Requirements and High Level Design Version II

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Hiking pal is an Android application for hiking lovers, which we will be extending and developing from Module 1. The app can track the hiking path, record interesting spots for specific attractions during the trip and save the route taken. Also, our application can communicate with the DE 2 board by sending/receiving the selected path images to/from the touch screen.

The leader/organizer of the hiker group can use the touch screen to introduce the general trip route that will be taken soon, and send it to group members; after the trip, group members can share their trails to others by sending the path images to the touch screen.

Requirements

On the Android phone side:

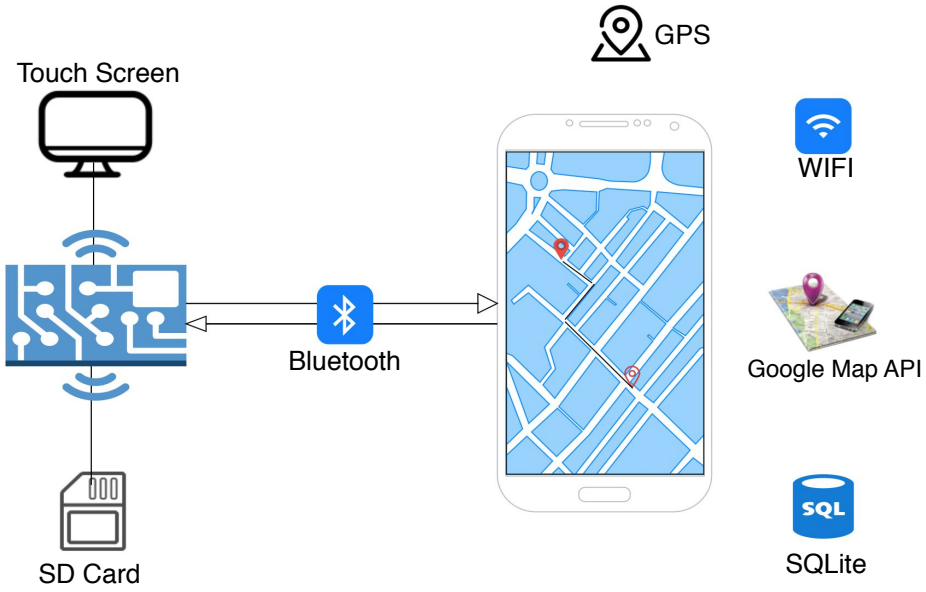
- User can view the current date and location.
- User can view the weather information corresponding to his location.
- User can track the path and save it to the SQLite database.
- User can send the selected image to the touch screen.
- User can receive the image sent by the touch screen.

On the touch screen side:

- User can view the path image sent by Android device.
- User can sent the selected image to the target Android device.

High Level Design

block diagram



Processing Tasks:
For this project, we will be integrating the bluetooth, GPS and wifi functionalities, which are already provided by Android device, together to communicate with DE 2 board/touchscreen. Also, we will be using the Google Map API to implement our main features, and we will be using SOLite as our local database to save the trails in our application. Detailed tasks are listed below:

- Touch Screen: has two modes, MASTER(sending to Android device) and SLAVE(receiving from Android device). It also should be able to display the received image and send the selected path from the SD card to user's android device.
- DE 2 Board: integrates the touch screen and SD card, which is also the embedded system that our application will be communicating with.
- Android phone: we will make use of its bluetooth, wifi and GPS functionalities to implement our main features, and integrate them together as a whole to communicate with the DE 2 board.
- GPS: detects user's current location and cooperates with the Google Map API to track the user's path.
- Wifi: allows us to use the Google Map API and update the map view instantly.
- SQLite: the local database we will be using to save our saved trails.

