

CprE / SE / EE – sddec26-11

CyFlyBot: Collaborative CyBot and UAV System for Faster Missions

Week 3 Report

Feb 10, 2026 – Dec 2026

Client: Dr. Rover and Dr. Jones

Faculty Advisor: Dr. Rover and Dr. Jones

Team Members:

Daniel Bieber

John Brittain

Jake Nickel

Caleb Sanchez

Tu Reh

Ping Wu

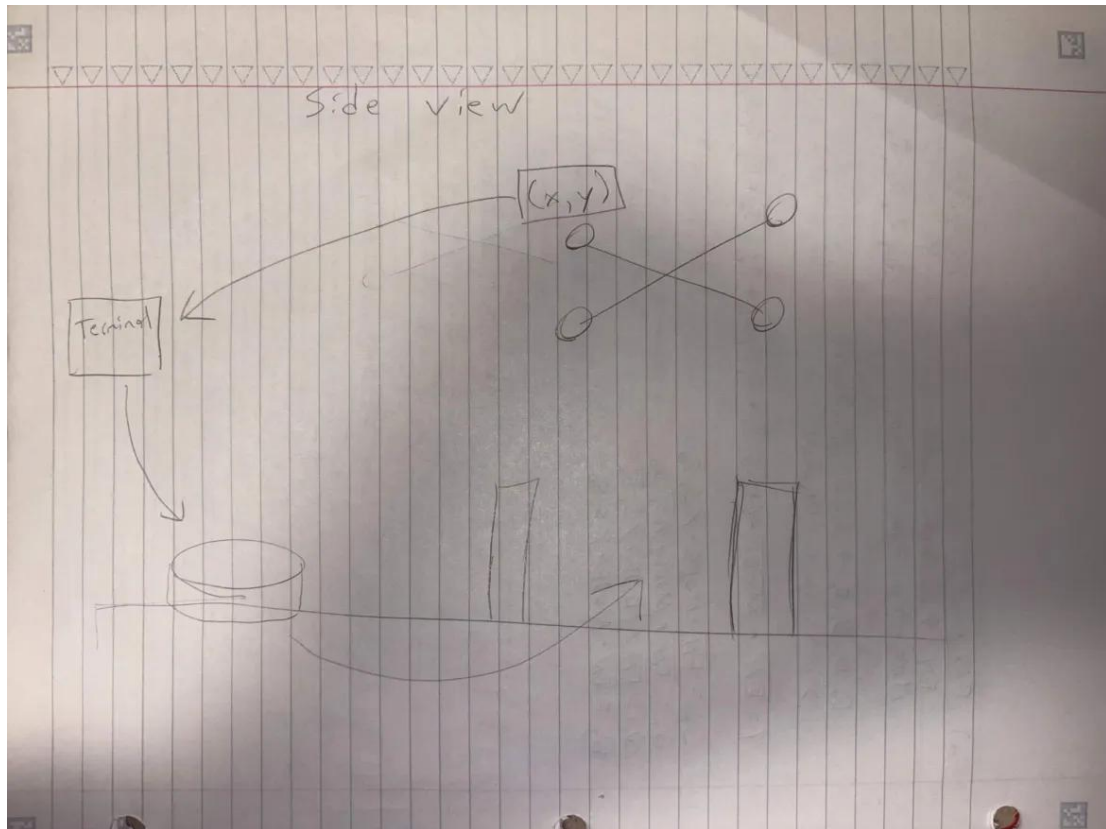
Mitchell Fowler

Weekly Summary

This week was the first week of technical documentation for Brainstorming. While previous discussions occurred, they were not recorded. We have started to build a portfolio of documents for the project. We also created 3 different application scenarios to discuss with Dr. Rover on Wednesday, March 4th.

