EE267 Project Proposal: VR Conductor

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1 Motivation

We plan to create a VR conductor application so that users can experience conducting music from the perspective of a conductor. There are several applications for viewing concerts in VR, but to our knowledge there are no applications that allow users to compose music from the perspective of the conductor. We plan to create an environment in Unity with several instruments. We track the motion of the right hand of the user using the IMU that we have used in lab. The user can use his or her hand to select instruments and compose music similar to a conductor. If the user points his or her hand towards an instrument and moves the hand up and down then the instrument starts playing music. If the user then again points at the same instrument and moves his or her hand up and down the instrument stops playing. The instruments are located at different positions around the user, so that the sound from different instruments will come from different positions. The user can combine the sounds of different instruments to create music. In other words, our objectives are:

1. Track hand motion of the user using the VRduino's IMU.
2. Detect up and down hand wave motion of the user.
3. Create an environment in Unity with a variety of instruments at different positions. Each instrument makes a different sound, and the sound comes from different positions.
4. If user makes up and down hand wave motion, then play/stop sound from the instrument the user is pointing at.

2 Previous Work

There are several VR applications that allow users to view concerts from a central location on stage near the usual position of the conductor [1,2]. The applications use 360°camera technology to record the concert from the view of the conductor or artists [1,2]. Users can then view the orchestra from a location near the usual position of the conductor [1,2]. For example, the Philharmonia Orchestra created a 3-D 360°VR experience that allowed visitors of the Londons Southbank Centre to view a classical music concert from the center of the orchestra [1]. Similarly, the Los Angeles Philharmonic orchestra used 8 modified GoPro cameras to capture 360°video [2]. They created an application Orchestra VR that allowed users to experience the concert from right in front of the conductor [2]. However, both the VR application of the Philharmonia Orchestra and the VR application of the Los Angeles Philharmonic orchestra did not enable the user to conduct the orchestra and create music; the applications only allow users to view the concert from the position of the orchestra [1,2]. In March 2016 there was a successful Kickstarter campaign named *Conductrix, A View from the Podium* that proposed to create a VR application that lets users conduct an orchestra and create music [3,4]. The campaign was created in cooperation with conductor and composer Eimear Noone. While the campaign reached its funding goal, the application has not been delivered to the backers; it is not available [3,4].

3 What is New?

While there are several applications for viewing concerts from the position of the conductor, our application will to our knowledge be the first application that people can use to actually create music as a conductor from the perspective of the conductor. We hope to make the experience as immersive as possible so that people can get a better understanding of the on-stage experience of a conductor. We hope that the users will enjoy the experience and create new original music with the unique insights they get while making music as an orchestra conductor.

4 Timeline

Figure 1: A timeline with the tasks and milestones necessary to complete the project.

References

[1] Lott-Lavigna, Ruby. "Surround sound: the Philharmonia Orchestra takes on VR to attract younger audiences." WIRED UK. WIRED UK, 26 Sept. 2016. Web. 26 May 2017.

[2] "L.A. Philharmonic's Van Beethoven takes virtual reality for a classical spin." Los Angeles Times. Los Angeles Times, n.d. Web. 26 May 2017.

[3] McPherson, Angus. "Computer simulator Conductrix is 'Guitar Hero' for conductors." LimeLight. N.p., 30 May 2016. Web. 26 May 2017.

[4] Noone, Eimear. "Eimear Noone Presents: Conductrix: VR Tutorials & Book." Kickstarter. Conductrix, 25 Jan. 2016. Web. 26 May 2017.