

sdmay19-35: Implementing a Web Portal System for Drone Simulation and Control

Week 5 Report

October 13 – October 19

Client: Ali Jannesari

Faculty Advisor: Ali Jannesari

Team Members

Bansho — *Test Engineer. Back-end Developer.*

Ian — *Scrum Master. Front-end Developer.*

Li — *Test Engineer. Back-end Developer.*

Jawad — *Meeting Manager. Back-end Developer.*

Mehul — *Project Lead. Back-end Developer.*

Sammy — *Report Manager. Front-end Developer.*

Summary of Progress this Report

- Added a terminal using the NPM package [terminal-in-react](#)
 - Fixed the width at 300 pixels and the height at 200 pixels which gives a comfortably sized terminal without taking up too much screen space.
 - Positioned the terminal using CSS. Absolutely positioned in the bottom left of the simulation.
 - Added 2 movement functions “ascend” and “descend” to move about the Y axis.
 - Utilize the terminal’s terminalQueue to execute the functions that cause movement to our drone when the user enters a corresponding function (ie. ascend 10).
- Added an on-screen joystick using the NPM package [react-nipple](#)
 - Positioned in the bottom right hand corner of the screen.
 - Only controls the following horizontal movement:
 - Forward
 - Backward
 - Left
 - Right
 - Moving the joystick will output directions for x of “left” or “right” and y of “up” or “down”. The values are used to determine which movement methods should be called and which should be called together.
 - As such, the angle does not come into play at the moment, so control is not completely realistic at this time.

Pending Issues

- The functions executed through the terminal seem to always default to the default value of 10, so ascend 1000 is the same as ascend 10.
 - All keyboard input is captured by the terminal when it should really only capture it when the terminal is focused.
 - Minimizing/closing the terminal does not look good and should be improved.
 - The joystick does not take into account the angle, which should be used in determining movement.
-

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Bansho	Began learning about and setting up the Raspberry PI	6	31
Ian	Added terminal and mapped commands to drone movement methods.	7	36
Jawad	Researched methods of converting binary to ROS commands and communication over sockets.	5	32
Li	Explored options for drones	5	30
Mehul	Researched different approaches to computer vision and converting images to 3D models/environments.	4	31
Sammy	Added on-screen joystick and mapped commands to the appropriate movement methods.	5	36

Plans for Upcoming Reporting Period

- Frontend
 - Add additional movement command support, such as: forward, backward, left, and right, and rotation about the Y axis.
 - Consider the angle of the joystick in the movement.
 - Improve the movement and tweak the physics to be more believable.
 - Make each propeller rotate and adjust their speed individually depending on the movement.
- Backend
 - Set up ROS and start interfacing with the front-end.
 - Set up Raspberry PI camera if it is received.
 - Start implementing computer vision techniques.
 - Establish communication between ROS and the Raspberry PI to mock the communication with the drone.
 - Explore more drone options and determine the best choice.