Past Week Accomplishments

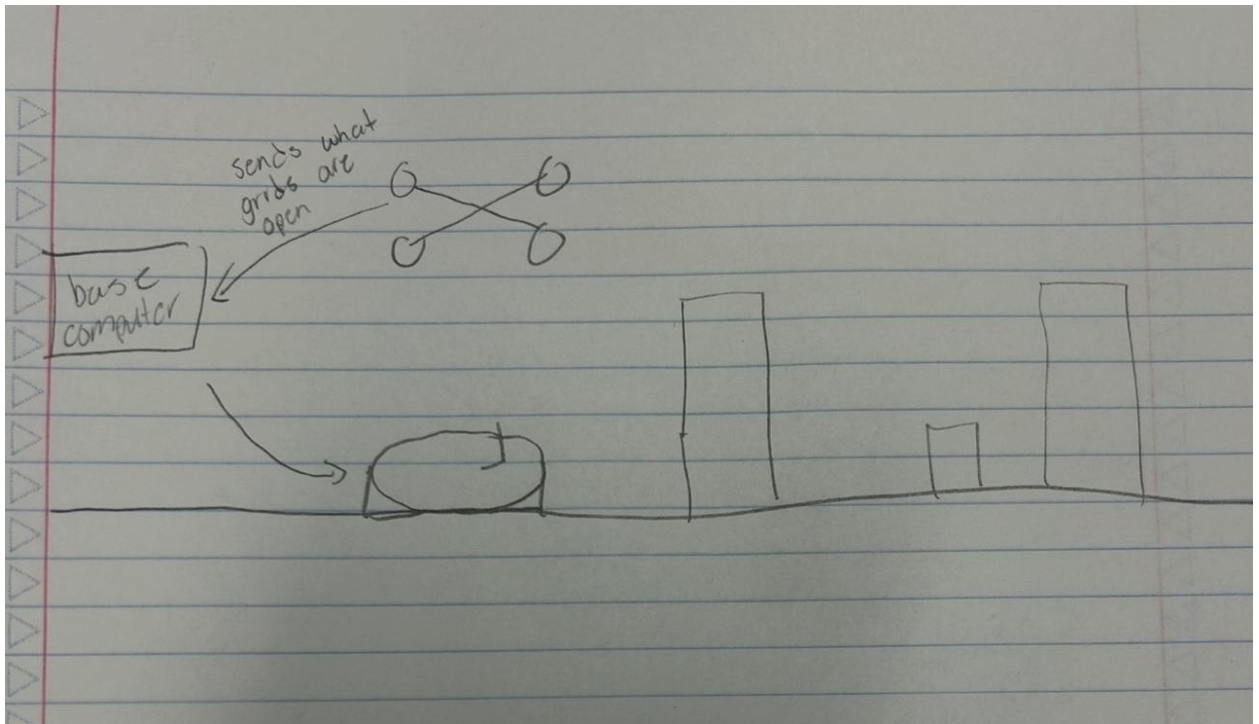
- Finished Section 1 of Design Document
- Brainstormed ideas for functionality



