



Documentation – HikingApp

Description:

The HikingApp is a location based application that was made for people who like hiking. The user can get basic information about the route during the trip and it records the path and share it via Facebook.

The application uses native Android code to access the following sensors needed for functionality:

- GPS
- Magnetometer
- Accelerometer
- Camera

Development Environment:

- Windows 7
- Eclipse Helios 3.6.2
- Android SDK
- Mobile device: Samsung Galaxy 3

Requirements:

System requirements:

- Android 2.2

Hardware requirements:

- Accelerometer
- Magnetometer
- Camera
- GPS
- Internet



Structure of the project

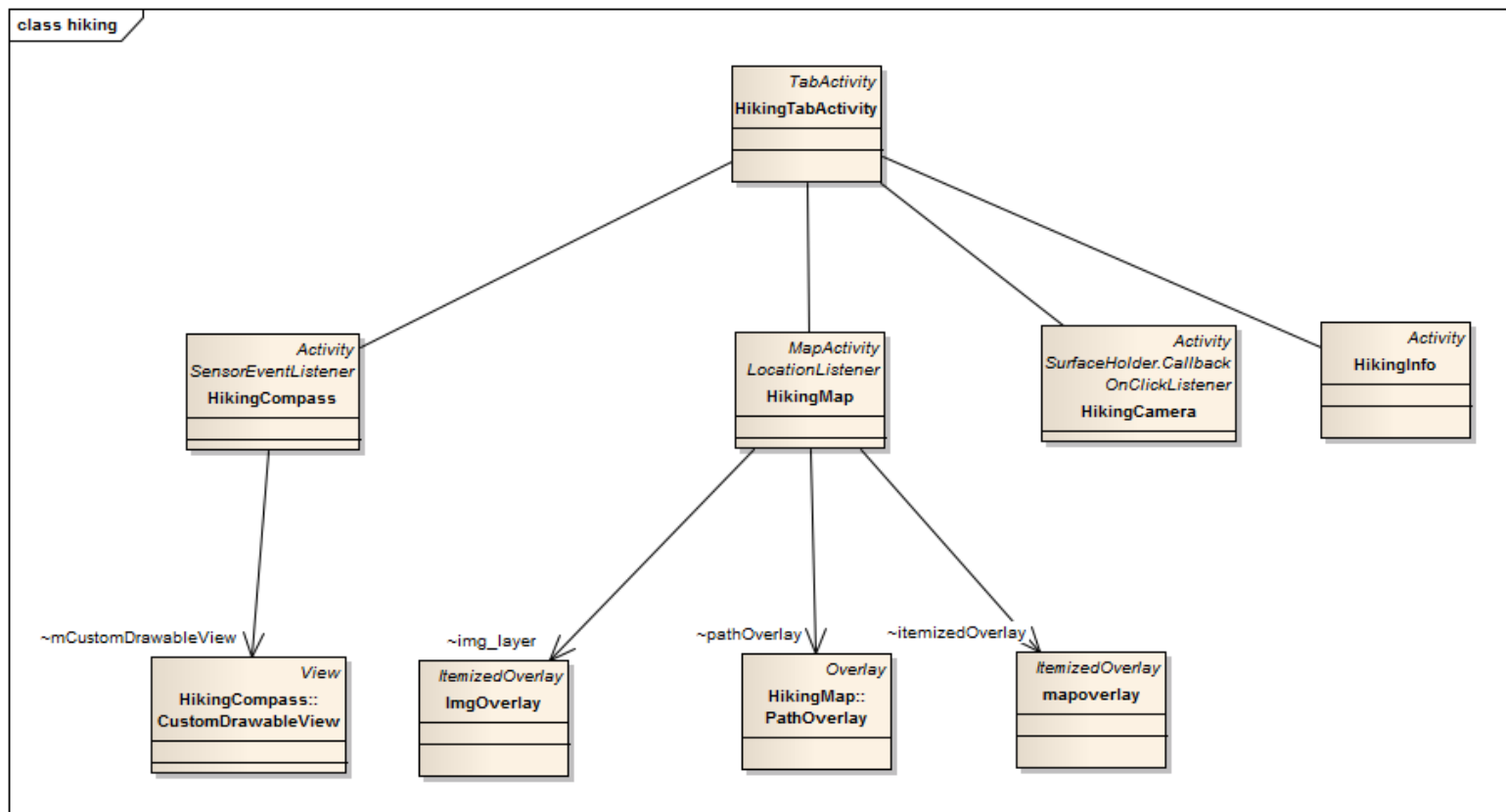
- src - .java files
- bin - generated files, e.g. the .apk
- res
 - drawable - image files, e.g.: markers
 - layout - layout xml-s for the activity-s
 - menu - layout for the „left click” menu on the MapTab
- AndroidManifest.xml - activity-s, permissions etc.

