Project Proposal - Joey Musholt - CSPB 3112 - Summer 2025

Vision Statement
My project this semester will be to build a simple web app sitting on top of public forestry data from the City of St. Louis, MO that enables users to learn more about their allergen exposure at a given location in the city by providing tree pollens they are allergic to. The front-end should be simple and flexible and the backend should do as much as possible to simplify the huge dataset into a few key indicators that are valuable to the user. Ideally, there will be maps and visuals to convey information alongside some simple numbers.

My learning goal for this project is to come away from it knowing how to set up a simple web app from back to front. Specifically, I want to learn more about best practices for hosting, data storage/retrieval, the front-end of a website, and the back-end server that keeps everything connected.

Motivation
I want to be comfortable with the end-to-end process of standing up a website in order to build a project portfolio as well as build interesting and useful apps in the future. I'm not necessarily interested in building websites professionally, but any project is much more useful and able to be showcased if users can interact with it simply in the browser, so it is a skillset I look forward to being able to reach for in the future. Additionally, the particular project I have in mind is something that would be useful and novel to someone like me with tree pollen allergies.

Goals
Below are some checkpoints for the project.

Weeks 3-5 - Explore the dataset and build the logic for a proof-of-concept for calculating allergen density given an arbitrary point in the city. Should be able to provide allergen species and a coordinate and receive information about allergen risk at that point.

Weeks 6-7 - Design and implement a front-end page with dummy data. This should include a drop-down for allergen selections and spaces for key measures like # of trees within X distance(s) and how the allergen density compares to the city average.

Weeks 8-10 - Design and build the back-end. This should include data storage and a server (potentially in Flask) to handle inputs from the front-end user selections, calculation of metrics from the data, and updating the front-end visuals.

Weeks 11-12 - add features beyond the minimum viable product. On the back-end this could include auto-refreshing the dataset from its public source. On the front-end this could include things like an embedded map visual, a mobile-friendly layout, or other features that arise from the development process.

Risks to Project Completion
The primary hurdle in this project is not necessarily writing the code but learning the new technologies necessary to pull it together. Mainly, I need to refresh my knowledge of HTML/CSS/JS and completely learn a back-end framework from scratch. Forecasting timelines with tools I've never used before can be tricky, so the risk factor I am most concerned about is ensuring I have enough time to make something useful without getting overly ambitious.

Mitigation
My strategy to mitigate the risks above is to focus on building the core systems necessary into a minimum viable product and then adding additional features once those are complete. If I can learn the back-end quickly enough, I will have more time to add some of the additional features I outlined among the goals. On the other hand, if getting the back-end working takes longer than I thought, I still have time to finish the MVP and will still have something useful by the end of the course even if it is missing some of the extra features that I'd ideally like to include.

Project Assessment
I will assess the project's completeness by whether a user can get useful and accurate results about the allergen density near their location within a few simple steps. The web page should be quick to load and provide info such as the city's overall allergen density for their provided allergens and how these compare to their immediate area.

Project Portfolio Link
https://joeymu.github.io/