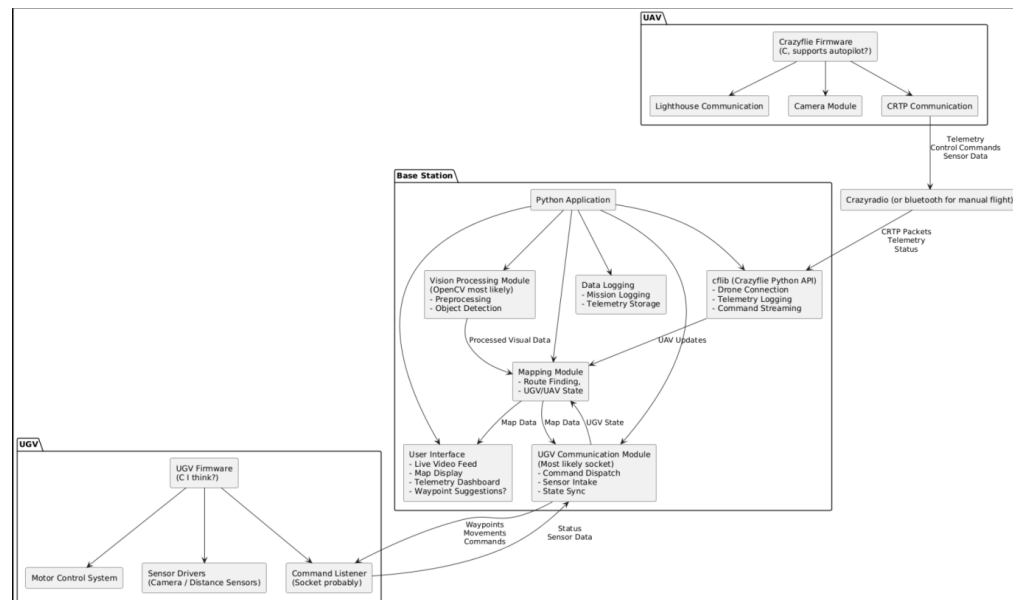
Drone is used as a marker for the CyBot to get to for the best pathing. Location Data could be sent to the terminal and then to the CyBot so it knows where to go. Can be used in search and rescue to mark the location of the target. See Technical Documents/Brainstorm/Week 3 for copy

- Second functionality idea

The drone will be used to hover over the cybot while it is moving. The drone will scan the cells that the cybot is next to and determine if they are occupied or blocked. This will help the cybot determine what the fastest path would be.



