INSTITUTION BASED SMARTPHONE APPLICATION USING VIRTUAL REALITY

Prof. N. Vinothaa
Assistant Professor

Mr. V. Shyam Prasad
UG Scholar

Ms. A. Pavithra
UG Scholar

Mr. K. Shreehare
UG Scholar

Department of Computer Science and Engineering,
Sri Ramakrishna Engineering College,
Coimbatore, Tamilnadu, India.

Abstract - Virtual Reality is the current buzz in the innovation business at this moment. A few items, for example, the Oculus Rift, HTC vive the Microsoft Hololens has been incredible achievement and have sold a few many their items as of now. It is ordinarily alludes to PC advances that utilization programming to produce practical pictures, sounds and different vibes that recreate a genuine situation (or make a non-existent setting), and re-enact a client's physical nearness in this condition, by empowering the client to associate with this space and any items delineated in that utilizing particular show screens or projectors and different gadgets. Virtual reality condition can be caught utilizing 360° stereoscopic circular video and 360x360 encompasses sound from expert VR camcorders. The clients can rise in the virtual reality condition utilizing head-mounted showcases. With this accomplishment there wouldn't be a superior time to build up an android application for Virtual Reality. In spite of the fact that there are various VR android application officially under presence, the proposed application is an exhibition that is centred on displaying the foundation of the Institution.

Keywords – Oculus Rift, HTC Vive, Virtual Reality

I. INTRODUCTION

Virtual reality (VR) commonly alludes to PC innovations that utilization programming to produce practical pictures, sounds and different impressions that duplicate a genuine domain (or make a fanciful setting) and recreate a client's physical nearness in this condition, by empowering the client to communicate with this space and any articles delineated in that utilizing specific show screens or projectors and different gadgets. VR has been characterized as "a sensible and re-enactment of a 3D domain made utilizing intuitive programming and equipment, and experienced or controlled by development of the body" or as an "immersive, intelligent ordeal created by a PC". A man utilizing virtual reality hardware is normally ready to "glance around" the fake world, move about in it and collaborate with components or things that are delineated on a screen or in goggles. Virtual substances

falsely make tangible encounters, which can incorporate sight, touch, hearing, and, less regularly, smell. Most virtual truths are shown either on a PC screen, a projector screen, or with a virtual reality headset (additionally called head-mounted show or HMD). HMDs commonly appear as head-mounted goggles with a screen before the eyes. A few recreations incorporate extra tangible data and give sounds through speakers or earphones. Virtual Reality really brings the client into the computerized world by cutting off outside jolts. Along these lines client is exclusively concentrating on the advanced substance. Virtual reality condition can be caught utilizing 360° stereoscopic round video and 360x360 encompass sound from expert VR video cameras. The clients can develop in the virtual reality condition utilizing head-mounted showcases. Some progressed haptic frameworks incorporate material data, by and large known as drive criticism in medicinal, video gaming and military preparing applications. Some VR frameworks utilized as a part of computer games can transmit vibrations and different sensations to the client by means of the diversion controller. Virtual reality likewise alludes to remote correspondence situations which give a virtual through telepresence and telexistence or the utilization of a virtual ancient rarity (VA), either using standard information gadgets, for example, a console and mouse or through multimodal gadgets, for example, a wired glove or omni-directional treadmills. The immersive condition can be like this present reality keeping in mind the end goal to make a similar affair. For instance, in reproductions for pilot or battle preparing, which portray reasonable pictures and hints of the world, where the typical laws of material science apply (e.g., in pilot training programs), or it can contrast essentially from reality, for example, in VR computer games that occur in dream settings, where gamers can use anecdotal enchantment and supernatural power powers.

The utilization of representation, sound and info innovation in computer games can be fused into VR. A few Virtual Reality

Head Mounted Showcases (HMD) were discharged for gaming. Oculus Rift is a head-mounted show for gaming purposes created by Oculus VR. One of its opponents was named by Sony as PlayStation VR (codenamed Morpheus), which requires a PS4 rather than a PC to run. The PlayStation VR is altogether more constrained than the Oculus Rift because of the way that the PC can be supplanted with all the more capable parts later on. All these virtual reality headsets are fastened headsets that utilization unique focal points to amplify and extend a 5.7-inch screen over the field of vision. There are additionally gaming VR-headsets being developed, each with its own uncommon capacities. StarVR offers a 210° field of view, though FOVE tracks the position of your eyes as an info strategy.

