

# EE CprE 491 – May 21 - 27

## MicroCART Senior Design Team

### Week 7 Report

September 28- October 5

Faculty Advisors: Phillip Jones

#### Team Members:

Alex Bjerke — *Project Manager*

Amith Kopparapu Venkata Boja — *Embedded Software Lead*

Theodore Davis — *Embedded Hardware Lead*

Grayson Goss — *Technical Lead | CAD Design Lead*

Hannah Mohamad — *Team Webmaster*

Russ Paulsen — *Ground Control Lead*

Alfonso Raymundo — *PCB Design Lead*

Trent Woodhouse — *High-Level Software Lead*

#### Past Week Accomplishments

This week we have been discussing more about our research on the outside-world projects that can help us with building our own drones. As a team, we've looked into projects that were shared by Dr. Jones and share our thoughts and findings about it. We've also cleared any confusion and concerns that team members have about the projects. Additionally, a skeleton project was created for the ground control desktop application.

#### Pending Issues

- Listing to-do tasks
- Beginning sub group works- decide assigned task to be accomplished by team

#### Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Alex	Reviewed the team's design document v1 prior to turning it in. Looked at the Silverware H8 Mini and Crazyflie 2.1 projects to determine similarities and differences between them and our project. Lead team meeting and discussion to review everyone's research/findings and make sure everyone is on the same page.	8	21

Alfonso	<p>I did a lot of research on what a successful quadcopter project looks like &amp; how groups accomplish their goals. Most of my research was based around the following drones:</p> <p><b>Crazyflie 2.X</b>  <a href="https://www.bitcraze.io/documentation/tutorials/getting-started-with-crazyflie-2-x/">(https://www.bitcraze.io/documentation/tutorials/getting-started-with-crazyflie-2-x/)</a></p> <p><b>Silverware</b>  <a href="http://sirdomsen.diskstation.me/dokuwiki/doku.php?id=start">(http://sirdomsen.diskstation.me/dokuwiki/doku.php?id=start)</a></p> <p><b>DBI a Quadcopter</b>  <a href="https://www.instructables.com/Design-Build-and-Improve-a-Quadcopter/">(https://www.instructables.com/Design-Build-and-Improve-a-Quadcopter/)</a></p> <p><b>UnbreakaBLE Micro Drone</b>  <a href="https://hackaday.io/project/21279-the-unbreakable-micro-drone">(https://hackaday.io/project/21279-the-unbreakable-micro-drone)</a></p> <p><b>ArduBee</b>  <a href="https://www.kickstarter.com/projects/luminousbees/ardubee?ref=7a0aug">(https://www.kickstarter.com/projects/luminousbees/ardubee?ref=7a0aug)</a></p> <p>Other Stuff i did for the Project was to finish the tasks given to me by Alex.</p> <p><b>Tasks Done this week:</b>  Design_Doc_V1.docx (EE 491)  May2127_WSR_October5.docx (Weekly Report)  Project Research 10/4.pptx (pptx for Jones)  Project Tasks -WIP.docx (Tasks from Alex)</p>	12	24
Amith	<p>Researched on the Silverware and Crazy file projects to understand the segments and functionality of the projects. Analyzed these projects to get ideas for building a successful project.</p> <p>Worked on a portion of the design document, where I described the overall goals of the project and the major milestones we need to achieve to reach those goals</p>	8	19
Grayson	<p>Researched various MCU-controlled drones. Began researching simulation software and open-source CAD files of drone chassis for drones of our specified size. Used the various MCU drones (like Crazyflie and SilverWare) as reference points for the chassis design.</p>	9	22
Hannah	<p>Looked into details on the Crazyflies project. What can be implemented and methods that we can use from the project to our project. Having a stronger and concrete understanding on how drones work.</p>	6	14

	Worked on a portion of the design documents that was assigned by Alex. Worked on the weekly report and bi-weekly report for EE 491.		
Russ	<p>Looked for other projects that involve quadcopters. I found 4 different projects that are similar to ours somewhat</p> <p>Extreme fliers microdrone  <a href="https://www.microdrone.co.uk/">https://www.microdrone.co.uk/</a>            Cheap and Easy Micro Quadcopter(instructables)  <a href="https://www.instructables.com/Cheap-and-Easy-Micro-Quadcopter/">https://www.instructables.com/Cheap-and-Easy-Micro-Quadcopter/</a>            DIY Mini Quadcopter - Oscar Liang  <a href="https://oscarliang.com/diy-mini-quadcopter/">https://oscarliang.com/diy-mini-quadcopter/</a>            Micro autonomous quadcopter  <a href="https://github.com/hemkum/Micro-Autonomous-Quadcopter">https://github.com/hemkum/Micro-Autonomous-Quadcopter</a></p>	4	13
Theodore Davis	Looked into more open source drone projects such as the unbreakable microdrone and ardubee, listed above by Fonzy. Worked on my section of the design document (project statement and risk management).	6	15
Trent	Looked into open source drone projects to gain a better understanding of what JavaScript compatibilities there are with drones, and for research on drone data UI design. Additionally completed two issues to initialize a skeleton project for ground station.	5	15

### Plans for Coming Week

This will be fairly dependent on the direction and input provided by Professor Jones. We are planning on breaking into subgroups to begin more specialized research:

- PCB/Hardware - Alfonso, Theodore
  - CAD/Test Station (Physical) - Russ, Grayson
  - Ground Control - Trent
  - Embedded Software - Amith, Alex, Hannah, Theodore
- Amith - After confirming our final microcontroller, will try to research it and understand some simple project examples with the microcontroller.

The following subgroups will be responsible for creating an initial, detailed list of all the tasks that will need to be completed in order to have a successful project:

- Ground Control Application - Trent
- PCB/Drone HW - Alfonso, Theodore
- CAD/Test Station Setup - Grayson, Russ

- Embedded Software on Drone - Amith, Hannah
- Embedded Software on Test Station - Alex, Theodore
- Team Website - Hannah