Structure of the application – classes:

- ***HikingTabActivity***
 - contains the four tabs
- ***HikingMap***
 - contains a MapView and implements the LocationListener to receive and handle the GPS signs
- ***HikingMap::PathOverlay***
 - special overlay for the map, it draws the lines between the points of the route
- ***ImgOverlay***
 - special overlay for the map with an onTap event that show a DialogBox with the photo that belongs to the current coordinate
- ***MapOverlay***
 - special overlay for the map, put a marker to the current coordinate, and with the onTap event the user can check the current coords
- ***HikingCompass***
 - implement a compass with using Accelerometer and Magnetometer
- ***HikingCompass::CustomDrawableView***
 - special view to draw the compass
- ***HikingCamera***
 - tab for the CameraView with two Buttons (Save/New) and onClickEvent on the surface to take a photo
- ***HikingInfo***
 - simple layout to show the information about the trip

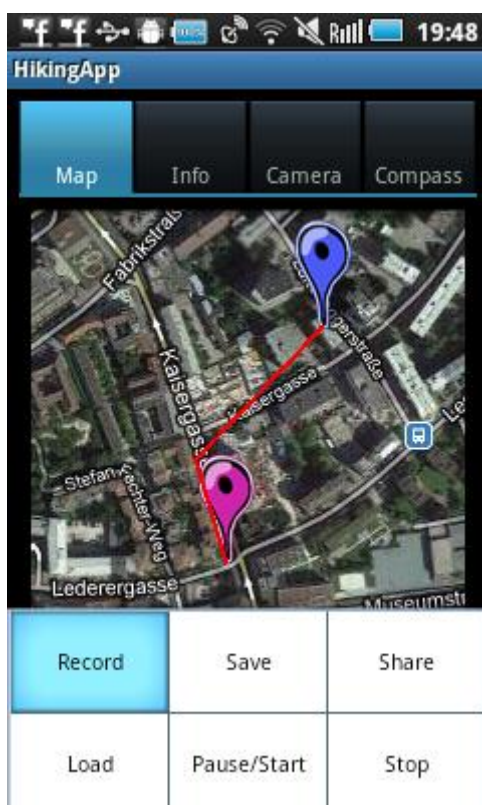


Class diagram



User Interface:

HikingMap tab

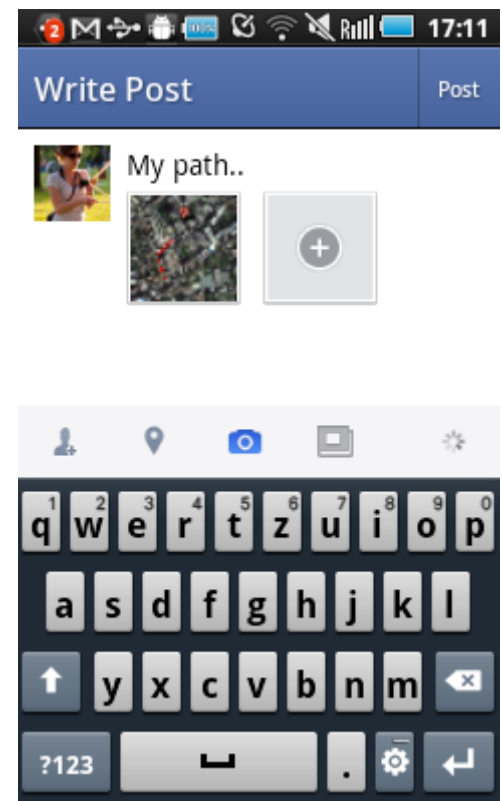
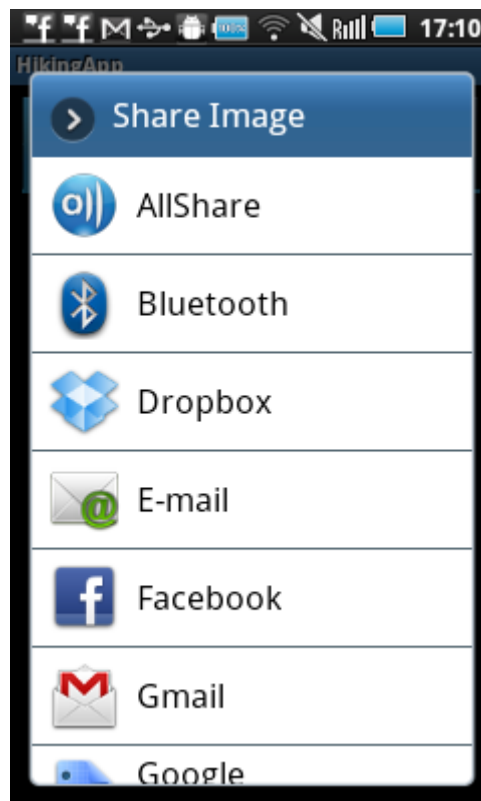
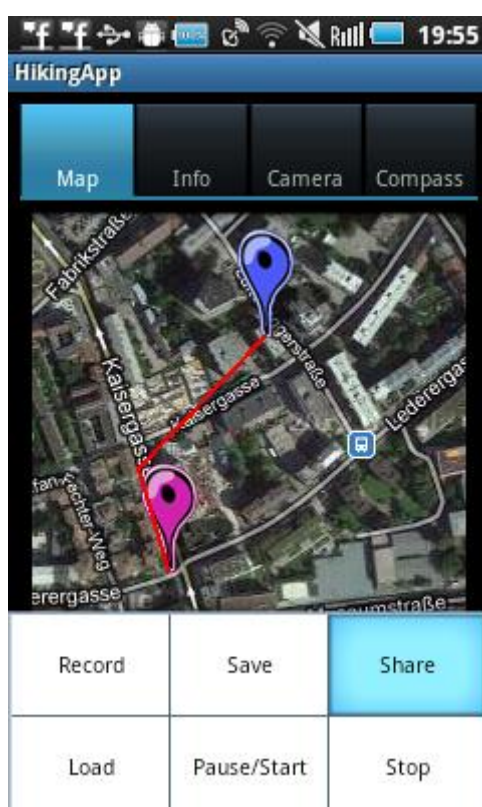


