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A Way to Trust Department for Security in Distributed Systems

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Abstract -The objective of this paper is to describe the implementation of the 3D model of a library using Virtual Reality. VR is emerging as an interesting new technology in today's world where we can experience a 3D environment from anywhere. VR experiences can build inordinately immerse environments and spots, asserting users to move in that place without actually visiting there. In this project, a 3D model of our college library full of interactive objects [3] is made in which the user can move around and explore the environment. It includes various scripts written in C# programming language to help it become interactive. Gaming engine Unity was used to develop this project.

Keywords— Virtual Reality, Unity, Script, Headset

I. INTRODUCTION

Virtual Reality (VR) provides a simulated experience that is almost identical to the real world. VR provides interactive content which enables the user to explore the entire 360 degrees of a scene. From conventional classroom place to utmost training spots, VR down scales investment and enriches advancement through a range of industries. VR requires a headset to get the immersive experience to see the 3D environment. During this pandemic situation when people are not able to go out and experience the place, they can enjoy the 3-D model of the place which is almost identical to the real world and can utilize this model for their work. Nowadays Libraries [11] have become a kind of a community center centered on knowledge and education [8]. Providing an almost identical experience to the real world with Virtual Reality sounds like science fiction but isn't it cool, people can move freely and experience the place virtually [1].

Virtual Reality technologies can be applied to college libraries to give the users a 3-Dimensional experience of the library where the user can move around and explore the library virtually. The user can interact with the 3D objects present in the library virtually, thus this application can act as a tool to maximize the operability of the library, where interactive objects can enrich the user's experience and inspire users to visit the library more often. This model helps the users to get the information and navigate easily using VR based mobile applications when moving inside the library. The 3D model of the library makes it easier for the user to explore the library without visiting in person. This project uses scripts written in C# language to make the application [6]. The findings of our study provide a contribution to the research field concerning user's perceptions of benefits of smartphone-based virtual reality applications within the education industry [12] where the user can get an immersive experience. Using this 3D model, the user can see where the different book-sections are located, and the smartphone-based virtual reality application will help the user to move in the different sections inside the place. VR has signified its ability to transFig and manage results in the learning and instruction arena. There are different types of headsets [10] available in the market today like oculus rift, Samsung gear etc.

II. LITERATURE REVIEW

In past research the visualization of complicated engineering data has been done and a set of multimodal tools has been provided to audit a 3D model on various levels, discussing the difficulties that arose while the implementation process and the future applications of VR in the industrial sector. We have implemented one of those applications in the education sector. Virtual Reality can act as an amazing medium to connect people to the unreachable world where people can experience the real world using the virtual environment created using VR. This 3-D world not only provides the immersive experience to the real-world but also the user can interact with the objects present in the 3-D environment. Virtual World has reached the healthcare sector [5] and now it is the turn for the education sector. Education sector needs the implementation of 3D models, helping students in increasing their knowledge and improving the future. We have presented the development of Augmented Reality and Virtual Reality to help users to navigate [2] and get the information easily using VR based mobile applications while walking inside the library. This paper introduced VR technology to enhance and improve the user experience inside the library in the right direction and with the right information instantly [3] addressed the topic to give the third degree to the notion of virtual reality and its suggested uses in libraries to shore the teaching of fact literacy.

III. PROPOSED WORK

Fig 1 depicts the flow of the proposed model, starting from how we created the 3D environment to how we added objects and interactions in the model. Data collection [6] is the first step for modeling any 3D environment. After data collection the design is built and the objects are created and added in the 3D environment. For adding interactions to the objects a script in C# has to be written. Fig. 1 depicts the library layout.

