

EE267 Project Proposal: Virtual Apartment Tour

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1 Introduction

Throughout the class, we've done assignments on graphics pipeline, IMU (orientation tracking), position tracking, and spatial sound, however, we never have a chance to touched on the content creation. In order to explore and gain hands-on experience in the VR content creation, I would like to do the default final project "Build a Scene" with Unity for the 3-unit version of the course.

2 Motivation & Concept

Finding an apartment to rent can be a time-consuming process. Actual properties usually do not look like the pictures and videos posted on the website. In order to solve this problem, I would like to create a virtual apartment tour as shown in Figure 1, so that potential tenants can view a range of properties without ever needing to set foot in the actual house.

The scene will consist of the outside structure of the apartment, as well as the inside, in order to see the interior design and furniture arrangement. For example, we can see living room, bedroom, kitchen along with how furnitures such as couch, bed, or tables fit in them. If time permits, I also would like to add interactivity by allowing users to use 'w', 'a', 's', and 'd' keys on their keyboard to navigate the apartment, so that the users can control their experience and explore any part of the apartment.



Figure 1: Virtual Apartment Tour

3 Related Work

Unity is a feature-rich multi-platform game engine for creation of 3D content [1]. It includes an intuitive interface while at the same time allowing low-level access for developers. Consumer-level virtual-reality hardware combined with Unity have recently empowered content creators to quickly create virtual reality applications.

There are several companies that interested in using virtual reality to help users find a new apartment. In June 2016, apartments.com has tested their virtual reality tour demo at the New Apartment Association conference, where attendees could walk through a series of properties using HTC Vive headset and hand controllers [2]. However, there is no official timeline available yet on when apartments.com will make the HTC Vive VR experience available to public. The other companies that are currently developing or using VR in the real estate industries are such as StartVR, Peabody & Smith, youvisit.com, etc.

4 Challenge

As I have no experience working with Unity or creating VR content at all, I will have to learn the Unity’s VR development platform and create the first project within the next two weeks. In addition, for the demo, I plan to build the whole apartment from Unity instead of using the 360° images or 2D video of the room.

5 Timeline

Mon	Tue	Wed	Thu	Fri	Sat	Sun
		24 May Learn Unity	25 Learn Unity	26 Learn Unity	27 Learn Unity	28 Learn Unity
29 Build Scene (outside)	30 Build Scene (outside)	31 Build Scene (outside)	1 Jun Build Scene (inside)	2 Build Scene (inside)	3 Build Scene (inside)	4 Add navigation
5 Add navigation	6 Add navigation	7 Final Touch	8 Prepare Presentation	9 DUE DATE		

References

[1] J. Jerald, P. Giokaris, D. Woodall, A. Hartbolt, A. Chandak, and S. Kuntz, “Developing virtual reality applications with unity,” in *2014 IEEE Virtual Reality (VR)*, pp. 1–3, March 2014.

[2] L. Savvides, *Use Virtual Reality to Find a New Apartment*, 2016 (accessed May 24, 2017). <https://www.cnet.com/news/use-virtual-reality-to-find-a-new-apartment/>.