- contains a MapView with zoomIn/zoomOut controller
- show the markers on the map
 - **pink marker** – current location
 - **blue marker** – it shows that a photo was taken on the location
- onTap event for the markers:
 - pink – show the current location in a AlertDialogBox
 - blue – show the photo that was taken on that location in a DialogBox

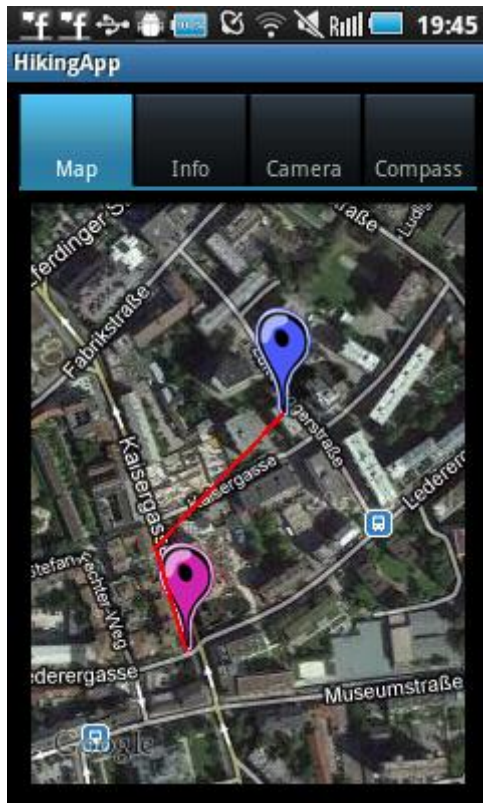


- **Menu:**

- **Record :** This is a basic function of the program. The user can start the recording at the beginning with the „Record” button. Then the program gets the GPS coordinates of the location, and start to record.
- **Save :** With this function the user can save the path until the current location and also the screenshot of the map, with the path-line. The filename is the time, when the user started the recording
- **Share :** The user can share the way on Facebook or via any other application that is installed on the user’s device.
- **Load (*not implemented yet*) :** the user can load the previous trips into the application, see the photos on the map, and also can check the statistics.
- **Pause/Start:** If the user would like to have a break during the trip, but don’t want it to make worse the statistics then he/she can press the pause, and when the trip continuous then just press again. This function sets the chronometer on the HikingInfo tab.
- **Stop:** When the trip is finished, the user can stop the recording with this button.

