who added it to their wain are entered into a wain list database when the add to wain button is clicked. The wain aggregate is visible at the wain runner's base. If the user is happy with the goods, they can check them out.



FIGURE 4. Furniture purchase through mobile App

4. RESULTS AND DISCUSSION

Although the conventional retail industry has historically had enormous success, the current environment calls for a more pragmatic approach. For instance, going shopping or hailing a cab.

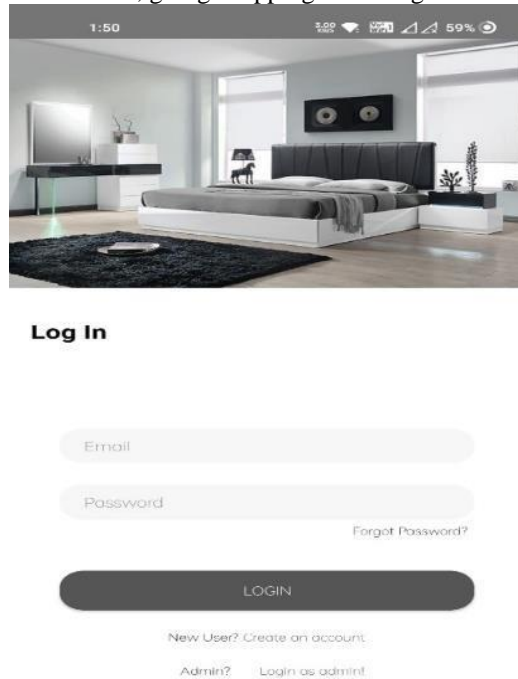


FIGURE 5. Homepage of Apps

This change may be the result of the recent technological revolution or the fact that a different age now makes up the bulk of an industry's clientele.

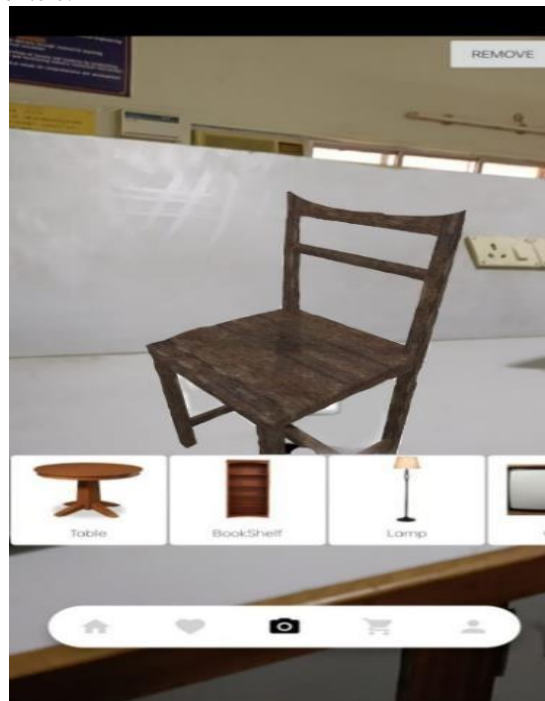


FIGURE 6. AR implementation with 3D objects

Today's society is perfect for the Furnished application since client's value convenience so highly. We can achieve the goal of cutting costs, time, and challenges through the use of AR. Because of the various plugins and SDK(s) used, users experience faster shopping. The administrator can now log in to the app, verify the augmented reality-enabled 3D furniture objects, and check the prizes associated with them.

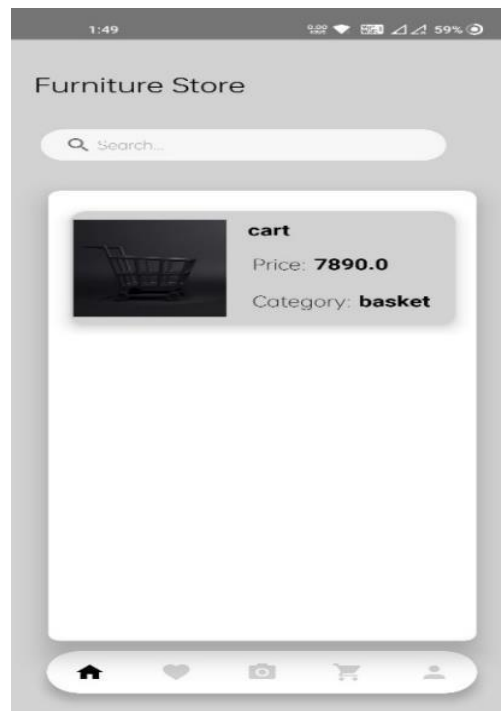


FIGURE 7. Product detail page

The project's scoping will be primarily focused on the augmented reality element. The work will still include the UI slicing of important components like the homepage and product detail page.

5. CONCLUSION

In conclusion, this study has shown how to design and create a mobile augmented reality application that facilitates online furniture shopping. The growing need for these applications, which considerably enhance the shopping experience and cut down on the time and effort frequently connected with furniture shopping, is what makes our work so important. Most importantly, it makes purchasing safer, particularly in the context of the present pandemic, where social distance is a crucial prerequisite. The technique used to design, create, and test the suggested augmented reality application is described in the article, along with the important software engineering tasks that were carried out. To enhance the user experience and make it more realistic and natural, future work will include the integration of increasingly sophisticated functions. One of these cutting-edge features is the creation of a recommender system or shopping assistant powered by artificial intelligence to assist consumers in choosing the best furnishings for their homes.

6. FUTURE SCOPE

Our dataset and expansion for the "Furniture Application Using Augmented Reality" may one day be flexible. The customer may not only have the choice to test out various furniture protests but they can also test out this application by donning clothes, goggles, watches, hairstyles, and other accessories. Also, it can be used for a variety of purposes in retail establishments, interior design, medical science, and other areas. Future developments could lead to the development of 3D models as a result.

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