

EE 491 Weekly Report

May15-27

Week 6 (10/05/14-10/12/14)

Advisors: Dr. Jones, Dr. Elia

Team Members:

Alberto Di Martino * Team Co-Web *
Dylan Gransee * Webmaster *
Robert Larsen * Team Leader *
Ian McInerney * Team Key Concept Holder *
Aaron Pederson * Team Communications *
Rohit Zambre * Team Secretary *
Fengxing Zhu * Team Comm. Co-leader *

Work Hour Totals:

Team Member	Weekly Hours	Running Total
Aaron	10	46.5
Alberto	7.5	48
Dylan	9.50	49
Fengxing	8	34.5
Ian	9	41
Robert	8	48
Rohit	10	34.5

Weekly Summary

Pending Issues:

1. The wood model is too fragile and needs to be redesigned.
 - a. We might as well just begin working with the dji quad.
2. Xbox controller still not working.
3. MESA board not fully understood.
4. Computations not fully understood
5. Need a data analysis tool for the 2d pendulum.
6. Reviving the old camera system

Next week goals:

- Design and build new testing quad. (Aaron, Alberto)
 - Make motor 90-degree mount.
 - Make a mount for the aluminum pole.
- Begin testing on the quad once ready. (Aaron, Alberto, Ian, Fengxing)
- Create a signal flow diagram which includes computations on inputs to generate outputs. (Alberto)
- Have Simulink Matlab Programs. (Fengxing, Rohit)

- Revive the old camera system. (Fengxing, Rohit)
- Tune motor constants. (Ian)
- Tune PID values of Eris. (Ian, Robert, Dylan)
- Model the effect of sensor noise on pendulum system. (Ian)
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Individual Contributions:

Dylan Gransee:

Attended group meetings. (3 hr)

Looked through Eris' code and documentation. (4 hr)

Website dev., helped team in lab. (2 hr)

Robert Larsen:

Got code for Eris working properly (4.5 hr)

Began examining VHDL, pre-made files, and programming process for FPGA (2 hr)

Fengxing:

Attended the advisor meeting and mainly worked on finding out the signal flow. Spent some time working on old camera system as well. (8 hr)

Rohit:

Worked on reviving old camera system (5 hr)

Took notes at team meeting and worked on setting up 2-d pendulum testing (3.5 hr)

Aaron:

Worked on testing the transmitter/receiver with oscilloscope. Troubleshooting (1.5 hr)

Met with Ravi, Jones, Paul and Ian and talked about Voltage regulator design. I gave Ravi under voltage protection ideas. (1 hr)

Tried to begin testing but broke the wood model on accident, fixed it and broke it again (3.5 hr)

Ian:

Worked with Micro cart to begin measuring motor constants (4.0 hr)

Discussed battery protection/regulator design (1.5 hr)

Attended the team meetings (2.5 hr)

Discussed PID tuning process for Eris (1 hr)

Alberto:

Worked on testing the transmitter/receiver with oscilloscope. Troubleshooting (1.5 hr)

Revised signal flow diagram (2 hr)

Testing until broke quad (3 hr)

Total Contributions for the project:

This Week:

60 Hours Total

Meeting Notes:

10/09/14 –

Duration: 1 hr

Members Present: all

Author: Rohit Zambre

* Overview *

Busy next week.

-- Next week can be a little relaxed since there are mid-terms coming up.

The two sub-groups are coming close together.

Bot

-- Xbox controlling not working now yet

-- Able to drive around well

-- Actually stops when told to stop through the GUI

-- Found meaning of letters popping up after talking to Dr. Elia

-- The new Eris project base has been very helpful

Confusion between GUI and command line

-- Has been clarified.

The probe of the oscilloscope is broken.

-- Write to Lee

-- Also ask for the status of the function generator

RPY is all 656 in the middle value. Throttle is 200ish.

-- Need to see the value of the difference from the center to the motors

- How to do this? Still considering

- Ian will look into it the code of the MCTcontroller on Friday

CLI – Command Line Interface

-- To differentiate from the GUI

Dr. Jones will send out a tutorial for PID stuff

Ian will be ready to test the controller on Sunday.

Need to have a quick MATLAB script ready to analyze data from testing

OmniBot subgroup: Finish PWM and PID for the bot

Quad subgroup: Insert the bias in the matrix while generating a signal flow diagram

Meeting Notes:

10/12/14 –

Duration: - 1 hr **Members Present:** - all

Date: 10/12/2014

Author: Rohit Zambre

* Overview *

Get the frame up on the pendulum system instead of the wooden one.

-- Add aluminium elbows to make the motors point outwards.

-- Start with elbow at 90 degrees first

-- Later add a screw that allows the motors to go beyond 90 degrees

The pitch comes out in the euler form from the camera system and gets converted to PPM.

-- Pull out snippets where the value are being changed. For each snippet, make references

-- Aim is to find if current controller is doing some other extra stuff with the values before sending out via the PPM.

-- We don't want this for our implementation in which we will be directly sending the motor values.

Shift from the wooden stand to the metal stand

-- by the end of this week.

Robert

-- Looking into the MESA board (FPGA/microController) of Eris. Need this to know how to modify PWM.

Dylan

-- Looking into the software.

Beginning of the week, we will be done with setting up the new computer.

Ian

-- Going to work on looking at the signal trace files.

-- Worked with Tyler to continue on modelling. Need the angular velocity VS thrust.

-- The photometer is not safe to use as of now.

- The reflective material is not as reflective to get measurements safely.

Feng

-- Work with Ian on modelling

-- Looking into the code for controller part of the GUI

Alberto

-- Creating signal flow diagram for Ian

Aaron

-- Building and constructing the frame and physical setup of the 1-D inverted pendulum system

Rohit

-- Setting up the Data Analysis tool for the 1-D pendulum testing

-- Looking into reviving the old camera system