# Hiking Pal - High-level Design#1

By Group#9

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Hiking pal is a GPS based tracking system for hiking lovers. It can track the hiking path, record interesting spots for specific attractions during the trip and save the route taken, details such as time and distance travelled as well as visited highlights for use or review in the future.

This document will be introducing a high-level design for this system. Diagrams and explanations are as follows.
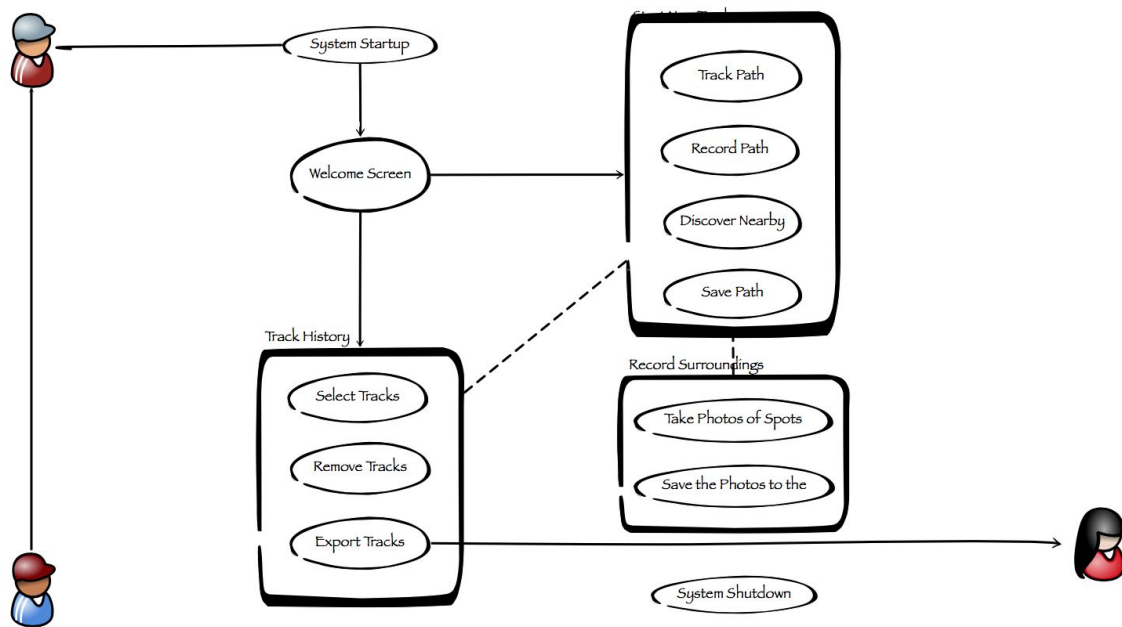
Hardware architecture

- Processor
- SD Card
- GPS
- Touch Screen
- Wifi
- Camera
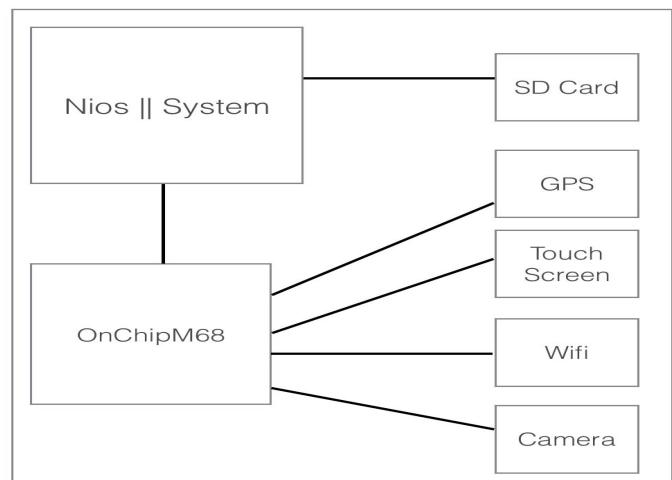
We are going to use NIOS II/f as the core for the Hiking Pal system because it has higher efficiency than NIOS II/e and NIOS II/s. The SD card is designed to connect with NIOS II/f, which will be storing recorded paths. Also, by interacting with NIOS II System, OnChipM68 allows us adding GPS chip, Touch Screen, Wifi chip, and camera to implement Hiking Pal 's main features.

Specifically, we will be using GPS to determine user's current location, track user's travel path and record the path; Touch Screen will be used to display the GUI that users will be interacting with; Wifi chip will allow us to use API in our program, which can largely reduce the code complexity for us, and users can take photos by using camera.

