EE/CprE/SE 4920 WEEKLY REPORT 04

February 28 - March 13

sdmay25-21

Distributing a Fleet of Drones over an Area with No-Fly Zones

Trajcevski, Goce Advisor

Nicholas Kokott - Team Organizer and Backend Lead
Melani Hodge - Algorithm Design/Implementation
Cole Stuedeman - Testing
Everett Duffy - Component/Module Design
Ken Schueman - Frontend Lead
Samuel Russett - Research Discovery and Testing

Weekly Summary

Frontend Development

The team has made significant strides in integrating backend systems and resolving CI/CD pipeline issues. Initial data visualization components have been started, and the team is working on connecting the frontend to the server for comprehensive testing and user interaction.

Backend Development

Continued progress on parsing and integrating the algorithm code. The team has made headway in breaking down the complex JSON output and working through the challenges of the graduate student's code. Initial server deployment preparations are underway.

Past week accomplishments

Nick Kokott: I have integrated the graduate student's partitioning algorithms into the API. These calls sadly do take forever due to the complexity of his code. There were 3 types that I had to integrate, that being no kd tree, half perimeter decomposition, and native kd partitioning. These were somewhat similar but required me to delve deeper into his code. On top of this I also dockerized the backend in order for the frontend to be able to easier launch and test their code alongside the backend. This currently pulls in a postgresql and a redis container on top of our container in order to maintain full functionality. | This weeks: 14 hours | Total: 73 hours

Kenneth Schueman: Initiated development of data visualization components for algorithm output. Completed initial backend data parsing implementation and began integrating these components with the frontend communication protocols. | This week: 11 hours | Total: 83 Hours

Everett Duffy: This week: Implemented websocket communication within original API calls. With this functionality we will be able to send information in real time to the front end regarding the current operations happening in the backend. Now we can decide which intermediate steps we want to display on the fronted. (8 hours) | Total: 39 hours

Cole Stuedeman: I have been working on parsing the geoJSON files we have received from the graduate student. Using different classes, I could successfully parse the information we needed for most of the files. My goal is to successfully parse the last two and then work on a single geoJSON parser that will parse all of these geoJSON files and new files if they are added in the future. This week: (7 hours) | Total: 35 hours

Sam Russett: I worked on implementing and testing the API calls completed by the backend for loading appropriate data into the frontend. Frontend work should now be able to be completed more smoothly now that we have access to these API calls, I also continued talking with the frontend team on what pages/functionalities should be completed next.
This week: 5 hours | Total: 38 hours

Melani Hodge: I worked on setting up the server for the frontend in AWS on an EC2. I originally was going to try and set up the server on a remote host which ran into some security issues while trying to get it run. This is why I chose to run the server on an EC2. My goal is to get the backend up and running on another server so that our app can fully function (after setting up APIs). This week: 8 hours | Total: 41 hours

Pending issues ***(If applicable: Were there any unexpected complications? Please elaborate.)***

1. Continued need for algorithm code refactoring
2. Ongoing implementation of comprehensive error handling
3. Finalizing server deployment security configurations
4. Ensuring smooth frontend-backend integration

Comments and extended discussion ***(Optional)***

None

Plans for the upcoming week

Nick Kokott: Get drones onto the map (one per partition), and hopefully get them moving. This will require some outside libraries to help achieve, and I am looking into their usages as we speak.

Kenneth Schueman: Complete the initial data visualization components and begin integration testing with the backend data parsing implementation. Start developing more advanced visualization features.

Everett Duffy: Working with Nick to find libraries that can display drones onto maps and associated with partitions. Having the drones move in real time is a big part of our functionality.

Cole Stuedeman: This week's goal is to complete the universal geoJSON parser and test more functionality on our API and partition model using Django.

Sam Russett: Have a more detailed plan of frontend pages/functionalities to be completed, and continue implementing the API calls supplied by the backend.

Melani Hodge: For this week, my goal is to fully setup the backend on another server and show communication between the backend and the frontend in the application. This will allow us to show the app fully functioning hopefully by the end of spring break.

Summary of weekly advisor meeting (*If applicable/optional)*

Discussed progress on algorithm integration and server deployment. Advisor provided guidance on optimization strategies and recommended additional resources for handling complex geographical calculations. Received positive feedback on the team's systematic approach to code integration and testing.