

Elevation Navigation Project

CS 520

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Group - "The Group"

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Final Project

Due Date: 12/10/2019

Problem Statement

For the final project our team chose to develop an elevation navigation based map. Our project is unique in that we aimed to create a more friendly user interface compared to other maps that already exist. Additionally, we wanted to tailor our project to help the basic UMass Amherst student.

Investigation/Research

Our group went through quite a bit of trial and error. The first decision was how we were going to display this project to a user. We were dabbling between a regular web page and a local host web page. From here we began researching the google maps API and how portions of that API could be useful to assist us in our project. Furthermore we began to research OSMNX to help us attain an optimal routing solution between two points.

Optimum Solution

After trying to attain a host server it was decided we did not want to go with a normal web page, therefore we decided to set this all up on a local host web page. Our consensus was to use the google maps API for the visual displays of our maps. From here we moved into implementing OSMNX into our project to determine the routing choice displayed to the user.

User Interface

As stated in our Problem Statement, the unique portion of our project lies within the user interface. Our goal was not only to make this web page attractive to the common user, but to also have more appeal to UMass Amherst students. To tackle the first portion of this we created a user interface which, in our opinion was very appealing to the common user. Our interface includes two fully functional search bars with address recognition through the google API. This feature makes searching for the starting point and the destination much easier for a user identical to searching through google maps. The interface also includes a sliding scale in reference to the elevation. This slider, which is displayed from 0-100, is for the user to choose the importance of the change in elevation along the route. Lastly, There is a information bubble incorporated within the interface. This bubble displays information about the route to the user.

"The Quick Access Menu"

This portion of our project is where we really aimed to differentiate ourselves. The Quick Access Menu located right under both of the search bars. This feature allows the user to access a drop down menu which has the capability to house every building on the UMass Amherst campus. Currently, this feature houses some of the most common buildings.

Problems Encountered

As our group worked through this project there were several struggles we all encountered. The fact that none of us really had sufficient knowledge on how to use complicated API's in depth really worked against us as we progressed through both the Google API and OSMNX. Additionally, the routing algorithm posed a big challenge to our team and took some time to get working properly.

Final Evaluation

Being that a main focus of our project was the user interface, we felt that the only way to ensure that we designed a good user interface was to actually get it critiqued by the average UMass user. We gave this test program to five typical users to gain some additional information on how to better create this application and received some great critiques. The following replies are some of these useful tips. User 1 - "I was a bit confused on the application for this program. At first I thought it was to plan a running route, that would be cooler in my opinion. If I was able to choose the total distance I wanted to run and the total elevation change and this program gave me potential routes in an allotted area, that would be ideal. User 2 - "The drop down menu was a good idea. It saved time because when I searched for specific buildings there were tons of results before the result I was looking for. The drop down menu was cool because it was unique to my needs." User 3 - "A history tab could be useful. But what I would really love to see is the hours of operation of the destination."

References

- [1] Google Developers. (2019). Google Maps Platform — Google Developers. [online] Available at: <https://developers.google.com/maps/documentation> [Accessed 9 Dec. 2019].
- [2] Geoff Boeing. (2019). OSMnx: Python for Street Networks. [online] Available at: <https://geoffboeing.com/2016/11/osmnx-python-street-networks/> [Accessed 9 Dec. 2019]. August 2005]. Available from World Wide Web: (<http://www.ece.iit.edu/~flueck/ece100>).