EE CprE SE 492 – MAY15-28

MicroCART Senior Design Team

Weekly Report 17

January 26 – February 1

Faculty Advisers
Phillip Jones
Nicola Elia

Member	Position	Weekly Hours	Total Hours
Paul Gerver	Key Concept	6	149
Tyler Kurtz	Key Concept	5	151.5
Ravi Nagaraju	Webmaster	2	87
Adam Campbell	Webmaster	2	90.5
Joe Benedict	Communications	4.5	182.75
Jacob Rigdon	Communications	6	100
Matt Vitale	Team Lead	7.5	128
Matt Post	Key Concept	5	25

Progress

- Gleaned a lot of useful information from Multi-Wii code – Documented our findings to be useful in the future – We hope to implement some of these findings in our solution
- Successful meeting with Dr. Amariucai – CPRE/EE/SE 492 instructor
- Refreshed areas of documentation

Plan of Action

1) <u>Manual flight demonstration is the highest priority milestone at this time</u>
2) Develop data capture from sensor board and camera system for comparative analysis
3) Develop data capture of PID coefficients, input signals and motor output (maybe) for plotting and analysis

Pending Issues

- Logging system can likely be streamlined and documented better – Unclear what OmniCoor is logging on the Base Station computer

Contributions

Paul – 6 Hours, 149 Total
- Updated Quad PID software to include new sensor board filtering and complementary filter - 2
- Documentation - 4
  - Xilinx document update to include FSBL and Custom Logic Cores
  - Task documentation updates
    - Sensor board
    - Quad PID

Tyler – 5 Hours, 151.5 Total
- Read through Multi-Wii code and documented some thoughts - 5

Ravi – 2 Hours, 87 Total
- Modified website - 0.5
- Looked in-depth into logging GUI code - 1.5

Adam – 2 Hours, 90.5 Total
- Worked on some more Bluetooth tests
- Looked into low energy Bluetooth

Joe – 4.5 Hours, 182.75 Total
- Meeting with client - 1
- Meeting with EE 492 advisor: Dr. Amariucai - 1
- Miscellaneous small group discussions covering PID data capture, yaw PID tuning using the camera system, restructuring tasks (documentation, website management, maintaining "gold copies" of code) and quad characterization - 2.5

Jacob – 6 Hours, 100 Total

- Client Meeting – 1
- Overview of Multi-Wii code - 3
- Weekly Report – 1
- Meeting with 492 advisor Dr. Amariucai - 1

Matt V. – 7.5 Hours, 128 Total

- Met with Jones about plan of action - 1.5

- enabled data logging - 1
- Documented Shell script / shell scripts in general - 2
- Learned basics of Matlab and looked over Rohit's work - 2
- Started looking into alternatives for TTY screen - 1

Matt P. – 5 Hours, 25 Total

- Required Meetings - 2
- Read through Multi-Wii Code and began documenting -3

Meeting Minutes

1) Bluetooth

   - Reliable connection (~1 Mb / 57 sec)
   - Surprisingly slow – looking into what would be causing this
   - Looking for dropped packets, performing latency tests
   - Dr. Jones brought up Low-Energy Bluetooth, low priority, but has potential for the future

2) Sensor Board

   - Receiving much more reliable data from gyro
   - Matlab graphs are performing well – in development
   - The implementation of a ping sensor was discussed - No plan of action at this time

3) Matt is continuing to review the demo GUI code and update the comments as needed

4) Matt is continuing to develop the shell script to use, ./QuadCommand

   - Allows for easy PID testing by connecting to Bluetooth and setting up TTY screen
   - Combines various pieces others have made such as Tyler's logging and graphing

5) Ravi is continuing to review Tyler's and Rohit's code to detect duplication and eventual/possible integration of both

   - Need to determine what data is getting captured from each program

- Need to determine what file type and naming convention is used for each

6) Receiver is not getting minimal voltage per spec sheet

- 3.6 – 9.6 V range (Zybo delivering 3.42 V)
- Need to check the PWM signal sent to ECSs after increasing voltage

7) No reported issues with connections between the quadcopter components since the new connectors were installed

8) Dr. Jones requested better "plan of action" details for each upcoming week

- One will be sent out on each Tuesday after each team member reports to Jacob following the weekly client meeting