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Virtual reality of interior architecture

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ABSTRACT

VR is an interactive computer-based on experience takes place within a simulated environment. It always gives in mainly auditory and visual feedback but may also allow other types of sensors. The environment created by virtual reality can be similar to the real world. By implementing our project in Virtual Reality, it has become convenient for the market value also for business purpose. Lots of manpower and resources are wasted in the civil engineering field. In order to use manpower efficiently, the planning of jobs should be done well in advance. Usually, the 3D model is done using unity gaming software. In this virtual reality plays an important role in making the human efforts to the zero. In our project, we have implemented the sample room of a flat in the vr3d model. Basically in civil field builder spends lakhs of money in building the sample rooms to show to their customers, implementing VR room it has made very simple and efficient for the purpose of making sample rooms. It is very economical. The virtual reality is based applications require a significant level of effort in creating a virtual environment that represents the real world. To save the money that will be wasted by building sample rooms we can simply render the sample room in virtual reality. This will save the cost, resources, and manpower that will be needed for future development purpose.

Keywords—Virtual reality, Interior, Real-time visualization, Dynamic, Interior design, Computer Graphics, Mobile devices, Video compression, Interior architecture

1. INTRODUCTION

The Virtual Reality of Interior Architecture to building a sample room is essential to avoid unnecessary construction and design misunderstanding. Virtual Reality is like a modern ICT tool, breaks traditional design environment by providing interactive imagery creation. Dynamic real-time visualization, interior architecture has been a type of VR tool, acts as a new approach to interior design practices nowadays. This provides us with new innovative ideas and perspectives in the application of VR tools for interior designing. Using “UNITY” game engine technology in the 3D design field has overall short and preferable virtual construction processes. Customers coming to visit the sample VR room are allowed to experience a dynamic and interactive virtual interior architectural environment by using 3D UNITY

engine as the development software. We can use Unity Engine software for implementing in 2D as well as 3D. Customers are then able to explore the various design interior design by walking throughout the room layout. Using a UNITY engine gaming development software acts as a dynamic design process and solution due to the limitless options that such software can offer to the field of interior architecture. Also, it provides a big opportunity for comparisons with other design software solutions like Unreal engine etc.

There are basically 3 types of animation representation where the 3D house models are intended to be presented animatedly. One is a conventional animation where users are a spectator in the visualization. Basically, there are not all any interactions between the real world and the virtual world. The second type is interactive visualization using authoring software where this type of technique is still static, but interaction can be done using methods such as point-click. This technique is only in 2D animation lastly, there is third technique is interactive visualization using the game engine as development software. The 3D or 2D designs that navigate user can become dynamic, providing engagement and collaboration between users and the 3D world created. Although the AutoCAD tools can create 3D visuals, the non-interactive 3D model will be hard for interior design to fully express what they intended to display in their work job. Interactive virtual walkthrough gives the user an experience of being in the virtual environment and explore the interiors freely by wearing a Google VR box which is easily available in markets or online websites. Here we have been using such VR box to enjoy the view of our architecture. Besides that, it will help interior designers to see their work from the perspective of a user when he enters the room. Also, it will help them in designing the room layout according to user convenience and choices.

2. SYSTEM OF INTERIOR ARCHITECTURE

In today's era of real estate has grown faster and it is very wider. Customers are always under stress while buying some property as those are under construction and the customer is not aware of how the apartment will look after construction, how much floor area will be useful or not and many other issues like colour of the apartment, curtains, tables, furniture, flooring etc. They are curious about their new homes and find restlessness usually. So,

the customer has to wait until the construction is done fully. So, our VR system gives the solutions to all these issues by providing Virtual Reality to view of the respected room even before the construction is completely done. Computer and Environmental Interactions are greatly effective. Environments capture things like Location, Nature, Aside, Beside Also weather Inputs too. Here, now the three combinations like Human input, Environmental input, Computer Input, together make a perfect virtual environment to be studied. Movement through the physical world can translate to movement in the virtual or digital world. Boundaries in the physical world can create obstacles in the gaming environment for the real virtual world. Without environmental input, we cannot blend the mixture of the perfectness of the actual gaming environment. The boundaries create obstacles in the real world can be overcome in the virtual phase. Here basically Virtual Reality where customers can actually view the sample rooms created on UNITY engine platform. Architecture mostly consists of Android 6.0 version, VR headsets, Gyroscopes, Google Plugin.

