

# Pittsburgh VR Experience

Eric J. Collazo

Reality Computing

## **Intro**

The goal of this project was to create an environment which got people excited about cycling in Pittsburgh by creating an immersive experience with live footage from around the city of Pittsburgh. The main goal was to get people excited about the Pittsburgh area and cycling within it. The project initially began as a video capture project but grew into a technical and much more software based project.

## **Implementation**

Initially I started with the idea of using a ring of Gopro like action cameras but determined that there were better simpler solutions and decided to go the route of a 360 Camera. After taking a look at the landscape of the market the Ricoh Theta S seemed to be the most appropriate choice as it was cost effective and had good enough fidelity to allow for realistic capture of cycling rides. The initial captures went extremely well and there is a link to a video clip of the capture of the Ricoh Theta S at the end of this document.

Once capture was complete, I proceeded to use software and gaming engine to create the graphical experience. I researched a variety of software and ended up deciding to use Unity and the Oculus Rift as it had the most libraries and existing guides to help me with my process. Within Unity I created a graphical sphere with a materials surface. The surface placed on the sphere was the 360 video capture and was then placed in a game environment. This allowed a file to be created so that I could import it into an Oculus package that would allow me to experience it in VR. Once imported into Oculus, I loaded it into the headset and tried to

experience a ride through Pittsburgh with the video capture I had made with the Ricoh Theta S and an indoor trainer with varying resistance.

### **Review of Experience**

Overall the VR Experience provided was quite incredible for the purpose of getting people excited and promoting cycling in Pittsburgh. When placing my friends in the environment they became excited about pedaling around while the video was playing and they continually couldn't believe that rides such as this existed in Pittsburgh. Some feedback I got was it was a bit jarring being in it for a long time because of the lack of depth but that was to be expected. I also adjusted resistance while they were riding to match what was going on in the real world, ideally this would happen automatically but in this scenario resistance was manually controlled which added more depth to the experience. Overall the experience completed its goal and was very enjoyable to individuals who were involved in riding in it. Pictures of the implementation are seen at the end of this document.

### **Future Work**

There are many ways to improve the experience of indoor cycling with an outdoor capture. One idea is using more expensive equipment to create a higher fidelity environment. Another potential implementation is to add depth with a graphic engine and have the objects be 3-D models increasing the viability of the surroundings and possibly reducing the jarring effect. The final thing that could also be done is automatically connect the indoor trainer to the video rather than having it be manually adjusted.