EE 491 Weekly Report May15-27 Week 11 (11/10/14/ – 11/16/14)

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	8.00	97.50
Alberto	9.50	90.50
Dylan	17.00	114.50
Fengxing	8.00	70.50
Ian	9.50	88.50
Robert	14.50	104.00
Rohit	14.00	79.50

Weekly Summary

Some exciting new discoveries this week! We now have a PWM signal coming from Eris! We also have new motors. We are waiting to characterize the motors before we implement them. Unfortunately the 1-d pendulum still is not doing as well as we would like with the new yaw-free setup. So we are looking deeper into the logs, running more tests to find out any more sources of this issue.

Pending Issues:

- The pendulum is still not working properly after fixing the yaw issue and camera system range issue.
- Need wiring to conduct PWM signal from ground to quad
- Re-visiting 1-d system derivation
- Beginning 2-d system derivation
- Characterizing new motors

Next week goals:

Aaron:

- Working on logging data inside the PID to see potential sources of error
- Work on characterization of the new motors

- Solder connectors on to new ESCs and fix polarity of old ESC power connectors

Alberto:

- Work on characterization of the new motors
- Working on logging data inside the PID to see potential sources of error

Dylan:

- Begin working on controlling motors of propellers
- Begin integration with the ground station code (most likely need to re-write a lot of it and remove bulk we don't need)

Fengxing:

- Begin deriving the 2-d system
- Help characterize new motors

Ian:

- Revisit 1-d system derivation and find source of problems

Robert:

- Begin working on controlling motors of propellers
- Begin integration with the ground station code (most likely need to re-write a lot of it and remove bulk we don't need)

Rohit:

- Further data analysis tool development for custom options.
- Analyze data being logged for 1-D pendulum tuning.

Individual Contributions:

Aaron:

- Team Meeting, (1hr), Go to Lee to mount Pendulum(.5 hr)
- Worked with Elia and team to fix pendulum and tune(2 hr)
- Team meeting (1.5 hr.), PWM testing (1 hr.), helped with logging and analysing in matlab(1hr)

Alberto:

- Team meeting(1.5 hr)
- Worked with team and advisor in getting tune the PID(3 hr)
- Worked with rohit in starting the matlab logger for PID(

Dylan:

- Mesa PWM (1.5 hr)
- Project plan (1 hr)
- Mesa PWM (3.5 hr), omnibot scripts (1 hr)

- Team advisor meeting, Helping with pendulum testing (1.5 hr), Working on getting Eris code compiling on different machines (3 hr.)
- Team meeting (1.5 hr.), PWM testing (1 hr.), Eris editing makefile (1.5 hr)

Fengxing:

- Measured motor resistance and project plan. (2 hr)
- Worked on 2-D model and Tuning PID values. (3 hr)
- Team meeting and worked on logging refired data and tuning PID values. (3 hr)

Ian:

- Measured motor winding resistance + Worked on project plan(1.5 hr)
- Analyzed data for and calculated the moment of inertia for the 1D pendulum (1 hr)
- Team Meeting + Camera System Work (2.5 hr)
- Control System Analysis (2 hr)
- Team Meeting + New motor testing (2.5 hr)

Robert:

- Worked on mesa PWM (3 hr)
- Worked on Mesa PWM again (made progress) (4 hr)
- Advisor meeting (1 hr)
- Mesa PWM (achieved desired frequency) (1.5 hr)
- Implemented manual control of PWM (2 hr)
- Team meeting, refining PWM control program (3 hr)

Rohit:

- Worked on Project plan Worked on project plan (1) + Worked on Mesa with Robert and Dylan(2)
- Team Meeting
- Researched on base joint possibilities (2) + Data analysis with Alberto, Dr. Elia and Paul (1.5)
- Worked with Alberto on logging data
- Team meeeting (1) + Data logging, PID tuning, Data analysis

Meeting Notes:

11/13/2014

Duration: - 1 hr Members Present: All Advisers Present: All

Note Taker: Rohit Zambre

Overview

Meeting minutes

11-13-2014:

Maybe the camera is losing the quad

New idea is to lower the IR balls

Only 4 cameras are able to see the position at the top

The system is changing everyday

Feng

-- Worked with Alberto in tuning the PID; tried many values

-- Jerkiness seems to have reduced with tuning

Ian

-- Starting to get motor constants

-- Have new motor winding resistance

-- Nice to have two new receivers

-- Writing up a MATLAB script of the software controller

Will allow us to see which values to inspect

Will also help us find motor constants that are close to the actual model

Possible 1 D joints

-- Getting Lowe's 1 D joint

-- Using door hinges

-- Drill a stick through the pole to fix the yaw correction (Doing this currently)

Ground robot

-- The PWMs can be generated now

-- The only issue is with controlling the frequency

Stick with the current localization system

-- Look at current sources of issues

Meeting Notes:

11/16/2014

Duration: - 1 hr **Members Present: All** **Advisers Present: All**

Note Taker: Rohit Zambre

Overview

Meeting minutes

11-16-2014:

Ground station

Able to generate eight PWMs with frequency modulation as well.

Next steps would be to implement the PID on the ground station on the robot to get eight PID outputs.

- Will focus on controlling the motors of the propellers
- Need to figure out what all to transfer between the ground station and the ground robot
- Need wires to connect the propellers to the pins on the FPGA board

Controller system

Revisiting 1-D system derivation

Also working on the 2-D system derivation

Work on characterization of the motors

1-D tuning

There are some errors in the PID probably

Working on logging data inside the PID to see potential sources of error

The IR balls are shaking during the test run