

Project Proposal - Andrew Fu, Daniel James Rodgers, Xintong Song

https://github.com/DanJamRod/babo_direct

The Big Idea

Our project's aim is to help people navigate around Babson as often visitors, freshmen, and exchange students have difficulty finding certain buildings on campus. Our minimum viable product is a website that will allow a user to input a start location and an end location, with our program outputting step-by-step directions along with pictures of the route ([low fidelity mockup](#)). Our idea will explore decision theory mathematics, particularly graph theory, and our program will rely heavily on boolean logic and conditional statements. Possible stretch goals include indoor mapping (floors or room numbers), a map that displays the paths the user should take, an estimated time for the journey, and a choice of multiple possible routes.

Learning Goals

As a team, we want to further develop our Python coding technical skills, as well as our ability to apply them to solve a problem. We haven't worked together as a group before in an academic setting and we want to make sure everything goes smoothly as well in terms of coding, work coordination, and scheduling.

Implementation Plan

There are many open-source base codes for Dijkstra's (shortest path) algorithm, and we plan to edit and optimize one for our project. We used [Ben Alex Keen's](#) for our feasibility test, but there are many alternatives. Our first step will be to map the entire college into nodes and edges ([example](#)), and then set arbitrary distances for the edge weights ([example](#)). Our next step will be to format the output ([example](#), 93-121), so that for example the program knows whether the user should "cross" a road, or "continue along" a road. Our next step will be to take photos of each edge in both directions, and write conditional statements to determine which should be outputted and in what order. Our next step will be to implement this code on a user-friendly website. Our final step will be to evaluate and explore whether to pursue our stretch goals.

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Project Schedule

Time	Due
Week 1 - 3/10 - Tuesday	Map Babson with nodes, edges, and weights
Week 2 - 3/17 - Tuesday	Translate the map into code
Week 3 - 3/24 - Tuesday	Have all the relevant pictures uploaded
Week 4 - 3/31 - Tuesday	Complete code for minimum viable product
Week 5 - 4/07 - Tuesday	Mid-Project Presentation, Website draft
Week 6 - 4/14 - Tuesday	Website finalised, Stretch goals explored
Week 7 - 4/21 - Tuesday	Robustly test and debug code
Week 8 - 4/28 - Tuesday	Final presentation and demonstration

Collaboration plan

- Flat & Fluid Organization Structure
 - No formal delineation of roles
 - Share responsibilities for strategy and implementation issues
- Communication Channel
 - Facebook Messenger
- Task
 - Split tasks up based on personal preference and strength
- Meeting
 - In-person meeting twice every week to check on each other's progress
- Product Development Process
 - Build a product road map together
 - Adjust priorities constantly based on what features we are going to build
 - Respect different ideas and expectations to have open conversations

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Risks

One of the biggest risks that we see to the success of this project is the completion of the final product. While the idea is comprehensible, the coding behind it will be challenging, thus it will take a lot of googling and office hours for help. With that said, however, we look forward to the challenge.

Additional Course Content

Some topics that we covered so far in class that would prove to be extremely helpful are lists, functions, conditional statements, for and while loops. Lists are helpful because they can index and store data, which will include images in our case. For and while loops are useful because they will be used in the entirety of the code, as the user needs to get from point A to point B, after which the program will end.