

EE CprE 491 – May 21 - 27

MicroCART Senior Design Team

Week 5 Report

September 14 – September 20

Faculty Advisors: Phillip Jones

Team Members:

Alex Bjerke — *Project Manager*

Amith 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

We assigned initial roles to team members based on interests and strengths related to the project. We defined 3 blocks of time throughout the week dedicated to working on the project, and we determined new meeting times for our team (Sunday 2:00-3:00 and Monday 7:00-8:00). As a team, we now have a much better understanding of how drones work, what components we will need, and we have created a slide deck with our initial thoughts of specific parts and ideas. We have determined the 2x2 inch requirement will be a very big challenge.

Pending Issues

- Talk with Prof. Jones about adjusting the dimensions of the drone.
- Talk with Prof. Jones about ideas for the ground station
- Get feedback about our Control and Data Collection software idea

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Alex	Learned the basics of drones. Started researching types of microcontrollers, sensors, etc to get a feel for what is out there. In addition to the previous statement, took a look at different	6	6

	components' dimensions to get a feel for how little space there will be with the 2x2 inch requirement.		
Alfonso	Learn the basics of the quadcopter by looking at pre-made kits & watching Youtube videos. After that, I started to look for the smallest parts I can find to fit the 2"x 2" size. I tried to look for the smallest quadcopter engines I can find but gave up on it after the 9/15/20 Group meeting. Next, I started to look for the parts asked for from Grayson. I found the Accelerometer, Gyrometer, Ultrasonic Sensor & RF Sensor parts we need for the PCB with the help of Grayson & Group input. All the parts are Modules.	6	6
Amith	Understood the basics on drone creations and watched drone tutorials. Researched on microcontrollers that would meet the technical specifications for the drone.	6	6
Grayson	Contributed Introductory documentation for team. Identified various weak points in specified design from previous experience of building drones. Researched feasibility of 2" x 2" with given weight	5	5
Hannah	Research on the basic components of drones. Look more into details on the microcontrollers, sensors, parts , etc that relates to the project. Watched videos to have better understanding on drones. Read documents that provided by Grayson.	3	3
Russ	Researched the type of drones that are out there and how much they cost. Look at the cost of some of the components. Tried to find information about the ground station but got nothing useable.	3	3
Theodore Davis	Read up on drones, watched tutorials for ESCs, RF controller/receivers, and looked for MCUs for the drone.	6	6
Trent	Research solution for designing a desktop app to interact with the drone, and all technologies associated with it (framework, chart displays, text editors, etc). Set up GitLab repository.	3	3

Plans for Coming Week

- Desktop Application - Trent
 - o Design layout
 - o Create new nodejs project and set up dependencies

- Vue
 - Electron
 - Begin work on desktop application
 - Updated Part list & Rework PCB Idea - Alfonso
 - Update Part list
 - Add new parts
 - Look for anything Team ask for
 - Work out plan to fit everything into a 2" x 2" PCB
 - Try to fit everything into 2" x 2" PCB if we fail to get more space from Prof. Jones
- Temp - Theodore Davis
 - Learn about chosen MCU
 - Thoroughly read through the chosen MCU's datasheet.
 - Watch guides and use cases for MCU.
 - Pin Assignments
 - Go through the list of pins and see which pin goes to which peripherals
 - Make sure there's no overlap
 - Documentation
 - Make note of any useful information I find.
 - Note pin assignments I make in documentation on github.
- Additional Research, potentially splitting into more defined subgroups, determine the next steps in design process/plans in meeting on Monday, September 21
 - Some of these next steps feel very dependent on the feedback received from Professor Jones