II.   RELATED RESEARCH

2.1 Virtual Reality on Smartphone

It goes for showing the incorporation of innovations used to enhance the experience of inundation in virtual reality applications with reasonable gadgets. The application investigated the Kinetic movement catch and the Smartphone sensors. Additionally, it utilized a middle person PC and a virtual reality cardboard with a Smartphone. The application gave the communication and the symbol control through characteristic body developments. The advancements reconciliation has adequate exactness to perceive developments from client's thorax, arms and legs [1].

2.2 Low cost Virtual Reality Environment

Displaying huge building or designing 3D-models is a vital piece of the arranging, development and upkeep stages as far as joint effort and comprehension. Particularly in mind boggling or expansive scale models, drenching is one of the significant key variables for having the capacity to naturally see all parts of the scene. A completely immersive framework needs to give the client an extensive field-of-view with diminished inertness for exact impression. Advancements, for example, VRwalls and screen glasses can convey high revive rates, yet neglect to give a substantial field-of-view.

Head-mounted-gadgets for virtual reality fill this crevice. Head following components interpret developments of the client's head into virtual camera developments and empower a characteristic method for inspecting models. Dissimilar to a stereoscopic portrayal with projectors, perspective following can be accomplished independently for every individual client. Equipment costs for such frameworks were high previously, yet have dropped because of virtual reality frameworks now

picking up footing in the standard gaming group. It paper introduces an approach to construct a minimal effort, very immersive virtual reality condition for building and development applications. Besides, a strategy was exhibited to improve and halfway mechanize the way toward reusing advanced building models, which are now utilized as a part of development, to make virtual scenes, rather than doing parallel substance creation for perception. Utilizing the Oculus Rift head-mounted show and the Leap Motion hand-GPS beacon, the potential outcomes of normally interfacing inside a virtual space in various utilize cases were appeared.

Building Information Modelling information can be transported in to UE4 with our displayed module. Utilizing a robotized database for mapping materials to the geometry improves the way toward bringing in Building Information Modelling substances. The revive rate of the framework remains inside worthy edges required for virtual reality applications utilizing head-mounted gadgets Head-mounted gadgets exhibit an incredible potential for the Architecture, Engineering and Construction industry, as a man can encounter sensible first-individual circumstances without caring about wounds. Robotized forms for the rearrangements of substance creation, utilizing existing models, and the utilization of visual programming dialects empower even nonprogrammers to make situations to their necessities [2].

2.3 3D Modelling

These days, cell phones and PC are extremely prominent. Portable and desktop applications with learning help check significantly help to everybody, who needs to gain some new useful knowledge. This paper presents an Android, Desktop and WEB application, which can help individuals to find out about the projects. This application was finished by utilizing innovations, for example, AutoCAD, 3D demonstrating with 3Ds Max and Unity 3D. Use of such devices and advances provide for individuals the colossal chance to change over unlimited thoughts in individuals' brain into reality, so that cell phones and PC will have the capacity to make virtual reality [3].

2.4 Game Interface

The immersive diversion interfaces which mirror the client's activities to the amusement progressively can make the client be submerged in the amusement. In this paper, the virtual reality (VR) procedures were connected to a first-individual shooting (FPS) diversion, Unreal Tournament 2004 for the upgraded client drenching with making the scope of sensible data. It can be augment by utilizing the head-mounted show

Corresponding Author: Prof. N. Vinothaa, Sri Ramakrishna Engineering College, Coimbatore, Tamilnadu, India.   **1178**

(HMD) and the 5.1 channel earphone, and furthermore making the collaboration between the client and the diversion framework be normal with the head tracker and the information gloves. Moreover, the insightful diversion operators are connected to enhance the nature of the amusement substance. The proposed immersive interface was substituted for the customary interface framework spoke to by a screen, a console and a mouse. To assess the proposed framework, the ease of use test was performed with both the physiological and the mental measures. Through the test, the proposed framework was checked to give preferable immersive experience to clients over the conventional framework [4].

