UNIVERSITI TEKNOLOGI MALAYSIA

FACULTY OF ENGINEERING

SCHOOL OF COMPUTING

SESSION 2023/2024 SEMESTER 1

SECP1513 - TECHNOLOGY & INFORMATION SYSTEM

PROJECT: DESIGN THINKING PROJECT PROPOSAL

THEME: SMART CAMPUS NAVIGATION APP
(Group 5)

Group members:

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Problems:

- Large and complex UTM campus challenging to navigate
  - It's hard for newcomers or student to locate which floor the events are organized. There also are some students who only know about the program that are handled at their college area.
- Daily lectures are not going smoothly for students
  - Some of lecturers may change the venue for their class at last-minute. It may be hard for students to find the new venue as searching for it is time-consuming. They can be late for the lecture session.
- Students wait a long time for the bus to arrive at their designated bus stop.
  - It's difficult for students to navigate the bus. They couldn't know what time to be at the bus stop to get the bus directly
- It's possible that security issues or emergency circumstances are not properly disclosed.
  - The app guides users to the nearest safe exit points, helping them navigate away from danger swiftly and facilitating a coordinated and efficient response to the emergency.
- Qr attendance for student might be time-consuming and high potential for student to cheat their attendance.
  - Student can cheat their attendance by receiving qr code from their classmate without attend the class. Besides, it is time-consuming for student who having an error in their phone to scan the code.

Solutions:

1. Large and Complex Campus Navigation:
   - ✓ We implement a detailed campus map within the app, integrating GPS technology for real-time location tracking. Besides, we also provide step-by-step navigation, highlighting the most efficient routes to different buildings and classrooms. Augmented reality features can also enhance navigation by overlaying directional information on the user's device camera view.

2. Efficient Lecture Navigation:
   - ✓ We include a class schedule feature in the app, allowing students to input their course timetable. The app can then provide optimized routes to their next lecture or class, considering their current location and class schedule. Integration with the campus map ensures accurate navigation.

3. Reducing Bus Waiting Times:
   - ✓ We implement a real-time bus tracking system within the app. Students can view the current location of buses, estimated arrival times at specific stops, and any delays. They can also view the traffic jams or any busy regions by using the app. This information helps students plan their departure times effectively, minimizing wait times at bus stops.

4. Emergency Communication:
   - ✓ We integrate an emergency alert system into the app. In case of emergencies or security concerns, push notifications can be sent to all app users with relevant

information and instructions. Additionally, we also include an emergency contact feature for quick access to campus security or emergency services.

5. Attendance Tracking:
   - ✓ We replace traditional attendance methods with a digital attendance tracking system in the app. Professors can take attendance using the app, and students can check in digitally. This not only saves time but also reduces errors associated with manual tracking. The app can also send automated attendance reports to professors and students.

Tangible/non-tangible product in the market:

UTMSmart

- The UTMSmart app includes a convenient QR code scanning feature for attendance. In each class, instructors can display a distinctive QR code at the start. To mark their attendance, students simply use their smartphones to scan the code.

NTU Omnibus

- The NTU Omnibus app features a smart navigation system designed to simplify campus mobility. With real-time maps and GPS technology, it guides users through the vast NTU campus efficiently.

WAZE

- Waze is a user-friendly navigation app that helps you navigate through traffic with real-time updates. It offers turn-by-turn directions, alerts you about road conditions, and suggests the fastest routes based on community-driven data.

Difference and uniqueness of proposed product:

Compared to other apps, our offerings are clearer and more comprehensive. Our aim is to reduce the student's stress level while they proceed to their assigned destinations. We will continuously update our services based on user preferences. We're going to implement interactive 3D mapping so that students can see the campus layout from various angles. Create AI algorithms that can provide individualised routes and recommendations by learning from each user's unique behaviour, preferences, and feedback. Additionally, we will offer customisable profiles, allowing students to customise navigation to meet their own needs by adding preferences for accessibility, preferred walking speeds, or certain routes. By using predictive analytics, you may provide alternate routes for stress-free travel by anticipating and mitigating possible traffic jams or busy regions. The concept becomes a revolutionary tool that enhances the overall student experience through the development of a sophisticated, flexible, and expansive platform that not only revolutionises campus navigation but also combines a variety of support services and creates a connected student community.