

Weekly Scrum Report

Team I: Will Weidler, Brennen Crawford, Bailey Schoenike, Donovan Bale, Lucas Wiley

Air-to-Ground Search 3/12/25

- What did you do this week?

Lucas implemented the ability for the drone to scan in a 2x3 grid in front of it. It does this by creating a new grid of all 0s, the same size as the map. Then, each time the drone moves it updates those 0s. It then compares the updated values to the 0s of the original map, and turns it into a percentage.

Will focused on implementing a lot of the front end of the project so that it would be ready for the demo in class on 3/12/25. This took a lot of research on different Blazor components and different C# libraries. Currently, the Blazor project has a home page that defines the project, has the team name and the team members. It then prompts the user to generate a grid. On the generate grid page, you can press the generate grid button, which runs the python script that generates the grid in the backend, and saves it in the wwwroot/outputs folder. You can download every part of the generated grid, including the png, json, csv, and txt output. You can also clear the grid, which deletes all generated files.

Along with that page, Will also created a Run Algorithm page which fills the page with the generated grid, if the user selected that first. I then have an import page where you can import a saved grid from your file system. This then moves these files to wwwroot/outputs so the python scripts can access it. If a grid exists, you can select one of two algorithms, A* and Dijkstra (not yet implemented) to run a pathing algorithm through. The site does not let you run the algorithm script unless you have a saved generated grid or imported grid. The site prioritizes an imported grid over a generated grid, so to use a generated grid, you must first clear the imported grid with the clear grid button.

Bailey has been focused on environment debugging, as issues have arisen with how the repository is cloned onto windows systems. These issues have led to the creation of a .gitattributes file, which is pending review as testing that on a branch is not possible. Once this is reviewed and implemented we should have no further environmental issues. Bailey also has the draft for a pixel enlargement for the starting pixel on our png done, but was fixing this first.

Brennen worked on researching our A star algorithm and added some functionality to the A star script. Trying to work the algorithm into the context of the code given by Boeing has proved to be a challenge but shouldn't require too much of an issue to make work. Further work will be needed before implementation and testing.

- What went well?

Getting the scanning feature in. np has a lot of built-in functions like zeros_like to automatically compare the size of an array, and create a new one, filled with zeroes.

The implementation of the new Blazor pages went very smoothly. It did take a lot of research, but came together pretty quickly and Will felt he learned a lot. The site works flawlessly with the python scripts that run in the user's docker container, and outputs the correct data. It is very intuitive to new users, and Will tested many edge cases to ensure that all bugs were addressed in the current build.

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- What could be improved?

Personally, I would like it if the blazor server had the ability to do the manual navigation, but that would be a stretch goal as the point is to do the A* pathing. Maybe we could compare the user to A* (or other path finding algorithms), to see which performs the best. Also, Being able to track the scanned map visually would be useful. But that is a blazor side change.

We're getting close to holidays too, so work may slow down, but we plan to push harder to ensure continual progress on the project. It will be easy for us to stop work during the next gaps in classes, but to ensure we stay on our scrum schedule, we need to keep marking off issues.

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SPRINT RETROSPECTIVE:

- What went well?

Overall, our project is going at a smooth pace. We're able to generate a map with designated points for the drone and goal. Our Blazor infrastructure has made saving the images locally an easy and straightforward process. The code provided by Boeing has proved useful and easy to modify. Additionally, the Docker containers have made coding easier since we're all working on different machines to code. We're also able to navigate the map manually, and detect how much of the navigable map has been explored.

- What new ideas do we have?

Looking forward, we would like to implement the search algorithms so the device can navigate the map. This would include A* and Dijkstra's algorithm. We may also implement a basic breadth first and depth first search, but those first two algorithms come first. We also plan to visualize the scanned version of the map. These features will start to be implemented in the next sprint in order for there to be adequate time for testing and refinements.

- What went poorly?

One issue we've run into is compatibility issues between Blazor and Docker. While Docker is a helpful tool for us and allows us to run everything in our own environment, it makes running things outside of our local environment difficult. We will continue to work on familiarizing ourselves with this tool to ensure continued development for our project goes smoothly and organized.

Another issue that we ran into was finding time for our team to meet within our busy schedule. A lot of us are very invested in different campus organizations, so conflicts often arise with when we may be able to meet to determine what needs to come out of the backlog for the given week.

- What actions will we take?

Looking into the future, we will continue to work on our backend development, while ensuring everything runs smoothly on our front end design. We'll work on further implementation on A star, as well as continue to work on linking our front end and back end systems while we transition through our upcoming break. We will also continue to utilize GitHub Projects to create issues, assign projects to members, and track progress as we continue into the next sprint.

To mitigate scheduling issues, we will continue to be open about our weekly schedule early, so our team can find a good time for us to meet to plan each week. We will also make sure to fit our given projects into our schedules, ensuring that the projects continue to get done in the sprint allotted. This organization through GitHub Projects will help keep us organized and driven to complete issues.