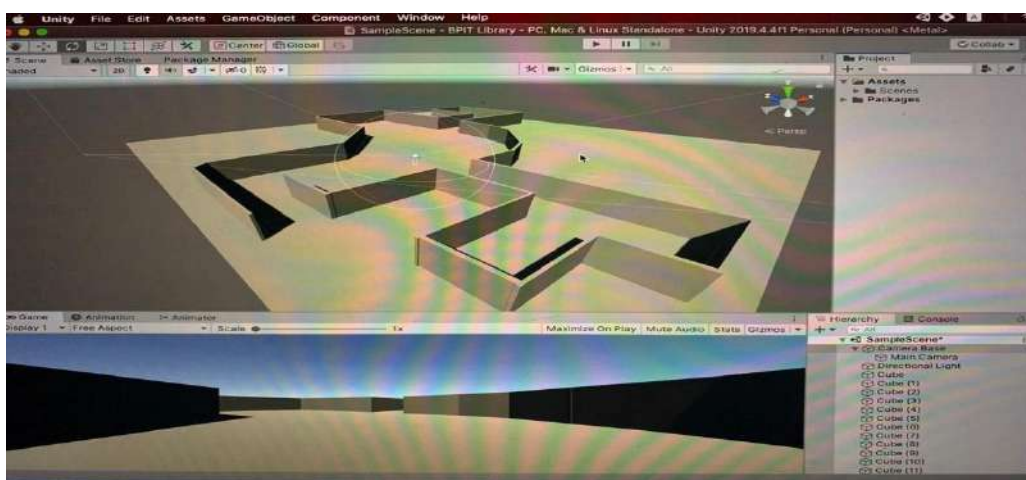


Fig 1: Layout of Library

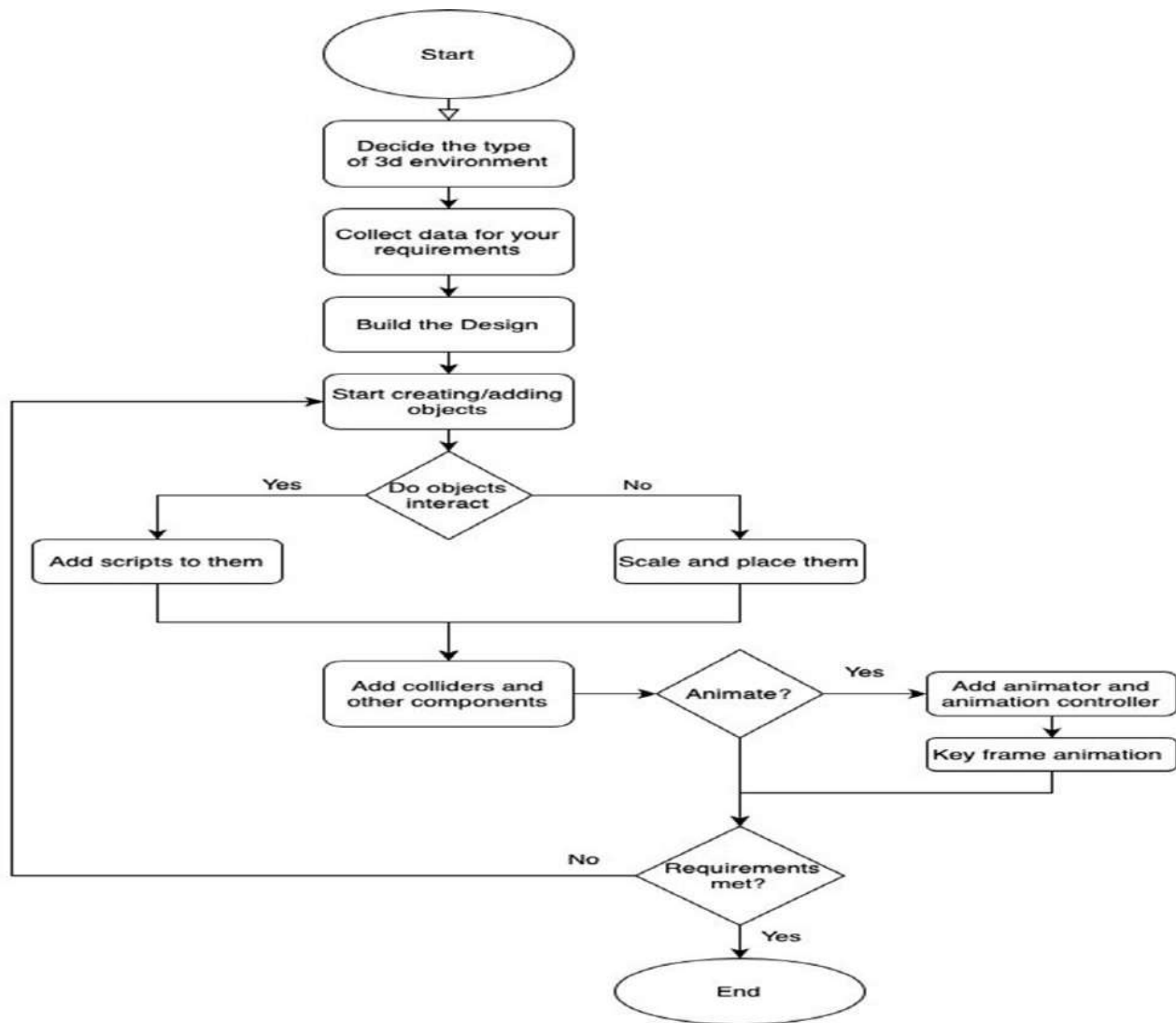


Fig 2: Flow chart for Creation of 3d model of Library

The first step to do in the model is to implement the layout of the library.

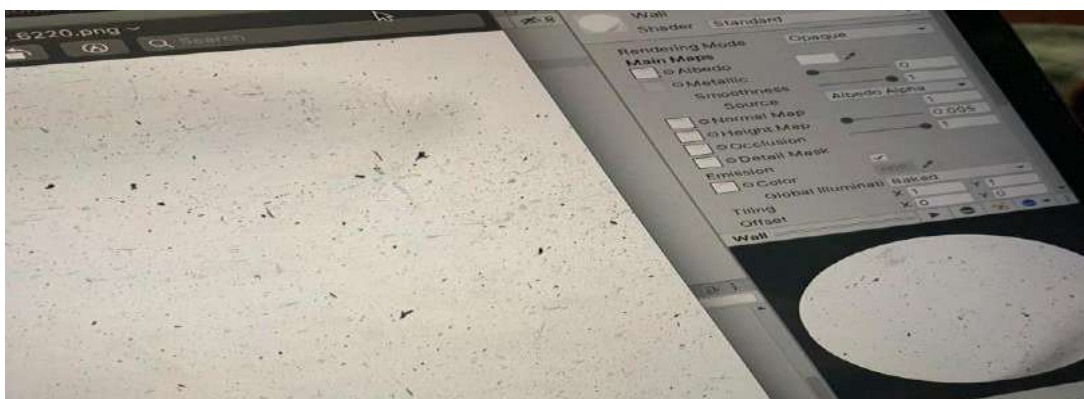


Fig 3: Texture of wall

A tour of the library was done and the data was collected [4] for different materials and texture of library objects. Material is the basic look which tells what the object is made of. Texture on the other hand provides it a more realistic feel. Texture mapping [9] was done to make this happen as in Fig.3.

A C# script is attached to the main camera to control the moving character. Logic for script (if camera angle is greater than 25 degree):

- Toggle angle = 25 degree
- Moving speed = 3.0f
- Vector3forward = vrCamera.TransformDirection(Vector3.forward)
- move = forward * speed



Fig 4: Background Lighting

