EE 491 Weekly Report **May15-27** **Week 4**

9/21/14 - 9/28/14

Advisors: Dr. Jones, Dr. Elia

Team Members:

Alberto Di Martino
Dylan Gransee * Webmaster *
Robert Larsen * Team Leader *
Ian McInerney * Team Key Concept Holder *
Aaron Pederson * Team Communications*
Rohit Zambre
Fengxing Zhu

Work Hour Totals:

Team Member	Weekly Hours	Running Total
Alberto	11.5	23
Dylan	8.5	29
Robert	8	25.5
Ian	5.5	21.5
Aaron	10.5	27.5
Rohit	7.5	24
Fengxing	7.5	22.5

Weekly Summary

We made a lot of progress this week. Our OmniBot group of Robert and Dylan has made progress in finding out if using the existing OmniBot(s) is a feasible possibility. They are leaning more towards not using it at the moment unless they find a quick solution to current issues.

Ian and Fengxing have been working on deriving the differential equations for the balancing pendulum. The equations are currently ready and are waiting to be implemented with the wooden model quad copter.

Aaron and Alberto have worked on getting the new receiver to work as well as modifying the existing code to transmit quad motor values rather than pitch – roll – yaw values. Also constructed the wooden quad model for two direction pendulum.

Rohit and Fengxing have been working towards a matlab testing platform. They updated the existing matlab scripts and learned how to parse data from a text file and determined the values that need to be tracked in the prototype.

Aaron is now working with Ravi from the Microcart team to build a protection circuit for batteries.

Pending Issues:

1. – Find out if the Omnibot will work for our project.
2. – Mixing matrix problems.
3. – Fixing the broken GUI.

Next week goals:

- Make a decision about the omniBot.
- Successfully use a mixing matrix to transmit motor instructions to quad receiver.
- Use differential equation model of pendulum to begin testing the pendulum.
- Use MATLAB to decode and display data in a helpful way.

Individual Contributions:

Ian – derived differential equations for pendulum – 3 hr.

Robert, Dylan – researched and worked on Eris – 6 hr.

Aaron, Alberto – built wooden frame for quad prototyping – 5 hr.

Fengxing, Ian – Worked on control theory. – 1hr

Fengxing, Rohit, Alberto – worked on c

Meeting Notes:

09/26/14 –

Duration: 3 hr   **Members Present:** Alberto, Rohit, Fengxing

Clarified on what needs to be done in terms of the mixing matrix and the GUI. Began building physical testing equipment ie. Soldering battery connectors, wood frame etc.

Purpose and Goals:

- This was a subgroup meeting intended to progress in matlab data processing.
- Get ball rolling in right direction for the quadcopter part of our project.

Achievements:

- Updated old matlab scripts
- Near the end of the meeting, began building the wooden model for testing purposes.

09/28/14 –

Duration: 1.5 hr   **Members Present:** All

Overview
- We first went over what everyone worked on
  - Dylan and Robert – Played with the Eris and it no longer works. Segmentation fault issues. FPGA seems to not get programmed. Kryton has a missing file which is required to make it work. The documentation for XBOX controllers is good but it is not working as described.
  - Ian – Derived simplistic model for pendulum: Differential equation equations that describe its motion.
    - To use new motors and new propellers, we need to derive new constants.
  - Feng – Met with Paul and figured out where the logs of MATLAB files are. Also helped Aaron and Alberto with receiver stuff
  - Rohit – Met with Paul and figured out where microCART is at for their data analysis tool for the quadcopter. Helped Alberto and Aaron with some soldering and troubleshooting for the demo quadcopter.
  - Aaron and Alberto – Made the parallel power-for-motors splitter. Made the wooden structure. Ran into a lot of receiver issues, did some soldering. Also completed the block diagram. Will commit it to git soon. Quadcopter demo is broken. Paul couldn't fix it. Need to contact Dr. Jones and microCART team to debug the working of the demo.
- Discussed logistical action items
- Discussed roles and titles. Rohit needs to come up with a title name
- Talked about Ominbot controlling logistics.
  - Want to come up with a new AI
  - Need to resolve the robot-not-working issue
- For git: Put in only stuff that we want. Use CyBox to store the whole of the old SVN.
- Aaron will start working on a Battery Pack Protection System.

Action items
- Having a google spreadsheet to keep detailed track of old tasks, current tasks and future tasks.
- A group text/message
- Make sure to send the report to Elia and team on Monday along with the other WSR.
- Rohit's title
- By Tuesday, Dylan and Robert will decide on the status of the robot
- Alberto and Aaron needs to get the receiver working, if possible
- Building and constructing the simple pendulum (physically and theoretically)
- Rohit needs to talk with Ian and learn about the variables need to monitor

- Feng will help Alberto and Aaron with the Linear Algebra stuff
- EVERYONE NEEDS TO CHECK OUT THE GIT REPOSITORY BY WEDNESDAY!