User Screen Prototypes

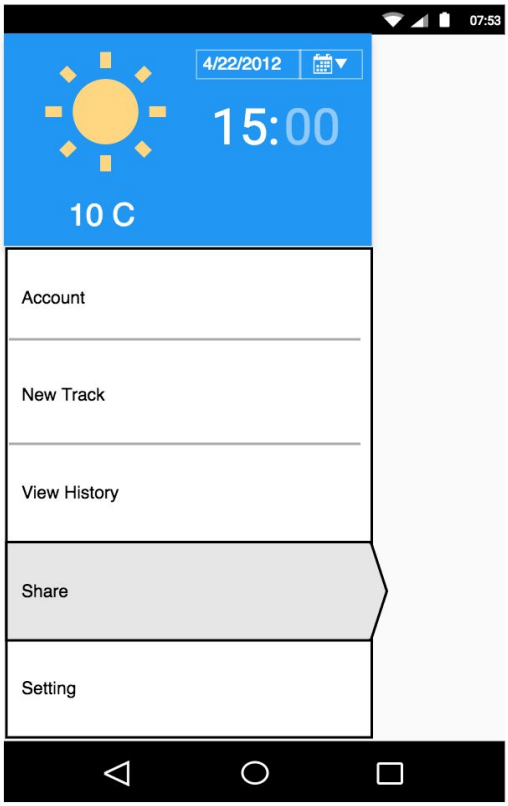


Figure 1, Side bar menu

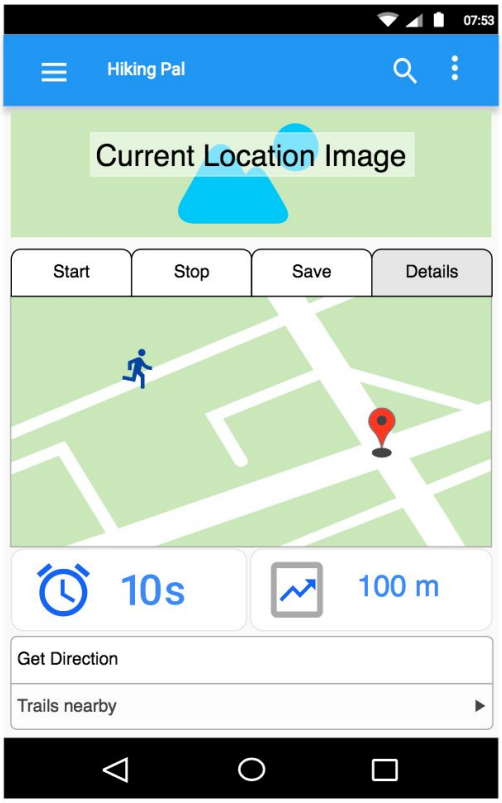


Figure 2, Tracking screen

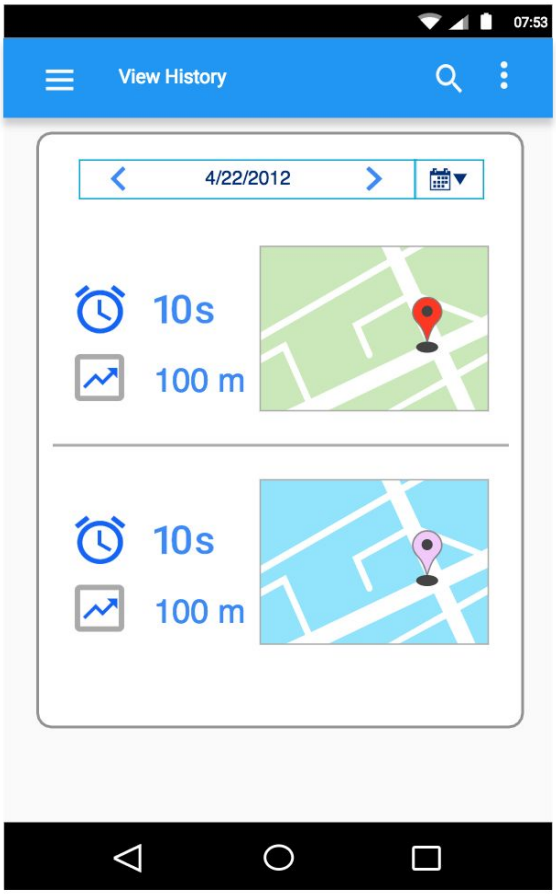


Figure 3, View saved track history

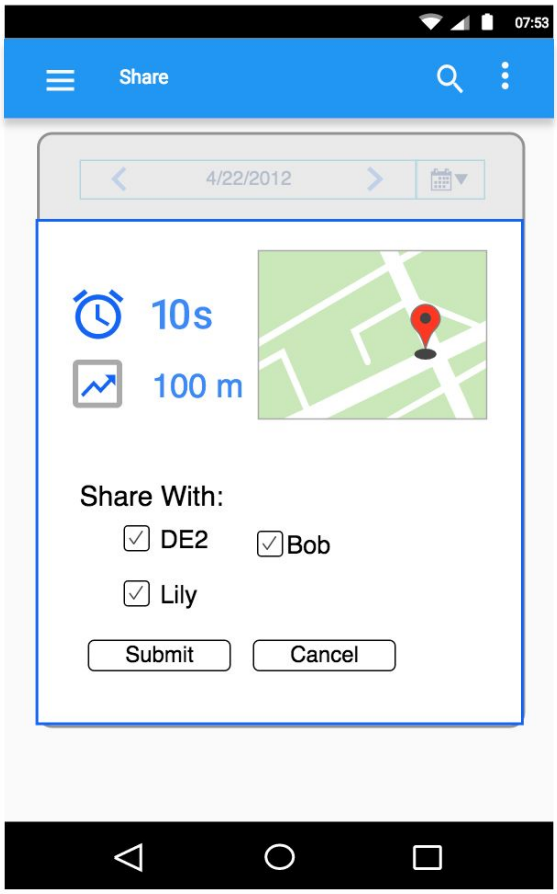


Figure 4, Share a track history with someone