

AR Collaboration Suite

Augmented Reality Collaboration Application for PCB Analysis Using HTC Vive and ZED Mini.

Project Motivation

- Kevin McGrath, a CS/ECE professor here at OSU realized the need for a better way to work with his colleagues in Texas and other states.
- Our objective was to create an AR application enabling them to share a live visual stream from one of the locations. Both members with headsets should be able to markup and annotation the stream as desired.

Project Requirements

- Our client requested that we use an HTC Vive or Oculus Rift as our VR headset, and that we used the ZED Mini as our stereo camera
- The software should allow multiple users (2+) to view and make notes on the live video stream recorded by the other headset in an almost real time experience.



Fig 1. Attaching ZED Mini to an HTC Vive.

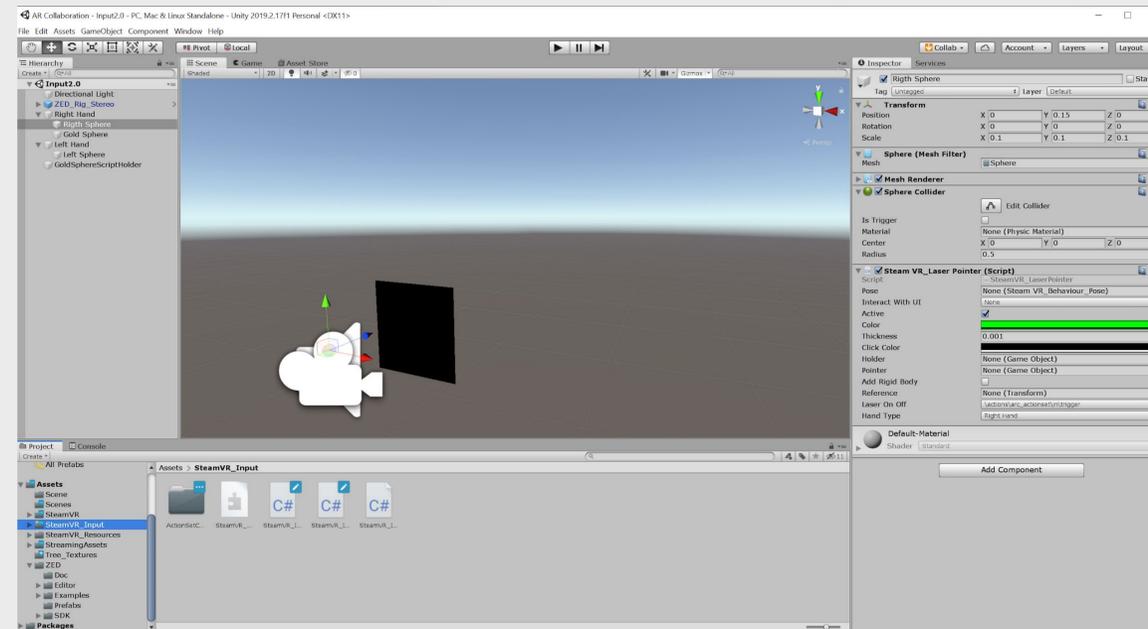


Fig. 2 Unity Project Screenshot

Unity Project Development Process:

There was a big learning curve for all of the member as we had very little experience with Unity prior to this project. There was also a lot of time dedicated to reading the ZED SDK documentation and understanding their existing code base. Once we felt comfortable, our project consisted of doing new things with the software that not many people have done before us.

Implementation

AR Hardware Design:

The camera was preselected for us to use, so we based our VR headset around the ZED Mini. We chose the HTC Vive due to availability. The two pieces of hardware attach easily due to a clip from Stereolabs.

Software Design:

We chose to use Unity for the development of our project for many reasons. Unity is free, relatively easy to learn, and Stereolabs has an SDK plugin for Unity. We downloaded many packages from the Unity asset store including Steam VR 2.0 and others.

Outcome

The outcome of this project was that our client, Kevin D McGrath is now able to collaborate with his colleges in a remote location using our project. They are both be able to share video and annotate/mark up the video with notes. Both parties are now able to interact in the same environment as if they were in the same room as each other. This is a large improvement to their previous remote collaboration, of Skype.

(This is will be confirmed once the project is complete)

Our Team

This team is a collection of senior CS students who all had the desire to work with VR technology.



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Thank You

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Kevin McGrath for letting us start this project.
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Richard Cunard for assistance along the way.
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Fig 3. HTC Vive