

EE CprE SE 491 – MAY15-28

MicroCART Senior Design Team

Weekly Report 15

Faculty Advisers

Phillip Jones

Nicola Elia

Member	Position	Weekly Hours	Total Hours
Paul Gerver	Key Concept	5	135
Tyler Kurtz	Key Concept	9	141.5
Ravi Nagaraju	Webmaster	2	80.5
Adam Campbell	Webmaster	5	83.5
Joe Benedict	Communications	11	171.25
Jacob Rigdon	Communications	6.5	89
Matt Vitale	Team Lead	6	115.5
Matt Post	TBD	12	12

Progress

- Rejuvenated team goals
- Established a plan of action for the semester
- Established 921600 baud rate on Bluetooth module
- Created script for easier PID testing
- Built custom connectors
 - Sensor to Zybo
 - Receiver to Zybo
 - Grounds for ESCs

Plan of Action

- 1) Manual flight demonstration is the highest priority milestone at this time
- 2) Slight restructuring of team-wide communication for sake of efficiency and productivity
- 3) Develop data capture from sensor board and camera system for comparative analysis
- 4) Develop data capture of PID coefficients, input signals and motor output (maybe) for plotting and analysis
- 5) Create and/or revise any documentation

Pending Issues

- Joe raised the question regarding the power and ground connections between the receiver and ESCs that are not currently being used. The current configuration sends just the data signal from the receiver to the Zybo which in turn sends it's own processed signal to the ESCs. The ESCs are grounded to the Zybo only, not the receiver. What does the power signal from the receiver to the ESCs drive? Is that the missing link to optimal ESC performance?
- Joe raised the question regarding the power control board for the motors. The current design has the circuit in parallel and not series which prevents battery over-discharge protection.

Contributions

Paul – 5 Hours, 135 Total

- Read up on SPI protocol - 1
- Investigated 921600 baud rate on Bluetooth module with Adam - 2
- Identified gyroscope bias on a per read basis – 2

Tyler – 9 Hours, 141.5 Total

- 492 - 1
- Team meeting - 1
- Made data logging thing in matlab – 7

Ravi – 2 Hours, 80.5 Total

- Caught up with Joe regarding boards progress - 0.5
- Talked with Rohit about Omnicor's data analysis tool, and learned about its capabilities- 1.5

Adam – 5 Hours, 83.5 Total

- Client meeting - 2
- Worked with Paul to up Bluetooth baud rate to 921600 from 115200 - 2
- Began investigating latency/throughput/integrity of Bluetooth communication - 1

Joe – 11 Hours, 171.25 Total

- Meeting with client and semester strategy discussion with Matt - 2
- General administrative work pertaining to team assessment meeting, virtual meeting with Jacob to develop new communication strategy for posting meeting minutes, WSR and goals tracking - 2.5

- Reworking connections (over 3 days) - 4.5
- Team assessment/strategy meeting – 2

Jacob – 6.5 Hours, 89 Total

- Client Meeting -2
- Team strategy meeting (scrum) – 2
- Administrative work/ Lab Assistance - 1.5
- Weekly Report - 1

Matt V. – 6 Hours, 115.5 Total

- Helped out in the lab on logging organization and bluetooth communication - 3
- Revisiting Sensorboard/Zybo's I2C communication built-in commands - 1
[built-in commands were never tested after the sensorboard's sleep mode was discovered. Could prove useful.]
- Made a script for easy PID testing - 1
[will work nicely with future GUI, anyone on team can use and start PID testing with current setup and with little to no prior knowledge]
- Made plans for GUI with Adam, different possibilities - 1
[Java, C#, Zenity, Webapp, etc. Will probably work on after meeting, if nothing more important arises]

Matt P. – 12 Hours, 12 Total

- Required meetings - 3
- Researched project background - 5
- Researched PID tuning methods for quads - 3
- Researched complementary vs Kalman filters - 1