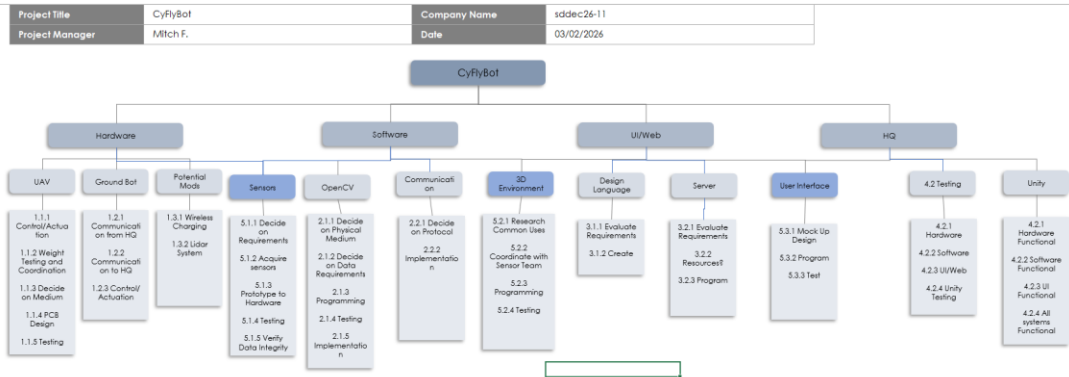
- Software Architecture Brainstorm



See Technical Documents/Brainstorm/Week 3 for Copy

- Work Breakdown Structure Rough Draft Completed

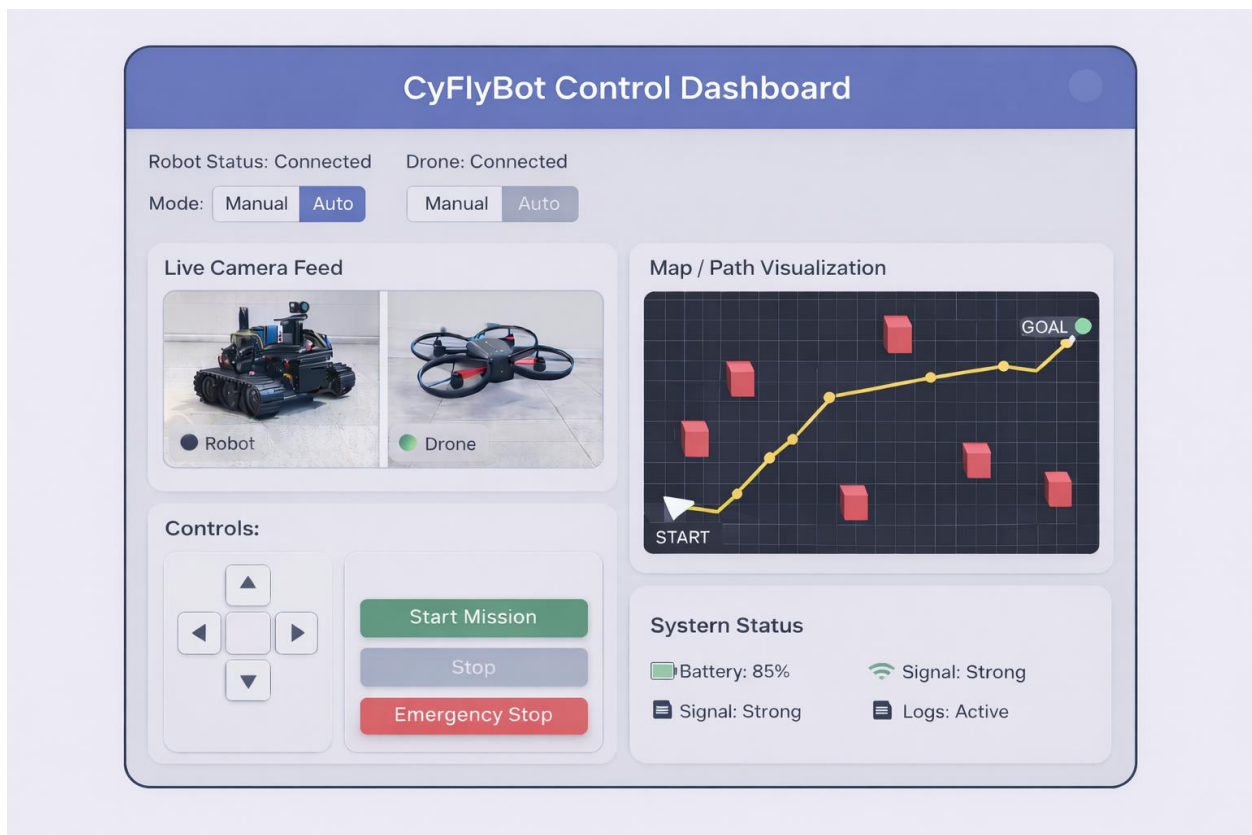
Simple Work Breakdown Structure (WBS)



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See Project SharePoint Documents/Planning and Management for copy

- CyFlyBot Dashboard Interface



Concept of a user interface designed for controlling and monitoring the CyFlyBot system. The layout is organized into multiple sections for user friendliness.

