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

Week 1 Report
September 14 - September 21

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.*
Sammy — *Report Manager. Front-end Developer.*
Mehul — *Project Lead. Back-end Developer.*

Summary of Progress this Report

- Researched Gazebo
  - 3D dynamic simulator for populations of Robots in an environment
  - Requirements:
    - Ubuntu (Trusty)
    - Nvidia GPU
  - Modeling a Robot (Drone): SDF for customization
  - SDF: XML based design format
- Researched ROS
  - Gazebo_ros_control
  - Wrappers, tools and additional APIs
  - Works with standalone Gazebo debian
- Researched Gazebo - ROS integration
  - Gazebo creates scenarios and adds physical aspects such as gravity and inertia
  - ROS is an interface for the robot's interaction with the environment
  - Use of Rviz etc. for visualization of Robot info
- Researched ReactJS
  - Powerful JavaScript library for creating user interfaces.
  - Encapsulated components that manage their own logic and view.
  - Efficiently updates and renders only the necessary components.
  - Flexible, easy to transition from React to React Native (or other library/framework).
- Researched Gazebo - Web integration
  - Gazebo provides a WebGL client for Gazebo called GzWeb
  - The process requires 5 components: 4 servers and a client.
- Determined roles:
  - Meeting Manager - Jawad
  - Report Manager - Sammy
  - Test Engineer - Bansho and Li
  - Scrum Master - Ian
  - Project Lead - Mehul
- Finish setting up our git repository and Trello; distribute necessary invites.
- Developed a rough draft of our project plan version 1.

- Created high-level component diagrams for the front-end.
- Designed rough screen-sketches for the front-end.
- Compiled research and visual aids into a presentation.

Pending Issues

Determine rough estimates for some project plan attributes such as the number of sprints and a tentative completion date.

Plans for Upcoming Reporting Period

- Revise project plan version 1
- Back-end:
  - Story card 1: Investigate ROS
  - Story card 2: Investigate Gazebo
  - Story card 3: Setup the environment
- Front-end:
  - Story card 1: Setup a website that will show a simple simulation environment. The first prototype will allow the drone to move up, down, left, and right.
  - Story card 2: Improve drone mobility, move in all directions and rotate.

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Bansho	Created Trello. Researched ROS. Researched Gazebo and its integration with ROS.	6	6
Ian	Distributed necessary invites for Gitlab and Trello. Researched ReactJS. Created high-level component diagrams for the front-end	7	7
Li	Researched ROS. Researched Gazebo and its integration with ROS.	6	6
Jawad	Researched ROS. Researched Gazebo and its integration with ROS.	7	7
Sammy	Researched ReactJS. Created rough screen-sketches for front-end.	6	6
Mehul	Developed rough draft of our project plan version 1. Created Trello. Researched ROS. Researched Gazebo and its integration with ROS.	8	8