Project Report: Virtual Reality Locomotion with Oculus Rift

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I have created an environment in Unity using the Oculus sample framework which includes a small world surrounded by castle walls with some scenery. This application runs on my PC with the Oculus Rift and Oculus touch controllers. In this world I have VR support for the oculus with the ability to move via using the touch controller thumb sticks, moving by swinging the controllers back and forth in a walking motion, and the ability to look around using the headset.

I have also created an application for my android smartphone which allows me to enter the IP address of my PC and stream accelerometer data from the phone to the Unity application over wifi. Doing this allows me to register movement from the phone. I have experimented placing the phone on the left foot and in my left pocket to register movement. Movement is a little disjoint due to only registering one half of the walking cadence. I will experiment with other placement locations for the phone (or perhaps two phones) and see if I can register both steps. If not, I may look into smoothing out the steps algorithmically. The application on the phone also needs to be updated so it can run in the background while the screen is locked, it currently requires being open. Running it as a "service" is the suggested solution for enabling this.

After solving the above problems, the next steps could be to experiment with jumping, add some sort of obstacle course with timing to judge the utility of the movement, and/or work on expanding the number of environments to judge the movement in open vs. closed environments.