EE / CprE / SE 492 – sdmay23-22

Ultrasonic Radar

5th Report

April 7th - April 21st
Client & Faculty Advisor: Jiming Song

Team Members:

Kevin Czerwinski - Electrical Engineer
Derek Thomas - Computer Engineer
Ryan Foster - Electrical Engineer
Samuel Rosette - Electrical Engineer
Jack Riley - Electrical Engineer
Abubaker Abdelrahman - Electrical Engineer

Past Week (s) Accomplishments

- Over the past couple weeks we made significant progress on the transmission circuitry, getting a much cleaner output wave when sending out a pulse.
- We have also made progress on the code for the distance scanning and the timing of the sent out pulses.
- The plan has changed for the output display of the ultrasonic radar, we decided against an LCD screen because a simple one would not have enough room on it to display data in a convenient way. Instead we plan on creating a graphical display on a laptop that will connect to the device via a USB A cable. This will allow for a much more immersive display.
- Our PCB has been completed and the order for the board and all of the parts has been put in. We decided to order a humidity sensor to implement into the radar which will allow us to change the speed of sound constant depending on the environment that the device is in. The speed of sound can vary by a reasonable amount depending on the conditions of the air around the device so by adding this sensor, the device can be calibrated each time making it much more accurate.
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Pending Issues

- One big issue we could run into is our PCB not arriving from the manufacturer in time. The estimated shipping date is before our presentation which should give us enough time to get the full project working, but if there are any delays we might not have the board in time. To prepare for this we are creating a separate project on perf board which will allow us to have a back up demo just in case this issue arises.
- We also might have a problem trying to get the humidity sensor to work properly, but it should not be a major problem.

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Derek Thomas	- Updated website - Contributed to the bi-weekly report - Attended meetings and figured out possible next steps to tackle phase array	3	25
Kevin Czerwinski	- Improved code for transmission circuitry and phase array. - Helped test and improve amplification circuitry - Contributed to the weekly report	3	27
Ryan Foster	- Testing of amplification circuitry (Input and Output) - Transducer testing - Input manipulation (allows for input to be received by the Arduino) - Developed code for data processing	3	23
Samuel Rosette	- Researched for more accurate transducers - Assisted with the testing of the amplification circuitry(input and output)	3	23
Jack Riley	- Finished PCB design - Creates BOM - Found high frequency amplifier - Started Case design - Work on reports	5	27
Abubaker	- Attended this week and past week	2	24

Abdelrahman	meeting - Researched for ideas to put on the circuit design - Met with the client and figured out using amplifiers in Arduino input. - Working on the final displayed poster.		

Plans for Coming Week
- Further develop code and circuitry.
- Finalize 3D modeled case and overall design of prototype.