

EE 491 Weekly Report

May15-27

Week 10 (11/3/14 – 11/9/14)

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	7.5	89.5
Alberto	6.5	81.0
Dylan	16.5	97.5
Fengxing	0.0	54.0
Ian	10.5	79.0
Robert	10.5	89.5
Rohit	8.0	65.5

Weekly Summary

This was a week of very little progress as far as I have seen. We have come upon some roadblocks and we need to discuss and make big decisions quickly to move on and make progress.

Pending Issues:

1. Apparently not easy to expand out of the current setup.
2. Localization system
 - Partially works on the XP machine with the ground robot
 - The robot does follow the tennis ball. The motors do update only when the robot is rotated.
 - The camera is most likely not detecting the objects.
3. 1-d pendulum
 - Way too much unknown. We either need ideas of tests and methods to eliminate unknowns and narrow down possible problems.
 - Need a universal joint to eliminate the unknown of yaw causing problems in the controller.

Individual Contributions:

Aaron:

- WSR (1 hr)
- Honestly did not do much because of jury duty from Tuesday to Thursday.
- Tried to improve the 1-d system but it seems to be bottlenecked by delay and yaw.(4 hr)
- Team meeting (2.5 hr)

Alberto:

- Fixed problems and tried to tune PID more (4 hr)
- Meeting (2.5 hr)

Dylan:

- Demos/prep (2.5 hr)
- fixing router issues (2 hr)
- debugging PWM on eris (2.5 hr)
- Attempting to get Mesa board to get desired PWMs (4.5 hr)
- Advisor meeting (1 hr)
- learning how to calibrate the cameras from Matt (1.5 hr)
- Team meeting (2.5 hr)

Fengxing:

- Ian Took data for moment of inertia measurements (1.5 hr)
- Demoed to high school students + Assisted with troubleshooting quad demo + Fixed lab router security hole(3 hr)
- Meeting w/ Advisors + Discussion of Mesa board w/ Robert and Paul(2.5 hr)
- Started MATLAB diagnostic of GUI controller(1 hr)
- Team Meeting(2.5 hr)

Robert:

- Attempting to get Mesa board to get desired PWMs(6 hr)
- Advisor meeting + PWM work (2 hr)
- Meeting (2.5 hr)

Rohit:

- Met with Jason in CSG to work on installation issues and located possible sources of issues (1.5 hr)
- Worked with Dylan on seeing if the localization system responded (1.5) + Demo (0.5)
- Adviser meeting (1 hr)
- Looked at motor_controller.cpp on Eris (1 hr)
- Team Meeting (2.5 hr)

Next Week goals:

Aaron:

- Characterize system delay
- Install universal joint

Alberto:

- Characterize system delay

Dylan:

- Work on website
- Get a PWM output on one of the pins from the FPGA on Eris
- Work on a guide to compile omnibot code on any computer

Fengxing:

??

Ian:

- Analyse drop test data and help characterize system delay

Robert:

- Set up doodle poll for next semester schedule
- Investigate the Mesa configuration so we can give the board what it expects for a proper PWM
- Contact Mesa for VHDL code (bribe)

Rohit:

Meeting Notes:

11/6/2014 –

Duration: 1 hour **Members Present: All except Aaron** **Advisers Present: Paul Uhing, Matt Rich**

Note Taker: Rohit Zambre

Eris

-- Apparently not easy to expand out of the current setup.

Refer to Robert's email

Feng

-- Went through Matt's thesis. Will get reference from Matt soon.

- Worked with Ian to measure the moment of inertia.
- Will work with the team on Friday to do generate constants for the inverted pendulum system

Moment of inertia measurements

- Did 5 runs with 5 different voltage levels

Might want to look into OpenCV to work with the webcam

- for demo and application purposes
- Purpose: to detect objects without the IR sensor balls
- talk to Dr. Jones for possible options and next steps

Motor test

- Conduct the test that Dr. Elia mentioned

Test the motor with constant PID and see if there is any jumping occurring or not

Use Matt's flow chart on the white board as a guide to characterize each part of the system

- Purpose: to find the source of jumping error
- While doing so, come up with own diagram of the board.

Gimbal joint

- Need a brushless motor OR stepper motor for the gimbal joint (servocity.com)
- look into what is available. Find out what is needed to drive them, etc.
- don't think we need the mechanical universal joint as of now

Localization system

- Partially works on the XP machine with the ground robot
- The robot does follow the tennis ball. The motors do update only when the robot is rotated.
- The camera is most likely not detecting the objects.

Meeting Notes:

11/9/2014 –

Duration: 1 hour

Members Present: All

Advisers Present: Matt Rich

Note Taker: Rohit Zambre

Update git regularly

Expanded git

-- Data folder

-- website folder

-- log files should go to data folder

-- matlab files should go to matlab folder

Units should be included on the log files and in the documentation for using the log files

Project plan

-- have it done by Monday

-- get it approved by advisers

WSRs on website from now on

Fill out doodle poll to fix on a meeting time for next semester

Old quad flies now

Base robot

-- currently looking into the possibility of attaching a micro zed board using a PCI.

-- need to create custom files to control 8 motors from the FPGA

Gimbal joint

-- may need an alternate system for the gimbal joint

-- get the universal joint to fix the yaw error as of now

-- Aaron might buy a universal joint from Lowe's