Individual Report

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***Abstract*—This report summarises the reflection, contribution and analyses of the group project for the Sensors and Actuators module where we were tasked to create an experiment and report that detailed the accuracy of an ultrasonic sensor.**

I. Reflection

The project was handled with great communication and careful planning. The project went well with everyone doing their part and more. By more they would take on additional tasks that wasn't required of them so in short, they took initiative where they saw fit. Everyone had equal participation with some doing a little more but nothing noteworthy to criticise the other team members for a lack thereof.

I managed the project by setting roles and deadlines to stick to. We planned to have all our work done by the 8th but ended up wrapping things up on the 10th. We were on schedule but due to my other deadlines it pushed back the group two days because I was working on another coursework that needed to be handed before the group project. I'd say I managed my own time decently well, but I could have been more efficient. Due to having two projects to work on at the same time I had to split my workload and dedicate different times of the week to complete the work.

So overall, I managed my time well while dealing with unexpected changes in our initial plan. I'm confident in saying that if I stray off course, I will do my best to get back on track and I have. The project is complete without rush and enough time to submit and review. Lastly, I became more familiar with the IEEE documentation and improved my time management, team and leadership skills.

II. Contribution and development

I distributed roles, planned deadlines, setup meetings, wrote and planned the methodology of the project, helped develop other sections of the report such as the conclusion, abstract and some parts of the results and discussion.

Evidence of distributing roles, planning deadlines and setting up meetings are displayed in the team group chat and in in-person meetings.

Evidence of the entire methodology that was all done by me and was demonstrated by how I developed the Arduino code to program the circuit I created. In addition, I created the method to conduct the experiment. Such as, how we were going to measure the data and how we would record it. After this I planned a day to conduct the experiment and used the results of the day to write everything up since things are always subject to change.

Evidence of my contribution in the report was shown by my sections in the methodology, abstract and conclusion. The abstract and conclusion were done after speaking to other team members about the section they wrote up as well as reading it myself to aid the writing of those sections.

III. Analyses

To understand the objectives, I looked at previous projects I had completed in my undergraduate because there were some similarities. Such as my experience using and testing multiple sensors such as colour sensors and tilt sensors. So, I had a good idea on what to do and how to go about the project. For the methodology and results, they provided good results, however the only thing that should've been changed is the amount of data we took which would have allowed us to make better estimations of the results as well plotting the data against a distribution curve. What we could have done to make a better experiment is to use the circuit we initially created but add a heat sensor. This is because there is inaccuracies in the ultrasonic sensor due to temperature. So, we would use the heat sensor and ultrasonic sensor to output appropriate values for distance and if you wanted to you could compare these values to a circuit without a heat sensor.

IV. Conclusion

Overall, the project was a success and I have learnt a lot about how the ultrasonic sensor works, but also how to conduct and experiment. The group and I had some ideas on what to do differently and given the opportunity we will do better. Not only that, but the group dynamic also helped aid the progression of the project. We completed tasks with good efficiency and were very transparent. Going forward this has set a good example for teamwork. Writing the report has also given me practice with IEEE documentation and I see myself using these techniques in my upcoming Individual project.