Status Report

DATE: 7 Sept. 2017

TO: Timothy Wheeler

FROM: Brandon Smith

SUBJECT: Senior Project Status Report – ARGT Display

The ARGT Display project is progressing at a decent pace. The meeting with the sponsor went smoothly and many questions were resolved. The scope of the project has been well defined, and the expected results are felt to be achievable on schedule. The project has been divided into several sub-goals, and work is underway to decide how and by whom each sub-goal will be completed.

When the description of the project was first received, the goals and expectations were very vague. After meeting with Dean Kissinger, the project sponsor, this confusion was cleared up; although the project extent was left very open ended. Mr. Kissinger stated that anything from a demonstration of trajectory drawing on a laptop screen to actually testing the system on a real grenade launcher would be acceptable. Examples of other augmented reality systems were shown at the sponsor meeting, which provided a better idea of the type of product which is expected.

With a better idea of what is expected but with the scope of the project still left very open, the team decided what would be an achievable goal during the allotted time of one semester. The scope of this project has been defined as an augmented reality(AR) helmet showing a grenade trajectory. This trajectory will be drawn based on real time input from sensors reading the inclination of the grenade launcher, and image processing to determine the relative position of the user to the launcher. A range finding laser may be used to determine the distance of targets from the launcher. This project will be heavily software based, with a mechanical system required to mount the sensors on the grenade launcher. Microsoft HoloLens has been chosen as the AR headset to use, and Mr. Kissinger stated in the meeting that he could provide one for testing purposes. The method of connecting sensors to HoloLens will be using Bluetooth and possibly Arduino to facilitate the communication.

This project is complex and composed of many smaller tasks. So far the project has been broken up into tasks including: image tracking, trajectory calculations, sensor research and setup/calibration, range finding, and image processing for object detection. It has also been decided that each group member should set up a development environment for HoloLens, including Unity, Visual Studio, and possibly the HoloLens emulator. Trajectory calculation research has been started by Hill and Akhil, and I have begun research on how to connect Bluetooth devices (such as sensors) to HoloLens through Arduino. Mike has stated that he has experience with image processing/image recognition, and Sasha is working with development tools. In addition, communication with Mr. Kissinger is being handled by Mike. Team members have decided to continue research and will then discuss how to interface sub-goals together.

The project is well defined in scope and goals. Based on the meeting, Mr. Kissinger will be satisfied with the project goal we have set. Team members have begun researching into specific goals so that project work can progress in parallel.