

## 1. Metadata

***Project title:*** NavU

***Team members:***

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## 2. What is your project?

### ***Summary***

Our project is an offline application for android based systems that helps students navigate their way through confusing University buildings. The app provides two dimensional floor plans of select buildings in Carleton along with features to help the user find their way, such as step by step directions, search functionality, and personalised schedules and notifications when the user has upcoming classes.

### ***Why we chose this project***

We wanted an app that would benefit us and other Carleton students, and teach us about subjects we haven't explored yet in our education like mobile User Interface design, databases, and pathfinding algorithms. Our hope is that this app will be useful to all students, especially first years, who constantly get lost around campus.

Our app will use stored floor plans of Carleton buildings to generate maps, and use the accelerometers and gyroscopes found in most smart phones to keep track of the user, mimicking traditional GPS systems like you'd find in a car.

We think an offline mobile app is the best choice for this kind of app as the wifi is unreliable around campus and as with traditional GPS systems like Google Maps, being able to constantly consult a live map is extremely convenient; and consulting a map on something like a laptop or bigger while walking around hallways is definitely less than convenient.

### 3. **Functional Properties:**

1. Maps
  - a. Store floor plans including all rooms and staircases in some sort of database
2. Directions
  - a. Provide the user with step by step instructions on how to reach their selected destination
3. Search functionality
  - a. Allow the user to quickly search for classes to being directions
4. Schedule
  - a. Allow the user to input their class schedule so we can push them notifications about upcoming classes
5. Movement tracking
  - a. Accelerometer
  - b. Gyroscope

*Use these to keep track of the user as he makes his way through our calculated path*

### 4. **Non-Functional Properties:**

1. Performance
  - a. Fast render times for the maps
  - b. Fast calculation of suggested paths

*These are especially important for users who may be running late, although a well optimized app is always good.*
2. Storage
  - a. Small app size; some phones don't have much storage and we don't want to clutter users' phones
3. Usability
  - a. Clean and easy to navigate UI
  - b. On-screen map is clear and understandable
4. Battery Consumption
  - a. Most phones struggle to last a day on battery, and we want to avoid contributing too heavily to that problem
5. Accessibility
  - a. Offline, so people without Data or solid WiFi can still use the app without worry of getting lost

## **5. User Scenarios**

A first-year student makes their way to Mackenzie building for a class. They know which room number to go to, but have no idea how to get there. The student is already inside the building and there are no maps on the walls to guide them. They open NavU, and select the room nearest them from a list, then their destination room. The app then draws a path on the on-screen map, which the user then follows to arrive at the classroom.

A student has entered their schedule into the NavU app. They are eating lunch in the Food Court before class, and don't notice the time. NavU sends a notification to them, letting them know it is time for class and offers to help with directions. The student enters that they are currently in the Food Court, and the app displays the route to their next class using the on-screen map. The student follows the map and arrives to their class in time.

6. Screen Sketches