Use case diagram

System Startup

Welcome Screen

Track Path

Record Path

Discover Nearby

Save Path

Track History

Select Tracks

Remove Tracks

Export Tracks

Record Surroundings

Take Photos of Spots

Save the Photos to the

System Shutdown

A welcome page will pop up with user's current location as long as users turn on the Hiking Pal system. Users can choose to either "Track History" for saved paths, or "Start New Track" to record another hiking path.

User can choose to remove tracks from the track history, or export them for further use or sharing. Users also can take photos of whatever interests them during the trip, and they can save the photos to the specific location.
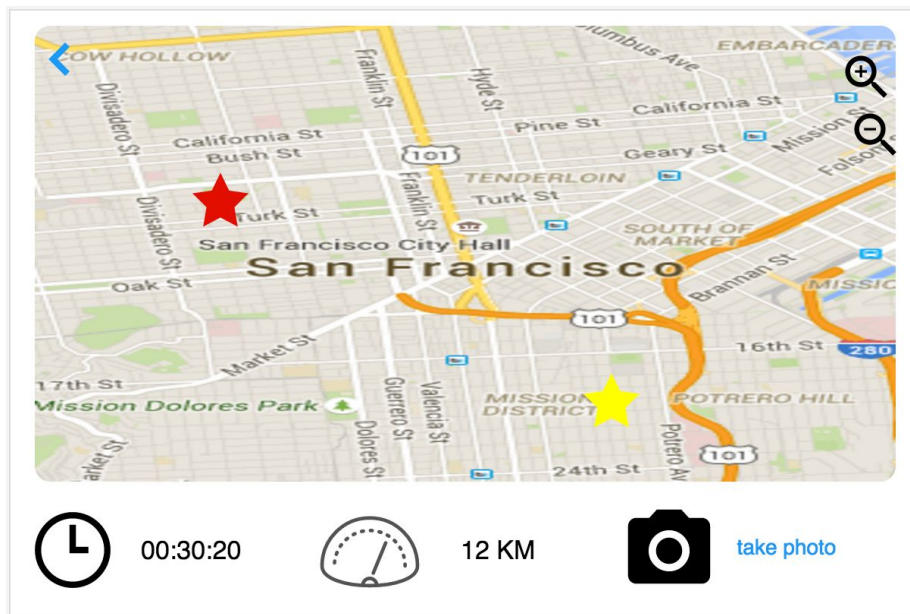
GUI Diagram

Landing Page:
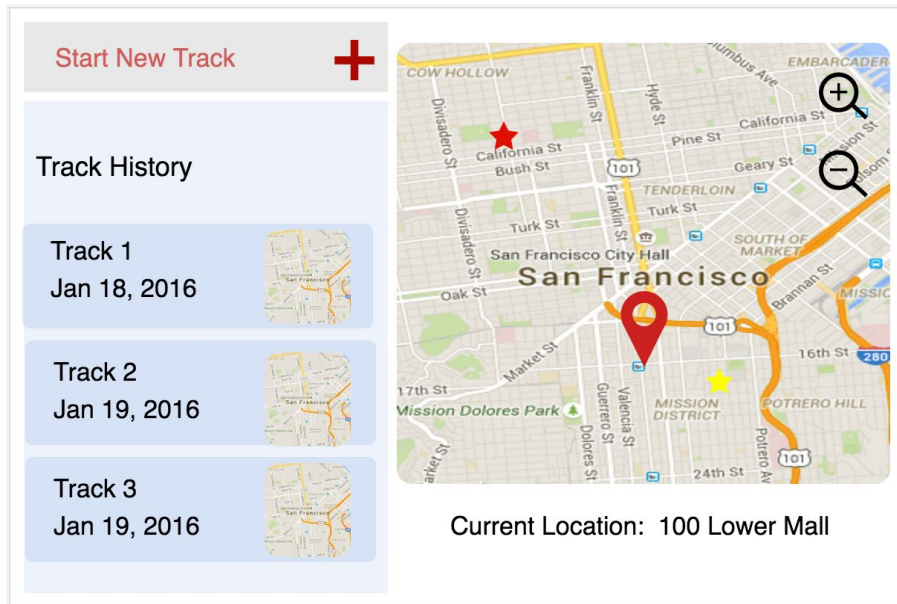
The landing page of our system composes two parts: (1) the view of of an interactive map containing user's current location, which is on the right; (2) the panels of our main features are on the left, which includes "Track History" and Start New Track.
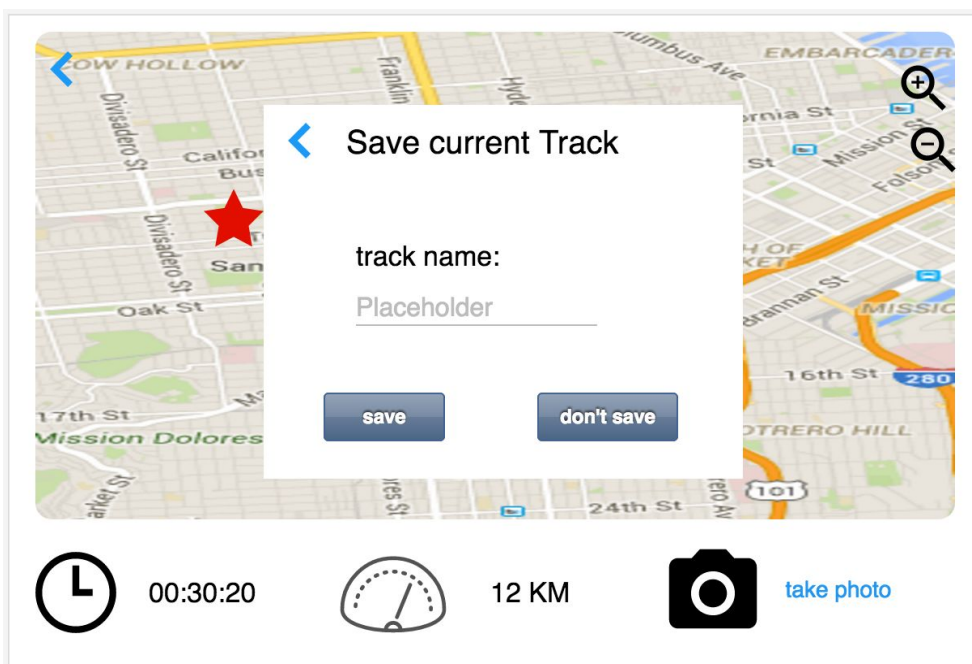
Start New Screen:

