
EE/CprE/SE 491 WEEKLY REPORT 5

November 2, 2019 – November 16, 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 went to the pool and ran a test where we took a video of a swimmer while the IR sensor was running. Afterwards, we synchronized the video with a scrolling graph of the data from the sensor. Through this we were able to see the usefulness of the IR sensor. We determined that we could not use it to get the distance of the swimmer from the edge, but that we could use it to determine whether or not the swimmer was close to the edge, although it would not work if the swimmer's entire body was kept underwater. The original headphones will not connect to any FM stations. The headphones are an MP3 player and an FM radio. The MP3 mode has sample audio downloaded on it that we can hear, but when it is switched to FM mode it plays unknown music (acting like a radio station, but never has anyone talking or ads like a local radio station would). Then when we scroll to the next channel it just keeps giving static. We try scrolling for awhile, and it still just gives static. If we switch to MP3 mode and then back to FM, the unknown music starts playing again. We connected it to a computer and can see the sample audio file for the MP3, but nothing else. We think that there is hidden music on the device that just plays when switched to FM mode. We believe that the next headphones will connect to our station based on product reviews.

○ **Past week accomplishments**

- Carson Kneip: Established that the old headphones do not pick up any FM stations. Found new ones, and sent Lee new FM headphones that we are going to try.
- Paden Uphold: Went to pool to test IR. Worked on sensor and making a way to put sonar in the water without getting water in the pins and wires.
- Nathan Mortenson: I soldered wires to the SONAR sensor as well as creating a waterproof container for the arduino so that it is usable at the pool without the worry of ruining the arduino

- Timothy Steward: I went to the pool to test the IR sensor again and get video on 11/6. I synchronized the video with the data from the sensor. I got the ultrasonic sensor hooked up to the oscilloscope and was able to get the analog envelope out.
 - Conor Albinger: Started researching possible underwater speaker/audio methods in case headphones don't work again.
 - Jake Sieverding: Reached out to swim coach about discussing the project. Started designing possible boxes for device.
- **Pending issues**
 - Carson Kneip:
 - Paden Uphold: Problems putting sonar in elbow and pipe that keeps it waterproof. First came disconnected from twisting the threats.
 - Nathan Mortenson: SONAR had bad ground that needs resoldered.
 - Timothy Steward: The IR sensor can't give us distance, we need to find a better way to sense the swimmer
 - Conor Albinger: Waiting for headphones to arrive to test with our transmitter and around water.
 - Jake Sieverding:
 - **Individual contributions**

<u>NAME</u>	<u>Individual Contributions</u> <i>(Quick list of contributions. This should be short.)</i>	<u>Hours this week</u>	<u>HOURS cumulative</u>
Carson Kneip	Put together some test code for the FM transmitter and established that it works effectively with an aux input. Have done some more research and gathered more code on how to interface with the digital signals from the Arduino.	8	34
Paden Uphold	Test sensor. Worked on piping to keep sensor waterproof	7	29
Nathan Mortenson	Testing sensor as well as soldering connections to the SONAR	10	33
Timothy Steward	Synchronized video and sensor data, got analog envelope from the ultrasonic sensor on the oscilloscope	16	51.5
Conor Albinger	Started researching possible underwater speaker/audio methods in case headphones don't work again.	6	27
Jake Sieverding	Sent email to contact swim coach about the project. Started coming up with potential box designs for the device.	6	28

- **Comments and extended discussion**

We have reached out to various organizations throughout the state

- **Plans for the upcoming week**

- Carson Kneip: Obtain code to send an mp3 file digitally from the Arduino. Establish which sensor we want to try implementing in the final product.
- Paden Uphold: Make youtube video. Finish design document.
- Nathan Mortenson: Test the SONAR to verify that it will work for our application
- Timothy Steward: Get the ultrasonic sensor working through the arduino and run another test at the pool to determine if it is sufficient, or we need to look into other options.
- Conor Albinger: Reach out to another organization that may provide feedback about ways to make our device accessible for visually impaired users.
- Jake Sieverding: Help get Arduino to use mp3 file.