

EE CprE SE 492 – MAY15-28

MicroCART Senior Design Team

Weekly Report 23

March 9 – March 22

Faculty Advisers

Phillip Jones

Nicola Elia

Member	Position	Weekly Hours	Total Hours
Paul Gerver	Key Concept	3	179
Tyler Kurtz	Key Concept	3	169.5
Ravi Nagaraju	Webmaster	1.5	109
Adam Campbell	Webmaster	2	104.5
Joe Benedict	Communications	8	211.25
Jacob Rigdon	Communications	5	120
Matt Vitale	Team Lead	-	140
Matt Post	Key Concept	-	36

Progress

- 1) Tuned out Pitch and Roll PID coefficients
- 2) Presented videos of results to the group for feedback
- 3) Determined the MOSFET on both battery control/monitoring boards is placed in reverse direction. This causes the body diode to act as a short circuit when reverse polarity of the battery is applied.

Plan of Action

- 1) Manual flight demonstration is the highest priority milestone at this time
- 2) Plan Poster and Final Document completion
- 3) Revisit PID tuning per Dr. Jones' instruction

Pending Issues

- 1) None Reported

Contributions

Paul – 3 Hours, 179 Total

- Tuned outer loop PID for pitch. We found that a P coefficient of 7.1 to 7.4 worked best with our inner P coefficient at 85.

Tyler – 3 Hours, 169.5 Total

- Worked on PID tuning

Ravi – 1.5 Hours, 109 Total

- Updated website - 0.5
- Meeting w/Client - 1
- Waiting to test failed circuit components in lab with Joe before ordering new boards (work was not done over break)

Adam – 3 Hours, 107.5 Total

- Pitch PID Tuning

Joe – 8 Hours, 211.25 Total

- Client meeting - 0.5
- Met with Ravi to discuss Zybo and motor battery monitoring/control circuits in an attempt to determine if the current design is sound - 1.0
- Discussed, with Tyler and Paul G, the benefits and drawbacks of single axis PID tuning using the Moment of Inertia machine on its side or the wooden single-axis rig. - 0.5
- Redesigned and rebuilt the mounting adapter on the wooden single-axis rig - 3.0
- Postmortem test on failed prototype 1 Zybo battery monitoring circuit (LED and 1.15k resistor tested good) and consulted with PID tuning team - 1.0
- Reviewed Zybo and motor battery monitoring/control circuits for possible issues that may have caused the failure of the prototype 1 Zybo board - 2.0

Jacob – 5 Hours, 120 Total

- Client meeting – 1
- Team Documentation – 1
- Lab work with PID team - 3

Matt V. – 0 Hours, 140 Total

- Nothing to report

Matt P. – 0 Hours, 36 Total

- Nothing to report

Meeting Minutes

1) Demo of Pitch PID

- Discussed the definitions of commands, velocity set points
- Dr. Jones was confused on what exactly was happening
- After some explanation and viewing of test graphs he had a clearer picture
- Successful demo

2) Controls Lab YouTube account

- Paul Uhing and Matt Rich created the account (need to check with them on the mail address)

3) Battery monitoring/control circuits

- Ravi and Joe will review both circuits and consult with Ian McInerney to verify updated design before ordering new parts