EE/CprE/SE 491 STATUS REPORT 1

September 6, 2019 – September 26, 2019

Group number: 05

Project title: Vision Impaired Swim Aid

Client &/Advisor: Leland Harker

Team Members/Role: Carson Kneip, Paden Uphold, Nathan Mortenson, Timothy Steward,

Conor Albinger, and Jake Sieverding

- ○ **Weekly Summary**

  We discussed the project and it's requirements with Lee. We shared different ideas of how to use sonar, other options, and ways to use radio communication. We contacted the disability center to look for potential blind users to test. We contacted the pool to look for a time we can come in to test. One of our group members has a sonar fish finder that we want to test in the pool.

- ○ **Past week accomplishments**
  - ● Carson Kneip
    - ■ Setup and met with accessibility's coordinator to reach out to vision impaired people.
    - ■ Created original design template
  - ● Paden Uphold:
    - ■ Went and helped with the accessibility coordinator meeting
    - ■ Went to Beyer Hall and State Gym to see if we could use the pools
    - ■ Researched possible sonars and how vision-impaired people lap swim now
  - ● Nathan Mortenson:
    - ■ Researched existing sonar devices in fish finders, as well as testing in the pool
    - ■ Investigated other methods of detection in and out of the water
  - ● Timothy Steward:
    - ■ Investigated Sonar Transducer Options
    - ■ Looked into possible FM radios to buy, didn't find anything good
    - ■ Went to the pool and tested fish finder
  - ● Conor Albinger:
    - ■ Researched commercially available sonar devices
    - ■ Compared different types of transmitter frequency and modulation options

- Jake Sieverding:
    - Researched Bluetooth headsets to find possible interface with swimmer.
    - Helped with the accessibility coordinator meeting.

- **Pending issues**
    - We need to figure out how to use radio to communicate between the swimmer and the side of the pool. It's looking like Bluetooth is probably too weak and we can't find a good, small, waterproof FM radio.
    - The first sonar device we tested did not work for our application. We are going to order some different devices and determine how we can track our swimmer.
    - Whether or not we can have one base station or if we are going to have to make two and have them communicate with each other.

- **Individual contributions**

NAME	Individual Contributions *(Quick list of contributions. This should be short.)*	Hours this week	HOURS cumulative
Carson Kneip	Researched possible sensors that we can use to interface with an Airduino, met with accessibility coordinator, and pool director.	6	6
Paden Uphold	Research on sonars and meetings with accessibility coordinator and people for the pool director.	6	6
Nathan Mortenson	Researched and tested existing sonar technologies	4	16
Timothy Steward	Did some research on Sonar/Ultrasonic options. Research on FM radios.	10.5	10.5
Conor Albinger	Researched sonar devices and communication technologies.	6	6
Jake Sieverding	Did some research on Bluetooth headphones.	6	6

- **Comments and extended discussion**
    - Not having any luck hearing back from disabled people here at Iowa State. We are going to reach out to some friends we know and see if we can come up with any norms for blind people.
    - Used a fish finder as a sonar device to track the person and tested it. Didn't get good results.

- ○ **Plans for the upcoming week**

    - Carson Kneip: Obtain equipment for testing. Arduino, ping sensor, and IR sensor.
    - Paden Uphold: Help obtain equipment and test it when ready
    - Nathan Mortenson: Test and problem solve new technologies
    - Timothy Steward: Write program to Interface with sensors
    - Conor Albinger: Research available FM transmitter/receiver options
    - Jake Sieverding: Helping Timothy

Summary of weekly advisor meeting
The first meeting we talked about the project as a whole and what Lee's expectations were for us. First things we did was set up a meeting with disabled people, and reserved the pool for testing. Next meeting we shared some testing results, and then proposed the sensors and microcontroller that we are going to use for more testing.