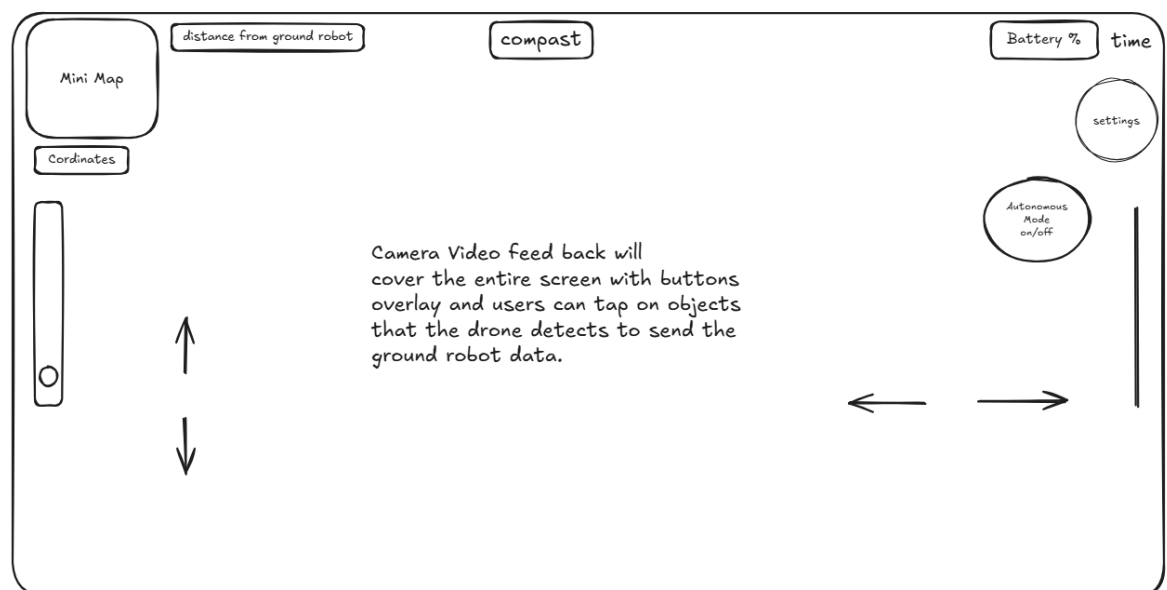
At the top, the system status indicator displays the connection state of both the Cybot and Drone.

The left section of the dashboard shows live camera feed from both the CyBot and Drone, to see real-time visual feedback on the environment. This could be useful to monitor during autonomous operations, as well as during manuals.

On the right side, a map visualization displays the CyBot path and detects obstacles using a grid layout. This could work with how the system identifies obstacles and computes an optimal route to the destination.

The bottom section has control input buttons for manual control and mission control like start mission and stops. Also, with other useful information such as battery life, signal strength, and system logs. These will allow the user to quickly know if the system is working correctly.

- Controller Interface of the UI



The controller interface will have the camera video feed covering almost the entire screen to give the user a clear, real-time view from the drone. It will include interactive overlays so users can tap on objects that the drone detects and send that information directly to the ground robot. In the top left corner, there will be a mini map with coordinates and the distance from the ground robot to help with positioning and awareness. At the top center, there will be a compass, and on the top right, battery percentage and time will be displayed so the user can monitor system status. The interface will also include a settings button and an autonomous mode on/off toggle so the user can easily switch between manual and automatic

control. On the sides, there will be sliders and directional arrows that allow the operator to manually adjust movement when needed.

Pending Issues

- Brainstorm more ideas
- Work on and Finish Part 2 of Team Design Document
- Continuing research on Generalized Topics (including articles provided by Dr. Rover)
- Work on Dr. Rovers Recommended Skill Document
- Research Bitcraze Crazyflie 2.1 brushless drone (weight capacity specifically)

Plans for Coming Week

- Prepare for meeting with Dr. Rover and Dr. Jones
- Continue Brainstorming (3 new articles of brainstorming)
- Continue Project Management Documentation (Scope/ Project Lifecycle/ Gantt Next)
- Continue Lightning Talk presentation preparation
- Continue Researching
 - Hardware
 - Software
 - UI/Web

Individual Contributions

Daniel Bieber

- Brainstormed Functionality Idea with Documentation (20 minutes)

John Brittain

- Brainstormed application scenarios and created initial presentation (90 minutes)

Jake Nickel

- Worked on the introduction for the design document (25 minutes)
- Brainstormed Functionality idea with how the quadcopter could be used (40 minutes)

Caleb Sanchez

- Brainstormed Software Architecture Idea with Documentation (60 minutes)

Tu Reh

- Brainstormed and developed a conceptual CyFlyBot Dashboard Interface (45 min)

Ping Wu

- Brainstormed the controller interface for the UI (30 min)

Mitchell Fowler

- Researched LiDAR and Wireless Charging (1 Hour)
- Produced WBS Document (45 Minutes)
- Presentation Preparation/ Application Scenarios (15 Minutes)
- Report 3 writing (20 Minutes)