

## MicroCart (Microprocessor Controlled Aerial Robotics Team)

### sdmay19-20

Week 12 Report

November 5 — November 11

Client/Advisor: Dr. Phillip Jones

### Team Members

James Talbert — *Hardware*

Sarah Koch — *Controls*

Anthony Bertucci — *Ground Station*

Tina Li — *Quad Software*

Nina Moriguchi — *Quad Simulation*

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### Summary of Progress this Report

- **James**
  - Got autonomous working
    - Quad is assigned IP based on allocation table in the repo
    - Quad must be moved to the front of a list of trackables in the ground station source code
  - Consulted on Vivado simulation scripting for R2U2 project
    - Worked with other team members on understanding existing code
- **Sarah**
  - Created first version of PCB circuit schematic and board layout
- **Tony**
  - Worked on modifying current matlab process to run plot\_data as background process on continuous timer
- **Tina**
  - Worked on PCB circuit schematic
  - Helped teammates with board layout
  - Cleaning up autorouting errors and checking PCB design for errors
- **Nina**
  - Absent

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### Pending Issues

- **James**
  - My primary goal for the semester is complete, but needs a proper review. The changes heavily

use material from CprE 488, and I am the only participating team member who has taken that course. This makes doing a detailed review extremely difficult, so I will be condensing the review to the level of system diagrams, and avoid implementation details.

- Also, the changes are systemic modifications, and cannot easily be compared for differences with previous versions.

- **Sarah**

- Tina and I need to verify the custom PCB layout meets the requirements we defined in the specs sheet and works with the Zybo board
  - We will need to enlist James' help during this process as he is the most familiar with the Zybo and helped to create the PCB requirements

- **Tony**

- Matlab GUI tool is largely new to me and thus requires a lot of extra time in order to become more familiar with its use.
- A suitable test for the real-time logging tool will need to be created. Luckily, this will most likely be possible with faked input from the quad and without any actual interaction taking place.

- **Tina**

- Make sure, when the board arrives, that it fits onto the quad and that everything works well
- Will have to rewire the quad and then test that it still works
- Will also need to make sure new sensor RT code works

- **Nina**

- Absent
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## Plans for Upcoming Reporting Period

- **James**

- Next week, I will be focusing on supporting the PCB design. I have the most experience with the internals of what the signals are doing and how they need to connect, but I have no experience with the CAD tools for the PCB layout, so this will be a joint effort.

- **Sarah**

- Finalize the custom PCB circuit schematic and board layout
- Verify with James that the PCB design meets the requirements outlined in the spec sheet we created for the board
- Send out board files for manufacture and order board components

- **Tony**

- I plan on continuing work on the Data Analysis Tool in order to have it fully working as continuous process.
- Once/if the above is complete, I plan on creating a test to ensure the new tool is capable of real-time updates

- **Tina**

- Will need to modify the ground station code to send a configuration packet
- Will need to modify ground station to respond to sensor RT packets
- Test and fix final version of sensor RT code

- **Nina**

- Absent
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### Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
James Talbert	<ul style="list-style-type: none"><li>● Made the temporary changes to get the updated quad in the air.</li><li>● Started developing a design review presentation for the Vivado migration</li><li>● Attempted to assist other team members</li></ul>	10	78
Sarah Koch	<ul style="list-style-type: none"><li>● Created PCB circuit schematic and board layout</li></ul>	4	53
Anthony Bertucci	<ul style="list-style-type: none"><li>● Worked on implementation of real-time data plotting in function DataAnalysisTool.m of background process GUI.m in groundstation GUI</li></ul>	6	52
Tina Li	<ul style="list-style-type: none"><li>● Created PCB layout and cleaned up copper traces</li><li>● Learned how the quad is assembled</li><li>● Learned how sensors were hooked up</li></ul>	6	50
Nina Moriguchi	<ul style="list-style-type: none"><li>●</li></ul>	0	17

## Gitlab Activity Summary

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Action: pushed to, Wed Nov 07 2018

Author: James Talbert

Title: Fixed memory error.

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Action: pushed to, Wed Nov 07 2018

Author: James Talbert

Title: Fixed the simple compile problems. Unimplemented functions are stil...

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Action: commented on, Tue Nov 06 2018

Author: bertucci

Title: Change trackables list from a C source file to a runtime parsed file, Type: Note

Comment: Yes, this does seem like a good idea, and as our goals start to focus on multi-quad functionality, these sorts of things are essentially going to be requirements.

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Action: commented on, Tue Nov 06 2018

Author: James Talbert

Title: Change trackables list from a C source file to a runtime parsed file, Type: Note

Comment: @bertucci Does this seem like a good idea?

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Action: commented on, Mon Nov 05 2018

Author: James Talbert

Title: Change trackables list from a C source file to a runtime parsed file, Type: Note

Comment: Some of this functionality may exist. If we don't have one, we should create a documentation file with all BackEnd interfaces (I think it's a socket, what commands does it understand).

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Action: opened, Mon Nov 05 2018

Author: James Talbert

Title: Change trackables list from a C source file to a runtime parsed file, Type: Issue

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