Character controller for the main camera acts like a 3D character mesh which is attached to the main camera game object. It acts like a rigid body without the need for colliders is as shown in Fig 5.

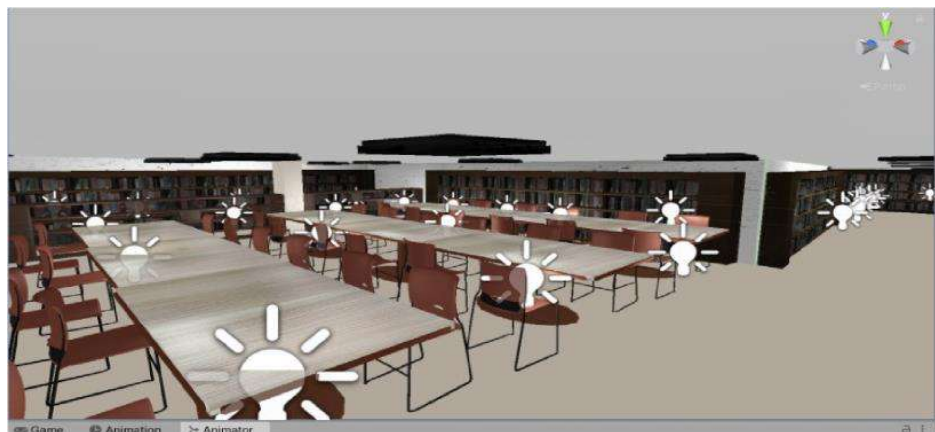


Fig 5: Character Controller for main camera

IV. RESULT AND DISCUSSION

Virtual reality provides an environment [7] which is presented to the user in a way that their precept is deferred and they accept it as the real environment. On a device, virtual reality is primitively experienced through the two of our five senses that is “sight” and “sound”. With this project we have created a 3D virtual environment for a library in which the user can freely move around and interact with different interactive objects. It provides the user a fresh and new way of being in a place just while sitting at home or anywhere by putting on the headset and enjoying the environment around them.

