Topic: Locating Gender-Neutral Bathrooms on Campus

Elevator Speech:

A hot issue recently is the inclusion of gender-neutral bathrooms in public places. As more places begin to declare bathrooms as gender neutral, locating them can be difficult for people who need to use them. My idea is to make a phone app that will guide users to the nearest gender-neutral bathroom depending on their location on campus. PRISM, TCNJ’s LGBT organization, has a list of known gender-neutral bathrooms on campus, so these locations can be added to a map. The app can take in a user’s location, either via specifying a location on a map or by GPS signal (depending on the scope of the project), and determine the nearest gender-neutral bathroom on TCNJ’s campus. The list of available bathrooms should be updated as more are added to TCNJ’s campus. Possible ideas of implementation are dividing the campus into a grid and being able to calculate the distances from the bathroom locations to the user’s location, and present the closest bathroom (Dijkstra’s Algorithm). Similar open source apps exist, but this one would be specific to TCNJ’s campus, leave comments about each bathroom, post messages of support?, divide by residential and open buildings, give information about PRISM.

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10/11/17

Assignment 3: OSS Project Proposal

Github: https://github.com/saboj2/Assignment3\_Sabo

In the past few years, issues regarding allowing the use of gender-neutral bathrooms by transgender and genderqueer individuals have become a topic of debate at the national level. Over time, different institutions and businesses have begun declaring their bathrooms as gender-neutral or unisex bathrooms, meaning they allow for people who don’t identify with their assigned gender at birth, or any constructs of gender for that matter, to comfortably use their bathrooms without needing to fit the binary norm. Since these bathrooms are not yet a guarantee for most businesses or institutions, locating them can be somewhat difficult. However, access to bathrooms are a necessity for all people regardless of gender alignment.

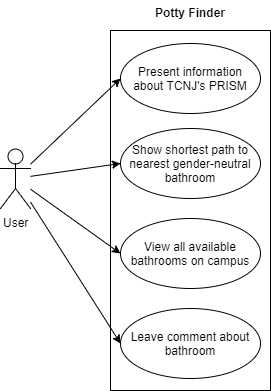
My plan is to create an android app to direct users to the nearest gender-neutral bathroom located on TCNJ’s campus. My application will also provide resources about TCNJ’s gay-straight alliance, PRISM. Since I am making my own app, I chose option 1. Although there is already an open-source project that focuses on locating gender-neutral bathrooms, my application will be specific to TCNJ’s campus, and perform some basic mapping of sidewalks on TCNJ’s campus. This accuracy in such a small area is important because bathrooms are something that need to be accessed in a very short amount of time. Also, college students may not always have access to their own private bathrooms if they are living in dormitories, so knowing how to get to a nearby gender neutral bathroom will make these students feel more comfortable and welcome on TCNJ’s campus. There are is also the possibility of expanding this to other college campuses, as well as the ability to leave comments about each bathroom to let other people know whether it is safe and clean to use.

To implement this, I’m planning on using a weighted graph data structure to create distances between different sidewalk junctions. Certain destination vertices will be specified as the usable bathrooms, and the app will determine the shortest path to the nearest bathroom vertex and outline the path by comparing the weighted connections between the vertices. The app will also differentiate between residential buildings and public buildings. Some gender-neutral bathrooms are located within residential buildings that require special access to enter, so it is important to make sure the user can actually find a bathroom they can use.

The algorithm that will be used to find the shortest paths will be Dijkstra’s algorithm. This algorithm goes through each node in a graph structure and compares the distances between neighboring nodes until it finally results in the shortest path to a node. Both the algorithm and the data structure should be able to incorporate newly added nodes in the event that new bathrooms or buildings are added to TCNJ’s campus.

Java is the main language used for developing android apps. Java, graph data structures, and Dijkstra’s algorithm were learned in CSC 250. However, coding android apps is something I have little experience with, so learning the more advanced and specific coding techniques required for making a working android app will need to be researched. Also, front-end programming techniques will also need to be researched to make features like a user interface and different graphics. The Android Studio IDE will be used to develop the app. The IDE has a lot of documentation to go with it, and the java language is extremely well documented as well. Also resources like Lynda.com can be very helpful for learning the important skills required for undertaking this project.

A UML use-case diagram is provided for better understanding of the overall functionality of this app.



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