Mediterra software

GIS portfolio

Automotive Routing Service

Technologies: C++, mapreduce, Apache Hadoop, PostgreSQL, PostGIS

Duration: 1 year

A service providing several alternatives for the shortest routes between point A and point B on the map: shortest by time, easiest in terms of number of turns, shortest by distance.

Work involved implementation of the modern variations of A* and Dijkstra algorithms, including those using large amount of preliminary precomputations, like breaking road maps into loosely connected parts and precalculating best paths between those parts.

Service provides an adaptive search result order, which learns habits of a user and changes the paths which are shown first

Service takes into account current traffic jams information, which is based on bigdata analysis of GPS signals from partner network + users of the mobile application.

Fellow Travelers Service

Technologies: C++, Java, Python, Android NDK, Apache Cassandra, OptaPlanner, jsprint, VRPH

Duration: 6 months

Implemented a system allowing car owners to share their usual routes like commutes and routes to shopping malls and back with those whom they can give a lift with minimal deviations to their routes.

- system collects information about usual routes of users based on GPS signals
- it uses both heuristic on mobile phone and bigdata algorithms to deduce habitual routes
- allows a car owner to mark himself/herself as available for sharing their route
- it collects requests from those who need a lift, and proposes options varying in time and price, allowing user to choose the best and chat with the car owner.

Automotive Routing Quality Assessment Software

Technologies: Python, MySQL, sqlalchemy, geoalchemy, nosetests, git

Duration: 1 year

The quality evaluation system has been developed, which is now being used to make decisions about making changes in the routing service. If the quality has dropped down, then the changes are not made, if the quality gets increased, then there is a green light for deployment of new data/software making effect on the QoS.

The things involved in the development:

- Yandex's mapreduce cluster computations technology
- statistical modeling, including analytical and computational approaches, bootstrapping, resampling and Monte-Carlo methods
- sqlalchemy, geoalchemy ORMs

Railway Subgrade Detection

Technologies: Visual Studio, C++, OpenGL, WinAPI, boost, GDAL, ArcGIS SHP, AutoCAD DFX

Duration: 6 months

Development of a system detecting structural lines and construction of cross-profiles of railway subgrade.