50.003 Project Proposal

Project Idea 1: Design an SUTD app

In this project students will design an SUTD app for Android-based platforms. Typically such an application should be designed with the goal of helping SUTD newcomers (staff, faculty and students) to easily obtain practical information around SUTD. It is critically important that the designed app significantly differs from the features available in the SUTD professional website.

Following is a non-exhaustive list of features that can be supported. Students are strongly encouraged to build upon these features as well as extend the app with additional interesting features.

- Expert search across SUTD. Say someone wish to discover expert faculties/researchers in "Software Engineering". The app should facilitate discovery of these personnel across different SUTD pillars.
- Projects route to a meeting room, think tank, faculty offices or the office of student affairs. For instance, if someone wants to find an instructor, the app should generate the route from the user's current location to the instructor's office.
- Every year several visitors come to SUTD, they often buy daily amenities from stores, but do not care to take them back home (too much luggage). The app should allow SUTD users/visitors to enter information (e.g. in terms of an advertisement) about selling and buying. For instance user X might be leaving and she wants to sell her study table, bi cycle and a rice cooker. Similarly, a visitor Y just arrived to SUTD and may enter an advertisement that she wants to purchase a bi cycle. Users can browse through such

advertisements and also contact each other directly through the app.
- Locate nearby outlets for daily amenities, such as grocery stores, malls and restaurants.
- Bus/MRT timing for your destination outside SUTD.

Project Idea 2: Smart Interactive Class

The goal of this project is to develop an Android app that facilitates interactive class management to improve the quality of teaching. To this end, following is a non-exhaustive list of features that can be supported by the app:

- Often students might be shy to ask questions during the lectures or all doubts from the students might not be possible to answer during the lecture time. To alleviate such issues, students can provide (anonymous) feedback in a fine-grained fashion, for instance, at the level of each slide during the lecture. Students can also rate each lecture via the app instead of waiting for the entire term. All feedback will be stored and can only be read by the instructor(s). Upon reading this feedback frequently, the instructors will refine their teaching strategy as well as clarify the doubts (as were received from feedback) raised in previous lecture(s).
- Instructors can use the app for interactive class management. For instance, the instructor should be able to initiate a short quiz during the lecture time. The quiz should be sent to the cohort members and upon completion of the quiz, the performance of each student should be available immediately in the app.
- The app should also provide features to broadcast a question during the lecture time. Anybody who answers the question correctly and at first, will be recorded in the system. The instructor can later view the system and formulate a rewarding scheme for the students who answers more frequently.
- The app should provide features to instructors to monitor the performance of each student in the online quizzes conducted and alert him/her if a student is consistently scoring low.

Extra features are welcome and will be rewarded accordingly.

Project Idea 3: Smart Event Scheduling at SUTD

Event scheduling is a big task at SUTD and in any organization. In this project, we will design a web-based framework or an Android app for smart event scheduling. The app should contain (at least) the following features:

- Before the start of a new term, course coordinators generate a term schedule for all the courses to be offered. This schedule needs to satisfy several constraints, such as, available rooms, no overlap between certain courses, number of cohorts and preference from the instructors. Therefore, it is critical for the students first to identify all such constraints. The constraints can be hard, which means they must be satisfied. Such constraints include the availability of rooms. In contrast, soft constraints could be the preference from the instructors. Soft constraints are not mandatory to be satisfied, but a good term schedule should not avoid too many soft constraints. Once the constraints are identified, a scheduling algorithm should automatically generate a term schedule.
- The designed app should facilitate communication between course coordinators and the instructors. This should reduce quite a number of email communications. Instructors can interactively suggest some modification to the generated term schedule or provide his/her preferences (e.g. #lecture hours/week, #lab hours/week, #mid terms, whether there is a final exam and venue preference in terms of think tank, lecture halls or cohort class rooms). However, instructors should not modify the term schedule. Only the course coordinators can modify/generate new term schedules.
- Once the final term schedule is generated, the schedule should be linked with a user's personal calendar (e.g. Google calendar) automatically.
- The app should also support proper placement of an event in-vivo. For instance, if a seminar needs to be scheduled during the term, where would it be placed? To this end, constraints could be in terms of the number of attendees and the list of available rooms during the period.

Extra features are welcome and will be rewarded accordingly.

Project Idea 4: Remote KYC (provided by IBM)

Current Know-your-customer (KYC) processes typically require a Face-to-face (F2F) verification whereby a human needs to verify the identity of a person (e.g. passport and NRIC) against their physical identity. The goal of this project is to design an application/software that allows a company to verify the identification of a person with confidence.

For instance, a potential use case can be as follows:
Coinhako process -> Sign up -> verify email before able to log in -> upon log in -> setup 2FA (include google authenticator) -> phone number verification -> Identify verification (include passport number, photo of passport, photo of self with passport together with a piece of paper that says 'coinhako *date*', address, proof of address document)

Potential application of digital technologies such as Biometrics, Facial recognition, NFC, OCR and image recognition can be leveraged to implement the process. This is to enable multiple cross verification factors that ensure the identity document provided by the user does in fact belong to the user.

Project Idea 5: Do your own

You are certainly also encouraged to come up with your own project idea, such as designing a game.