Week 4 Journal Group 22

Date 17/02/2019

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 3:

- Marlon, Abdullah and Aarambh to complete assembly of buggy and ensure all the connections to the driver board are correctly made.
- Osama and Subhi to continue the development of software, ensuring the tasks of TD1 are nearing completion
- 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.

2. **Project Status and statement of progress**

The assembly and wiring of the buggy have neared completion and the group is now directing their focus onto the software of the buggy, ensuring it achieves the specification of TD1. While gradual progress is made onto the sensor circuit design on stripboard, everyone is aware of their tasks and duties to ensure a strong performance in TD1. The group has found that Task 2 and 3 have been particularly challenging but feels confident with the completions of tasks 4-7.

3. **Individual Student Contributions**

Aarambh Sinha

- Spent 2-3 hours in C34 on Monday with Osama and Abdullah. Focused on the finding the appropriate connections between the driver board and microcontroller.
- Worked with Abdullah on Friday to create two separate sets of sensor implementation. Idea of this is to test how the IC chips perform such as the ULN2003 and quad comparators. Decided to trial a straight line design and the 'smile' arrangement (as seen in DR2) and see how they both will work with the software.
- Researched about ways to enclose the batteries, looking at finding a solution that is secure, not heavy and easy to open and lock into place. Decided on a particular set of straps that will appropriately fit the battery onto the buggy.

Abdullah Ahmed Akhtar

- On Monday went to C34 and worked on the assembly and wiring of the buggy, Marlon then took the buggy home and finished the wiring for drive board.
- Attended the Wednesday lab and worked on the switch of the buggy, and all the wiring was completed on Thursday
- On Friday worked on the sensor circuit and soldered most of the components onto the stripboard.

- Assisted Marlon with the wiring of motor module, which had to be done again after there was a problem with the first wiring.
- Briefly researched about encoders to help Osama with the equation required to get speed.

Marlon Guanoluisa:

- Change all the wires for both motors and crimping the headers of them to the connection terminal crimps and introduced them into the interface connector.
- Rewired again the connections between the motor drive board to the motors and to the power source for the encoders.
- Assemble and disassemble the buggy because some failures were present and looked for a good spot to place the switch of the battery.
- Help Osama to understand how it is connected the motors and encoders to the motor drive board and discussed the progress of the code for the TD1.

Osama Othman

- Researched hardware of how h bridge and motors work and how to control motors using bipolar and unipolar
- Determined which pins to use for controlling motors using gpio pins and potentiometers
- Wrote over 100 lines of code that is able to control and display duty cycle using potentiometer, control the mode of both motors to be either uni or bipolar, direction if unipolar and speed of motors by controlling duty cycle
- With the help of Marlon, understood how to test the motor voltage and how the pwm signal of micro controls the pwm of motors
- wrote 40-line program to receive input from encoders and output pulses
- went to both labs on Thursday and Friday to work on code.

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.