The Proposal for an
Intelligent Campus Route Planning System

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User Research

After I surveyed some students from the school of Computer Science, I noticed students having difficulty locating their lecture room only using their timetable; I noticed this difficulty particularly for year 1 students. I deduced that student confusion is likely because the building name given in student timetables are not usually shown correctly on the mobile map, and sometimes simply cannot be found at all on the mobile map. Due to this issue, students typically use the university-offered online interactive campus map. However, students continue to alternate between timetable and map repeatedly on their phone. Most importantly, the online interactive map is not designed for mobile use and is not functional when used for navigation. Thus, the current campus route method is not sufficient for students who walk around campus. This is why I would like to make a campus route planning system.

Proposed Solution

The solution is a combined system of a timetable and a route planning system. This system will be a mobile web-app that connects with student timetables and plans a route automatically for students to their lecture building. Students will no longer consistently switch between timetable and map, and they can use this system on a mobile browser as they walk around campus. The additional features will include a parking lot display, a market and restaurant display, an updated train schedule to New Street, an overlay of corrected building names, and route planning for bicycles. The surveyed year 1 students suggested many of these solutions. Moreover, this is also a potential campus navigation application for UoB campus visitors.

Functions

1. An automatic route planning system for students.
2. A Search or drop-down menu to select a campus building and show a planned route from the user's geolocation.
3. A function that allows users to view their upcoming and previous lecture.
4. A route planning for bicycles.
5. An updated train schedule to New Street.
6. An overlay of corrected campus building names.
7. A display of parking lots, markets, cafés and restaurants.

Techniques

In this project, most of the functions will be based on JavaScript, and will have a strong connection with front-end development. The main function will be an automatic route planner from student's geolocation to their lecture buildings. Google Maps API will be a preferred selection for the route planning function, due to the improved accuracy of the planned route and increased usability of API compared to others. I will manually locate every lecture

buildings in my building list to correct the inaccurate search results of mobile maps. From the early stage of researching, I found that Google Maps API does not directly provide the route planning from the user's geolocation to the user's destination. However, it provides the function of route planning from two points. Therefore, I will collect the geolocation of the user and combine the route planning API to achieve this goal. The timetable connection service will require students to upload their timetables, as it is rarely possible to get an API from school's database to reach user's timetable. A preliminary idea is to allow users to save their timetable webpage on the MY.BHAM and upload it to this system. It is also possible to collect the train schedule data from National Rail Darwin API.

Prototype
Here are some of prototypes that I designed for this project.
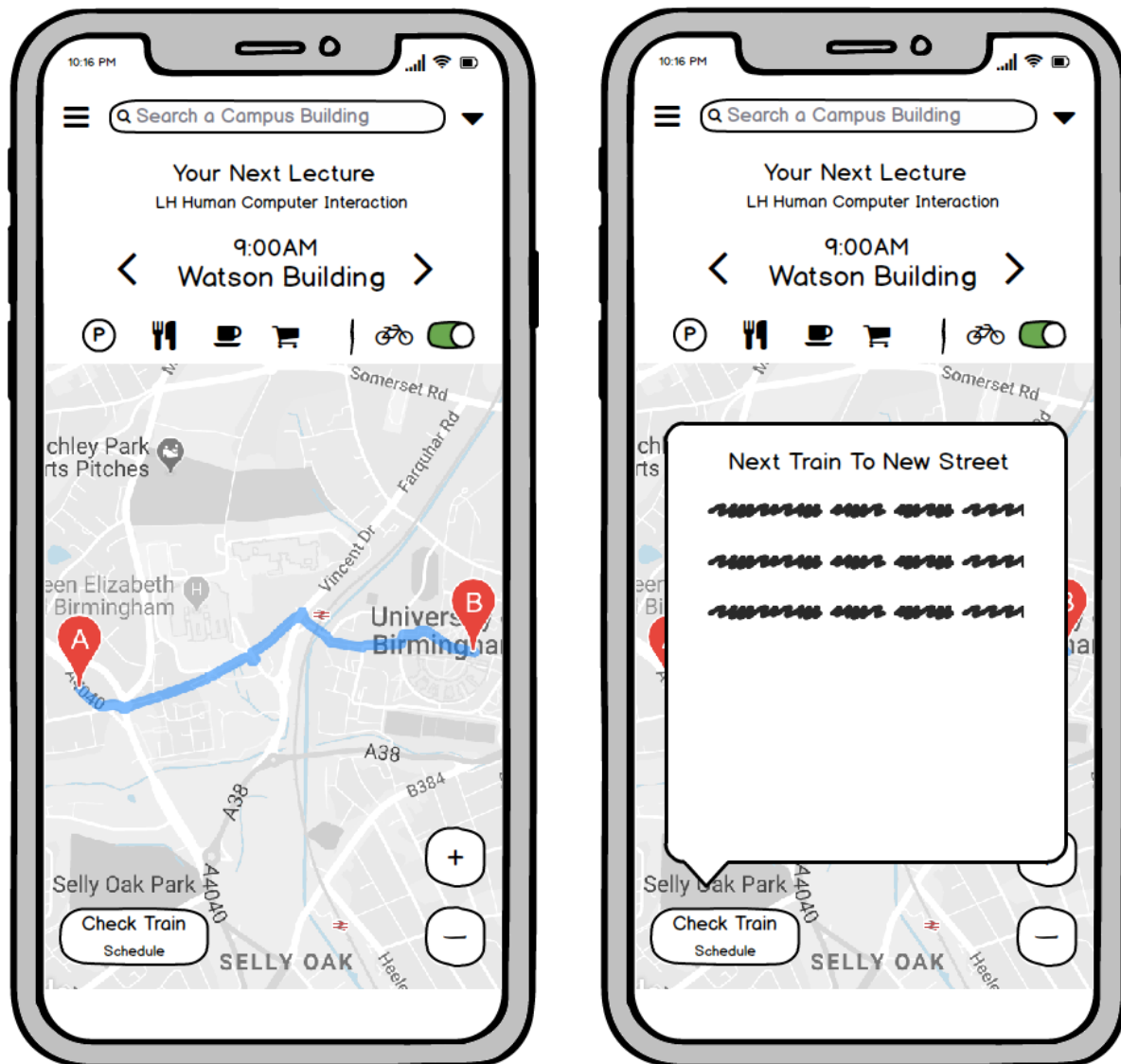
Summary & Plan

This is a multi-function combined system, and as such I will organize all the user requirements and evaluate the time needed first. Then, I will demonstrate the prototype to users and collect suggestions from the user. Meanwhile, I will finish my literature review in this semester. I will complete the main development portion before the end of Christmas holidays. I will finish the main function first and consider an additional function at a later point, because the additional functions are uncertain and may increase or decrease. I hope that when the system is completed, students and visitors can easily find campus buildings and facilities. I propose that the system will make students' academic lives more convenient through easier interaction.