2.5 Augmented Reality

Expanded Reality (AR) is a quick raising innovation and it has been connected in many fields, for example, gaming, learning, excitement, medicinal, military, sports, and so on. This paper surveys a portion of the scholarly investigations of AR applications in assembling operations. Relatively, it is lesser tended to because of stringent necessities of high precision, quick reaction and the alluring arrangement with mechanical norms and practices to such an extent that the clients won't discover extreme move while receiving this new innovation. This paper investigates regular assembling exercises, for example, item outline, apply autonomy, offices format arranging, support, CNC machining reproduction and get together arranging. A portion of the issues and future patterns of AR innovation are additionally tended [5].

2.6 Integration of Virtual Reality tools

At the distinctive phases of the PLM, organizations build up various agenda based methodology including model investigation and testing. Furthermore, systems from CAD, 3D imaging, liveliness and virtual reality now frame a develop set of devices for modern applications. The work displayed in this article builds up a one of a kind structure for immersive agenda based venture surveys that apply to all means of the PLM. It joins immersive route in the agenda, virtual trials when required and mixed media refresh of the agenda. It gives a bland apparatus, autonomous of the considered agenda, depends on the incorporation of different VR instruments and ideas, separately, and utilizes a unique signal acknowledgment. Attainability investigations are exhibited, approving the advantages of the approach [6].

2.7 Simulator in Virtual Reality

Customer accessible virtual-reality innovation was propelled in 2016 with solid establishments in media outlets. We built up a creative medicinal preparing test system on the Oculus (TM)

Gear-VR stage. This novel application was created using globally perceived Advanced Trauma Life Support (ATLS) standards, requiring basic leadership abilities for fundamentally harmed virtual patients. Members were enrolled in June, 2016 at a solitary focus injury course (ATLS, Leinster, Ireland) and trailed the stage. Test system exhibitions were corresponded with individual ability and course-execution measures. A post-mediation survey identifying with legitimacy angles was finished.

III.   PROPOSED WORK

Due to advancements in the Mobile Technology and the presence of strong mobile platforms, it is now possible to use the revolutionizing Augmented Reality technology in mobiles. This project is based on android application using virtual reality. It uses the open source Google cardboard VR libraries tools are free of cost. It showcase the key infrastructure of the college with full 360 degree view. Each location has its own info card which provides information about that particular location. This application will be integrated for the fresher's reference.
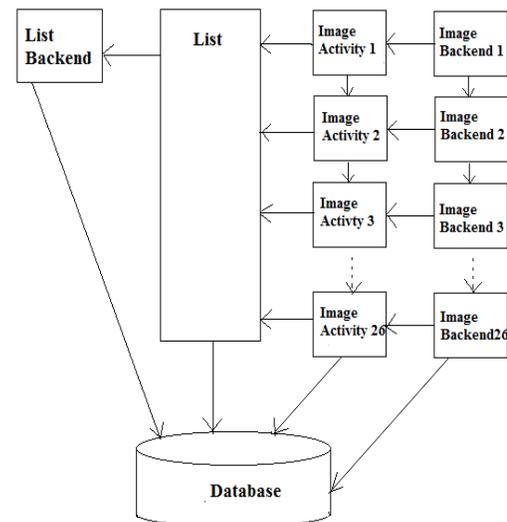

Fig 3.1 Architecture diagram

Module description

This project consists of three modules. They are
- ❖ Layout Module
- ❖ Operation Module
- ❖ Database Module

Corresponding Author: Prof. N. Vinothaa, Sri Ramakrishna Engineering College, Coimbatore, Tamilnadu, India.   **1179**

3.1 Layout module

This module consists of all design elements of the application such as the GUI and all the front-end elements. A layout defines the visual structure for a user interface, such as the UI for an activity or app widget. Android provides a straightforward XML vocabulary that corresponds to the View classes and subclasses, such as those for widgets and layouts. The advantage for declaring the UI in XML is that it enables the user to better separate the presentation of the application from the code that controls its behavior. The UI descriptions are external to the application code, which means that user can modify or adapt it without having to modify your source code and recompile. For example, user can create XML layouts for different screen orientations, different device screen sizes, and different languages. Additionally, declaring the layout in XML makes it easier to visualize the structure of the UI, so it's easier to debug problems.