3. SYSTEM OVERVIEW

In Virtual Reality, we have observed many features of the system in which it makes the successful model for the interior architecture. Not only it is helpful for customers but it is also beneficial for builders too. Because it saves the builder's time and precious money too. by using this model builder do not have to visit the site with a customer every time when been called. They can come up with various models and designs anytime and anywhere as it is time-saving for both of them. There are some more features of this VR system that are as follows:

- Virtually environment created for the customer to view the future room sample.
- High quality renders environment for the property with a minimum amount of resources.
- Various tools and assets are available in the engine shop itself.
- Provide a custom view by using such tools like painting, texture, curtains, wall paintings, designs etc.
- 360 view of overall room consisting of roofs tills floors.

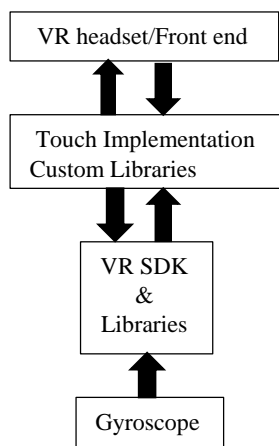


Fig. 1: System diagram

3.1 Gyroscope

It is a software which is used for tracing and scanning the apartment room. It is used for measuring and maintaining orientation and angles according to its velocity. It assumes a random point at firstly. And this scanned view is then transferred to the next level of the architecture.

3.2 VR SDK

It is a Virtual reality software development kits for the virtual environment. It is the second level of the architecture which will process the scanned view of the sample room.

3.3 VR headset

It is a medium of interaction between the system and the customer. In the VR this headset will enhance the view of the room that the customer is willing to buy. It will not only help customer to buy but also help builder.

3.4 Unity engine

It is mostly used for making games development creating the virtual environment. It is feature-rich and highly flexible editor. It is also known for the ultimate game development platform. Basically, it is used for 2D or 3D games designing software and can be run on any software or devices like laptops, mobiles, pc, etc. It can be executed in the making of software-imposed games.

4. SYSTEM IMPLEMENTATION

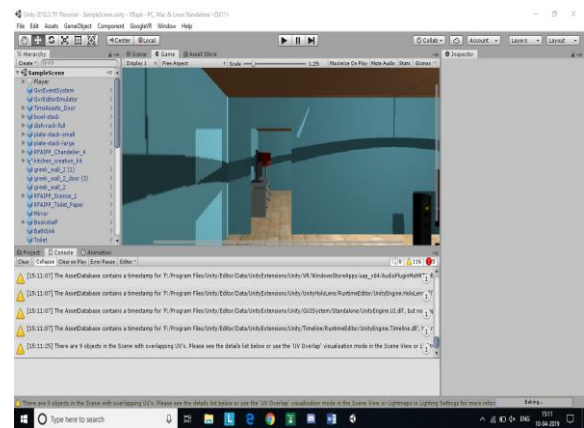


Fig. 2: Unity Engine

Here with the help of the unity engine, we can make any 2D or 3D gaming structures.

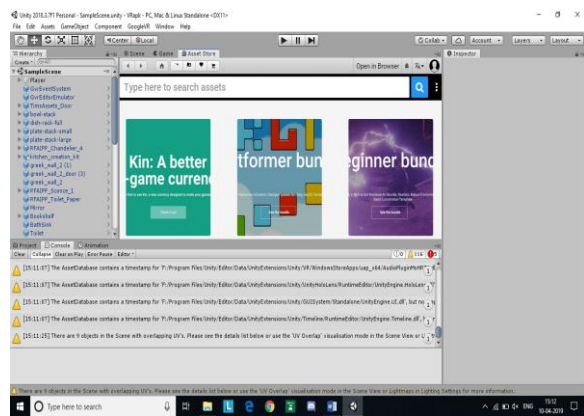


Fig. 3: Asset store

Next step is about to choose the inputs or things we have to insert in our virtual rooms.

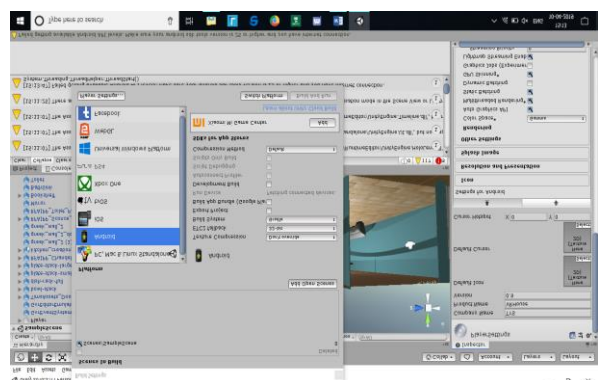


Fig. 4: Application building settings

Next step is to build up settings.

