Week 5 Journal Group 22

Date 25/02/2019

1. Action items from last week:

This week saw fewer group meetings, but the group primarily focused on collaborating with each other on every aspect of the buggy. The brief meeting on Monday highlighted the following targets and goals to achieve by the end of week 4:

- Abdullah and Aarambh to work on the assembly of the buggy, mainly cleaner wiring but be available to help Osama if they can
- Marlon to help Osama on task 1 and help Osama on figuring out how to structure the code for task 6 td1
- Osama to continue the development of software, ensuring the tasks of TD1 are complete by Wednesday.
- Aarambh to continue circuit design and perform basic sensor operation.

The group continued to make progress over the week on those targets. Following the completion of the buggy assemble, a decision was made to focus the group's attention on the software and ensure the group is able to understand every aspect of the code for TD1.

Group also met with Osama to help group understand the code.

2. Project Status and statement of progress

The assembly and wiring of the buggy have completed and the group is now directing their focus onto the sensor circuit of the buggy, ensuring it achieves the specification of TD2. Some progress was made onto the sensor circuit design on stripboard as we were preoccupied with TD1, however the group will prepare appropriately for TD2 this week.

3. Individual Student Contributions

Aarambh Sinha

- Helped Osama with programming and ensuring all requirements of TD1 are met.
- Helped Abdullah and Marlon with the assembly of the buggy, ensuring wiring and connections are made securely to the buggy and driver board.
- Continued research into sensors, getting a clearer understanding of how ULN2003 Darlington Array and LM339 Quad Comparators work and how to implement the sensor board circuit.
- Worked on sensor board, getting switch controls of the sensor LEDs close to working. Testing contacts of stripboard using multimeter and MyDAQ software.

Abdullah Ahmed Akhtar

- Gearbox and wheel were not working properly so got them fixed by taking them to the mechanical workshop.
- Made the edges of the plates smooth as required in Td1.
- Made the wires shorter and arranged wires in organised way.
- Helped Osama with debugging of the code for task 6.
- Prepared for td1 by going through the technical information and did a bit of research for encoders.

Marlon Guanoluisa:

- Helped Osama with the code of the TD1 for the different tasks which I spent three days of at least 2 hours per day working with the group through the task 6 trying to get a decent square with the buggy and explained what the ports from the motor are for.
- Disassembled and assembled the buggy because it was needed to smooth the sharp edges and made wires shorter, soldered the ends, grouped them together and connected back to the Motor Drive Board and to the microcontroller.
- Prepared for the questions that were going to be assessed in TD1.

Osama Othman

- With the help of Aarambh and Marlon, Completed the code for all 4 separate td1 tasks with a total of 560 lines of code that was completely successful.
- Debugged the encoder code until I found the pins that work well with the encoder class QEI and using that created a class that calculates speed in meters per second.
- Researched encoders, H bridge, bi polar and unipolar modes to understand why we have chosen unipolar. As well as that, with trial and error understood how the pwm signal is fed to the motors from microcontroller and which test point to measure from to view motor voltage pwm and learned that common ground for all devices is needed to measure the signal correctly from MyDaq.
- Chosen the switching frequency to be used that is adequate enough to switch direction and that keeps overall power loss low enough to elongate battery life.
- Wrote the weekly journal

4. Other Issues

Subhi Alsous is unable to give his individual student contribution this week because of ill health. Members of group 22 look forward to his recovery.