

Lappeenranta University of Technology

Department of Information Technology

CT30A9300 Code Camp on Communications Engineering

Android Code Camp 2010
Application Name: Optimal Route

Group grp14

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1. Background

For businesses which require delivery of goods to customers within the city such as postal, pizza delivery and supermarket supplies traveling from one point to another and back to the initial point is a straight forward situation where by a map in any GPS can indicate the closest possible route to get to the desired point of destination. But if you have multiple destinations to visit at the same time it is difficult to tell which route will be optimal for visiting all the destinations. One might want to use optimal route every time they are required to visit multiple places in order to save time and in a long run to save money by using less fuel. The importance of calculating optimal route is the main reason for us to develop the application which will solve this particular problem.

2. Introduction

Optimal route is Android mobile application which calculates the optimal route for multiple locations. User of the application will select a location on a map then insert the addresses of the location he wants to visit and the application will calculate the optimal route and return the order of the addresses which user should visit in order. The application also shows the optimal route on the map by connecting the locations with the line. Optimal route are presented as lines on the map, which connected points for visiting in optimal way or as list of addresses for visiting. User can delete all inserted points from the database and user can move map and change zoom on the map.

3. Modules

3.1 Map

The application uses Google map for displaying places for visiting and location identification. Google map provide full functionality for displaying map, such as changing zoom and move map. User can select a place on the map then insert address of the selected place.

3.2 Database

The application use SQLite database to store the addresses provided by the user in order to display then again in visiting order. This database contain only one table "location", which contain information about street, longitude, latitude of location, number in order to visit and record ID. Are implement methods: connect and disconnect to database; add new record; read all records from this table; delete all records from this table.

3.3 Optimal route algorithm

The application use neural network algorithm to calculate the optimal route. The algorithm use longitude and latitude collected from the map to calculate the optimal route between locations. There are two main requirements for processing in up-to-date experiments: maximal calculation speed with the most reachable accuracy of computations and high efficiency of methods for physical parameters estimation. Realization of such requirements for a very complicated structure and a noisy experimental data was inevitably faced with limitedness of traditionally applied methods from combinatory, clustering analysis and algebraic methods. Those methods do not secure precision or high efficiency of parameters estimation, or all of this. Neural networks techniques imitate a brain's work whose main advantage is to implement logical, recognizing and computational functions. And their principal parallelism, nonlinearity and no locality are the most crucial things to be used. In particular, there are tasks like pattern recognition and associative memory design.

4. Features

4.1 Implemented

- Select location from the map
- Mark selected place on the map
- Connect all the selected places on the map with line
- Insert address for each place
- Store the location places and addresses in the database
- Delete all addresses from the database
- Calculate optimal route

4.2 Not Implemented

- Displaying the optimal route on the map

5. System screenshots

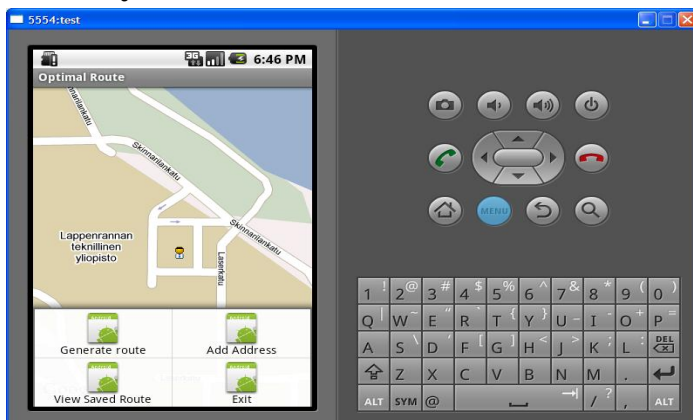


Figure 1: Main screen

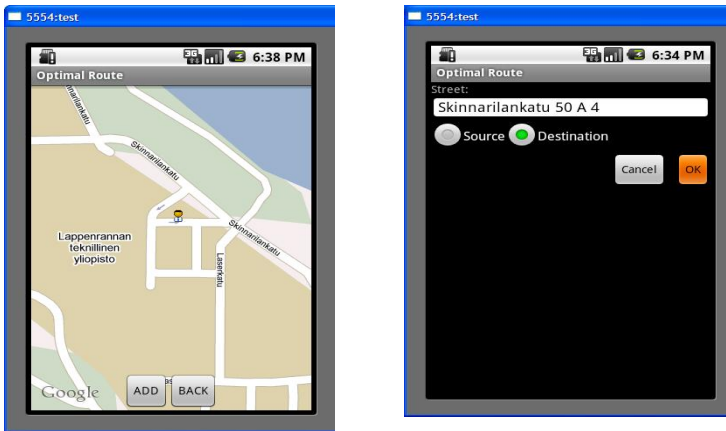


Figure 2: Select location on map and Add address

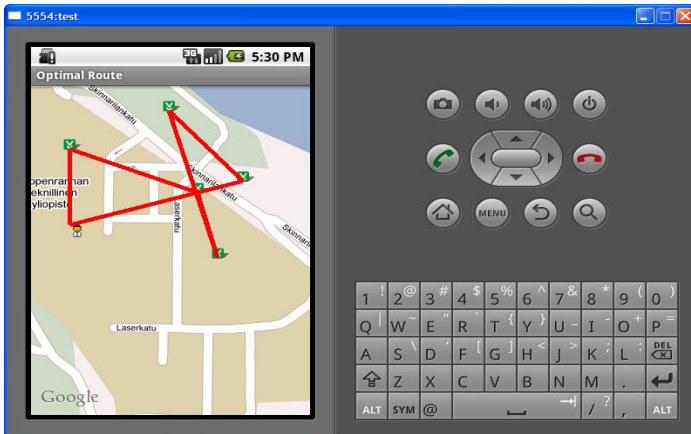


Figure 3: connecting selected places



Figure 4: displaying list of addresses

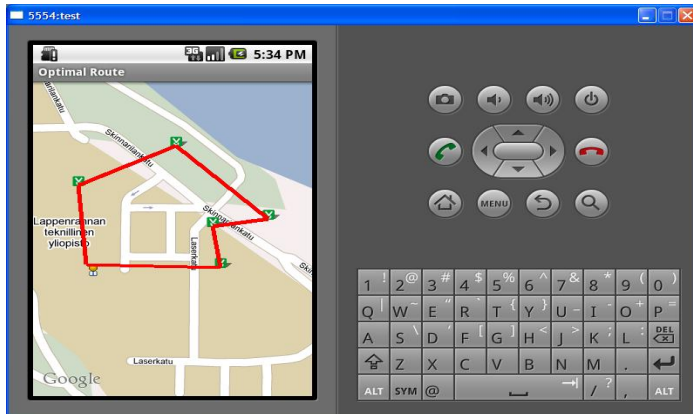


Figure 4: Expected optimal route image



Figure 4: Show information about place for visiting after click on this place on the map.

6. Conclusion

During the implementation of this application we learned most of the basics of android such as creating and interacting different Activities, making user interface with xml, Google map API and SQLite database. The most impressive part for use was to be able to implement user interface with xml. The most difficult thing for use was how to combine our work together after each member has finished developing different parts in different computers. Another difficult thing was to work with maps, it was our first time and very tricky.