User can start tracking a new path by clicking on "Start New Track" on the landing page. The user can take photos by clicking on the "take photo" button. A star will be labeled on the spot where the user takes photos.

Save the photo for the specific spot:
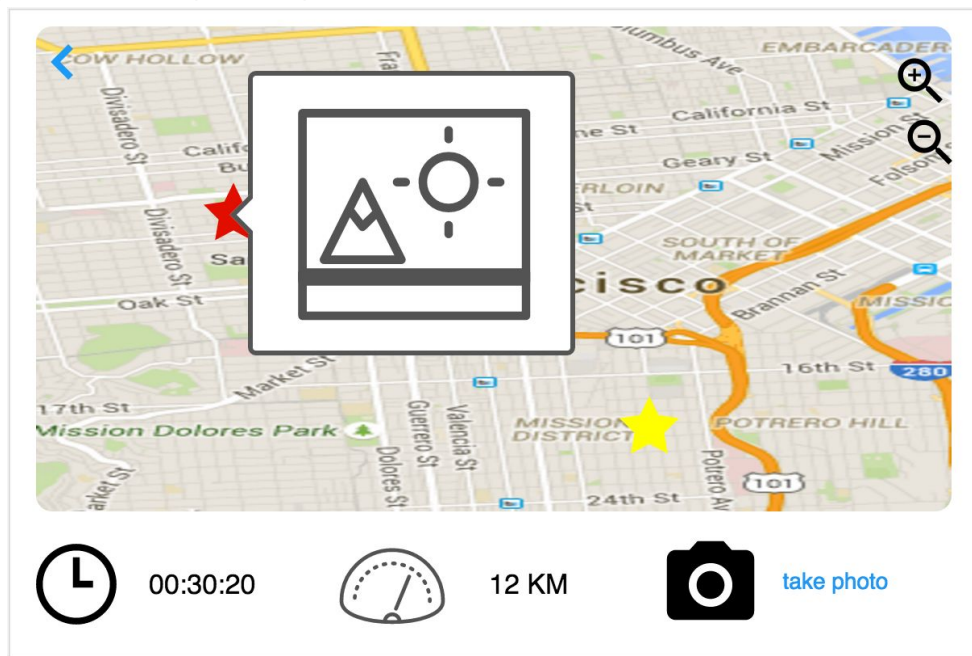
Users can check on the photos by clicking on the stars marked on the path.

Save/not save the track and exist:

When users click on the left top arrow, a window will pop up for users to save the track by typing in track name.

Class Diagram:

getCurrentLocation
- getCoordinates()

startNewTrack
- create()
- track()
- save()

TrackHistory
- select()
- remove()
- add()
- export()

recordDuration
- start()
- end()
- getTotal()

recordDistance
- start()
- end()
- getTotal()

takePhoto
- save()
- mark()

getPhoto
- onClickListener()
- showPhoto()