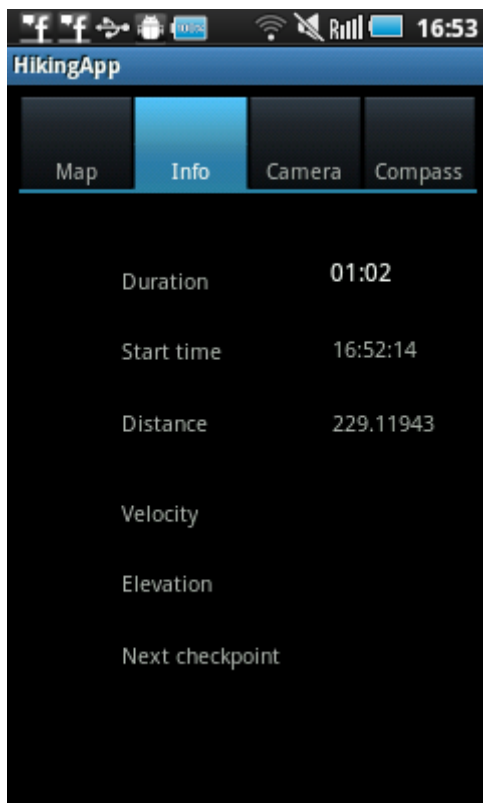


Share the MapScreen on Facebook



Tap on the blue marker – new dialogBox with the correspond photo.

HikingInfo tab:

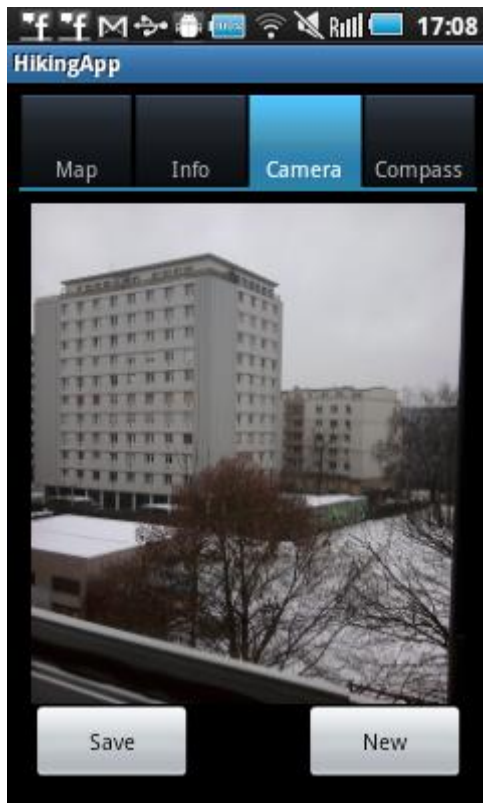


The user can see the statistics of the current trip like:

- Duration of the trip
- Start time of the trip
- Current distance from the start location
- Average velocity until the current location
- Current elevation
- Next checkpoint (*not implemented yet*)



HikingCamera tab

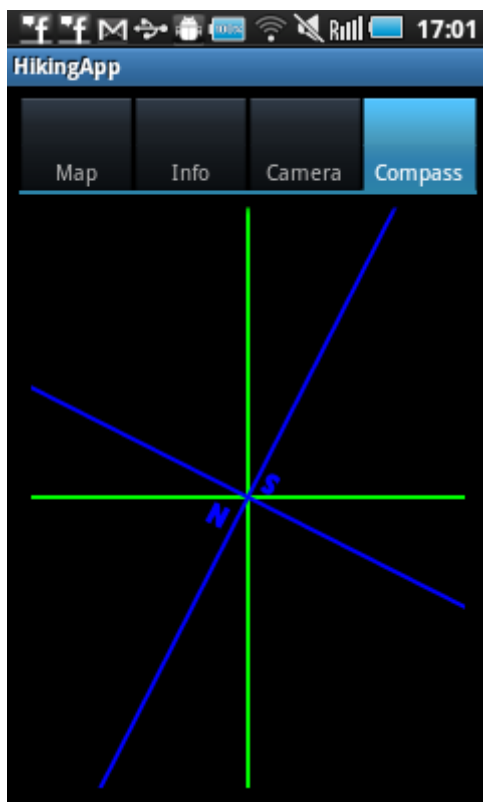


The user can take photos on the way and this photos will saved with the correct GPS coordinates and appear on the map. (blue marker)

The tab is quite simple, the user can take a photo by tapping the screen then save it or take a new one.

The photos are saved in the folder of the application but at the same time the coordinates and the directory path of the photo are also saved in another txt file. It will make it easier to load the dates later into the application.

HikingCompass tab



A basic compass was built in the application to make localization more comfortable.

The compass uses the magnetometer and the accelerometer for the calculation.



Future work:

- Better performance
 - GPS usage
- Missing features
 - saving map before the trip
 - solution - OSM
 - checkpoints
 - set checkpoint before the trip
 - notification if the user reached them
 - summary statistics