3.2 Operation module

This module consists of all the code that acts as an intermediate layer between the front-end and back-end. It performs all basic operations such as insertion, deletion and update. The Android Application Development Kit is an Open-source Linux-based operation system, which has its own middleware and key applications. The platform for app development in Android is Java. This means that you use the Java library and code the applications in Java, C and C++ programming language. But, the most widely used programming language for android application development is Java. Google provides a Java API to get started and compiles your files into classes. Though Google provides the Java API, Android does not use JVM to execute class files. Rather, it uses Dalvik Virtual Machine (DVM). The class files are compiled into Dalvik Executable (DEX) format and bundled as Android Package (APK) along with other resources.

3.3 Database module

A SQLite DB is used as Back-end to store and retrieve all data. SQLite is a open source SQL database that stores data to a text file on a device. Android comes in with built in SQLite database implementation. SQLite supports all the relational database features. In order to access this database, the user don't need to establish any kind of connections for it like JDBC,ODBC etc., The main package is android.database.sqlite that contains the classes to manage the local databases. The user can create table or insert data into table using execSQL method defined in SQLiteDatabase class. We can retrieve anything from database using an object of the Cursor class. The application will call a method of this class called rawQuery and it will return a result set with the cursor pointing to the table. The user can move the cursor forward and retrieve the data. For managing all the operations related to the database, the helper class has been given and is called SQLiteOpenHelper. It automatically manages the creation and updation of the database.

3.4 Methodology

There are a number of methods by which virtual reality (VR) can be realized. Simulation based VR, Avatar image based VR, Projector based VR, and Desktop based VR, etc... Panorama photography is a technique of photography, using specialized equipment or software that capture the image in horizontal view. Fig 3.1 describes that the flow of the project, list is maintained by list back-end simultaneously image activity for the lists performed and maintained by image backend. These all activities are maintained by database. Mentioned above features are implemented for the institution. The sample screenshot in included for the reference (Fig. 3.2).

Fig 2 : Example Snapshot

IV.   CONCLUSION

The proposed system is to showcase the entire infrastructure of the institution. This system is based on android application using virtual reality. It gives clear view of the college's infrastructure. It gives the effect of real environment. It also helps the viewers to view the real infrastructure of the Institution.

References

[1] Marlon Dantas Braga, Guilherme Lucio A. Mota, Rosa Maria E. Moreira Da Costa, "Technologies Integration of Immersive Virtual Reality on Smartphones with Real-Time Motion Capture", Virtual and Augmented Reality (SVR), 2016 XVIII Symposium, INSPEC Accession Number: 16175685, Publisher: IEEE

[2] V. Dhivya, H. Anandakumar and M. Sivakumar, "An effective group formation in the cloud based on Ring signature," Intelligent Systems and Control (ISCO), 2015 IEEE 9th International Conference on, Coimbatore, 2015, pp. 1-4.doi: 10.1109/ISCO.2015.7282366

[3] Zhaparov M. K , Nassen Y, "3D modelling based on virtual reality", Cloud System and Big Data Engineering (Confluence), 2016 6th International Conference, INSPEC Accession Number:16140718, DOI:10.1109/CONFLUENCE.2016.7508151.

[4] Jong-Won Yoon, Su-Hyung Jang, Sung-Bae Cho, "Enhanced user immersive experience with a virtual reality based FPS game interface", Computational Intelligence and Games (CIG), 2010 IEEE Symposium, ISBN: 978-1-4244-6295-7.

[5] A.Y.C. Nee, S.K. Ong, "Virtual and Augmented Reality Applications in Manufacturing", IFAC Proceedings Volumes, Volume 46, Issue9, 2013, Pages 15-26

[6] P. Fillatreau, J.-Y. Fourquet, R. Le Bolloc'h, S. Cailhol, A. Datas, B. Puel "Using virtual reality and 3D industrial numerical models for immersive interactive checklists", Computers in Industry, Volume 64, Issue 9, December 2013, Pages 1253-1262

[7] Security analysis for order preserving encryption schemes by Liangliang Xiao; I-Ling Yen 2012 46th Annual Conference on Information Sciences and Systems (CISS) in Year: 2012 Pages: 1 - 6, DOI: 10.1109/CISS.2012.6310814

Corresponding Author: Prof. N. Vinothaa, Sri Ramakrishna Engineering College, Coimbatore, Tamilnadu, India.   **1181**