V. CONCLUSION AND FUTURE WORK

Whilst the VR concept isn't new, the technology to power the VR is, as this technology delivers a seamless experience for the user. The bright side is that with nearly limitless applications, VR offers an abundance of opportunities in almost every aspect of our world, including education, design, commerce, gaming, tourism, medicines [5] and knowledge. Since many of us have already created things that never leave the web's digital space, it's not facile to imagine a primarily digital future which will be powered by a VR environment. Virtual Reality is no longer a fiction, it is integrated into our present and, in the future it will lead to a lot of advancement that will shape the future and it will be very beneficial to the industry. Some interactions can be added to the model in future which makes the user able to read books from the shelves.

REFERENCES

- [1] Wolfartsberger, Josef & Zenisek, Jan & Sievi, Christoph & Silmbroth, Mathias. (2018). A Virtual Reality Supported 3D Environment for Engineering Design Review.
- [2] Romli, Nida & Razali, Amir & Ghazali, Nur Hafizah & Binti Zahri, Nik Adilah Hanin & Ibrahim, Siti. (2020). Mobile Augmented Reality (AR) Marker-based for Indoor Library Navigation. IOP Conference Series: Materials Science and Engineering.
- [3] Massis, Bruce. (2015). Using virtual and augmented reality in the library. *New Library World*.
- [4] Lee, H-L. (2000). What is a collection? *Journal of the American Society for Information Science*, 51(12), 1106–1113.
- [5] Carson, E. (2015). 10 ways virtual reality is revolutionizing medicine and healthcare. TechRepublic. Retrieved from <http://www.techrepublic.com/article/10-ways-virtual-reality-is-revolutionizing-medicine-and-healthcare/>
- [6] Wilson, C. J., & Soranzo, A. (2015). The use of virtual reality in psychology: A case study in visual perception. *Computational & Mathematical Methods in Medicine*, 2015, 1–7.
- [7] Mazuryk, Tomasz & Gervautz, Michael. (1999). *Virtual Reality - History, Applications, Technology and Future*.
- [8] Hahn, J. (2015). The student/library computer science collaborative. *portal: Libraries and the Academy*, 1(2), 287–298.
- [9] Donalek, C., Djorgovski, S. G., Cioc, A., Wang, A., Zhang, J., Lawler, E., Yeh, S., Mahabal, A., Graham, M., Drake, A., Davidoff, S., Norris, J., & Longo, G. (2014). Immersive and collaborative data visualization using virtual reality platforms. In *Big Data (Big Data)*, 2014 IEEE International Conference on (609–614).
- [10] Reisinger, D. (2016). Should you buy an Oculus Rift VR headset: 10 Factors to consider Eweek, March 30, 7.
- [11] Mikkelsen, S., & Davidson, S. (2011). Inside the iPod, outside the classroom. *Reference Services Review*, 39(1) 66–80.
- [12] Aji, C. A., & Khan, M. J. (2015). Virtual to reality: Teaching mathematics and aerospace concepts to undergraduates using unmanned aerial systems and flight simulation software. *Journal of College Teaching & Learning*, 12(3), 177–188.
- [13] Tharp, Gregory, *Virtual Reality: A New Dimension for Academic Libraries* (2019).
- [14] “Special study on virtual reality technology: virtual reality head-mounted technology, display and interactive device” by sraSontisirkit. Asian institute of school of engineering and technology, Thailand.
- [15] “Virtual Reality in Libraries” by Breanne Kirsch (Briar Cliff University, USA), 1-33 (information available at <https://www.igi-global.com/chapter/virtual-reality-in-libraries/255391>).
- [16] “Mobile Virtual Reality featuring a six degrees of freedom interaction paradigm in a virtual museum application” by M. Papaefthymiou, K. PlelisD. Mavromatis, G. Papagiannakis
- [17] *Student Engagement and Smart Spaces: Library Browsing and Internet of Things Technology* by Jim Hahn (University of Pennsylvania, USA)