EE/CprE/SE 4920 WEEKLY REPORT 03

February 14 - 27

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

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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 progress in integrating the frontend with the backend systems. The frontend team successfully implemented the planned UI components, while the backend team has begun processing and restructuring the PhD student's algorithm code for integration. The CI/CD pipeline has been established, improving our development workflow.

Backend Development

Work has begun on parsing and integrating the provided algorithm code. While challenges remain with the code's structure, initial progress has been made in breaking down the complex JSON output into more manageable components. The given code from the grad student has proven difficult to work with and read through as well. We are attempting to get more clarification on how he breaks things down for our own benefit.

Past week accomplishments

Nick Kokott: This week I've worked heavily on understanding the grad students partitioning algorithm and how he creates that. It has been rather difficult to integrate into the backend, however once this is done a good chunk of the backend is complete and will just require testing to ensure its quality. On top of this I have also tested that the frontend can call the already set in place no-fly zone generation API and get the data they need. I previously did this with Postman just to test it out. | This weeks: 12 hours | Total: 71 hours

Kenneth Schueman: Completed the frontend design components planned last week. Implemented initial backend communication protocols for data transfer. Created documentation for the frontend-backend integration process. Successfully transitioned to assisting with backend data parsing. | This weeks: 9 hours | Total: 72 Hours

Everett Duffy: Working on reconfiguring the web socket to be just an output after the frontend connects to it. This is for our algorithm dump aspect of the design, where during no fly zone and partition generation steps and algorithm data gets computed and thrown out to the user. This is something that our advisor wants from us, so this needs to get done. (8 hours) | Total: 31 hours

Cole Stuedeman: I have been implementing more static FAA data into the database and loading it as maps. This will be important for our base setups that users can select between, if they just want to see how the product works without making their own map. (7 hours) | Total: 28 hours

Sam Russett: Met with the frontend team and decided that we need more backend progress in data parsing to move forward with the frontend work. Planned out what remaining pages and components need to be added to the frontend in the future, and made the decision to look into helping the backend team with interpreting and modifying the grad student's code for our needs. This week: 5 hours | Total: 33 hours

Melani Hodge: I met with the frontend team and discussed future work to be done in the frontend. We are currently waiting on more APIs from the backend to implement in the frontend. Otherwise in the meantime, I got docker working in the frontend for the CI/CD pipeline. This week: 6 hours | Total: 33 hours

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

1. The algorithm code still requires additional refactoring for optimal performance
2. Need to implement error handling for edge cases in the algorithm output
3. Server deployment requires additional security configurations

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

None

Plans for the upcoming week

Nick Kokott: To continue chugging away on the partitioning code and trying to get that integrated properly into the backend. I also want to get our backend ported onto a server that can constantly run the backend and database. Beyond this week, I want to get the backend dockerized in order to make sure that things don't go awry if the backend is put on other platforms.

Kenneth Schueman: Complete the backend data parsing implementation and begin work on data visualization components for the processed algorithm output.

Everett Duffy: Continue to work on the sockets, and get that integrated into the API calls so that during calls, data can be computed and displayed back out to the user.

Cole Stuedeman: Work on implementing more tests for the static FAA datasets, as well as get tests in to ensure partitions are being calculated properly, and to the amount specified.

Sam Russett: Take a deeper dive into the new repository shared with us by the grad student, run it and understand how it works, and communicate with the backend team to figure out what modifications need to be made to fit our needs.

Melani Hodge: I need to fix all broken tests in the CI/CD pipeline for the frontend so that it is usable in the foreseeable future. I also need to connect the frontend to the server so that our application can be up and running for users to use or for our team to test functionality.

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

Met with advisor to review progress on algorithm integration. Discussed challenges with code optimization and received guidance on potential approaches for improving performance. Advisor suggested additional resources for handling complex geographical calculations.