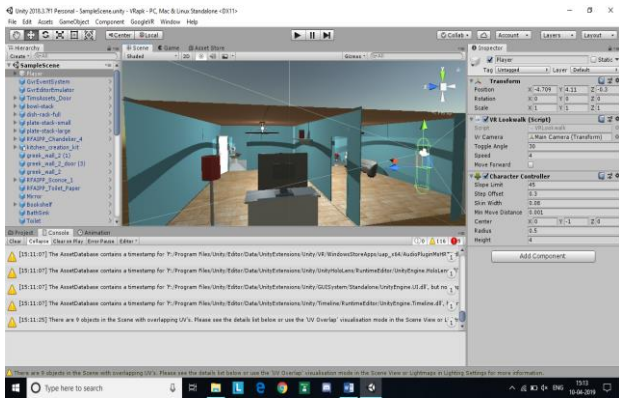


Fig. 5: Player object placement

Place the required objects to their right positions.

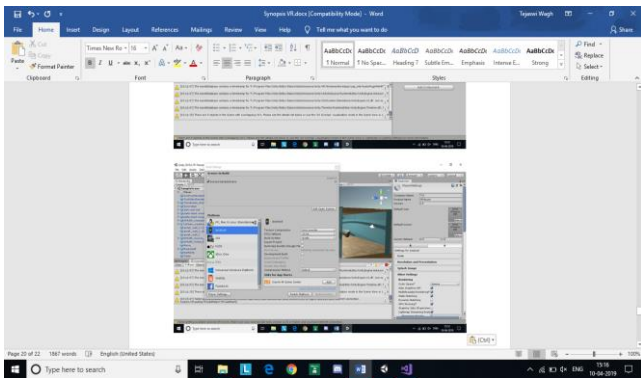


Fig. 6: Platform switching

Next step is to switch platform according to our choices.

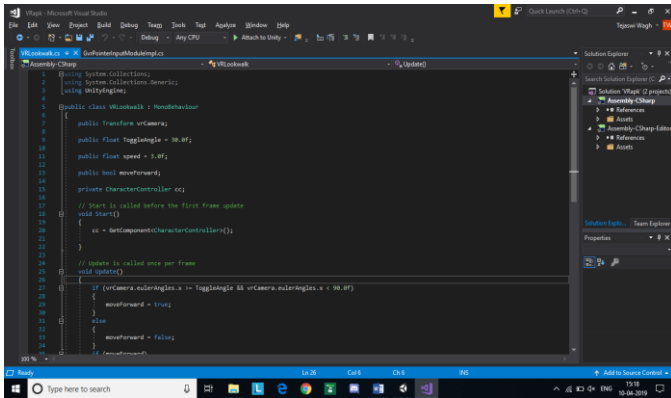


Fig. 7: Scripting of movement of the player

The main step to code about the movement of the player in scripting languages.

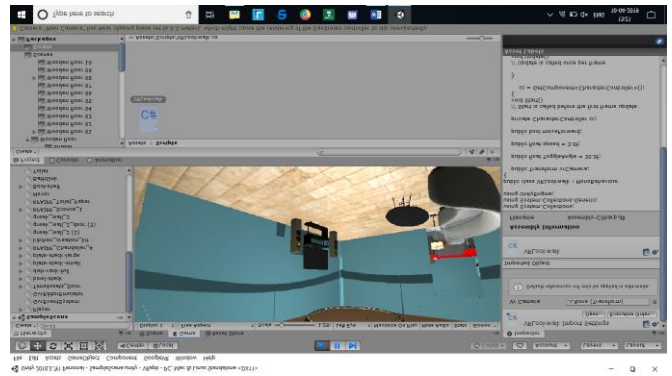


Fig. 8: Application testing

Now time to test the application.

5. UML DIAGRAM

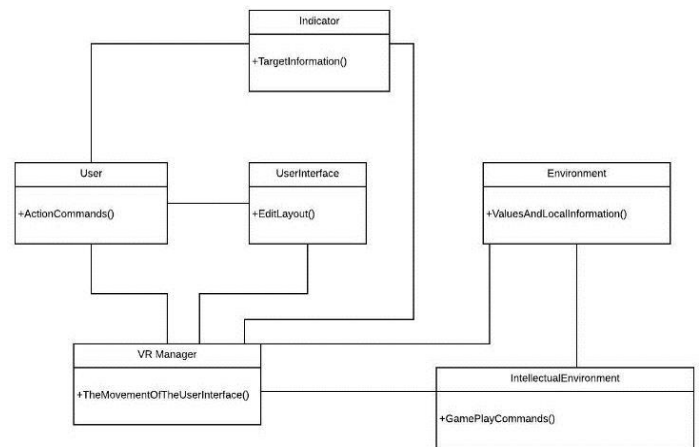


Fig. 9: UML diagram

6. CONCLUSION

Thus, the application is the way to let us experience and make our own customizable demo room without much resource cost by using mobile devices. The application can be used by builders to give a demo of the room to be purchased by customers.

7. REFERENCES

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