

Abstract

Studies suggest that a large percentage of traffic congestion occurs during peak hours (Downs, 2004). Many location based services and systems today exist, that assist traffic routing to maximise on travel time and reduce trip lengths (e.g. Garmin, TomTom). The objective of this study looks at enhancing Open Source routing algorithms by adding functionalities and variables that favour fuel savings as well as shortest route. A system is developed using Open Source GIS (using the PostGIS and pgRouting extensions for the DBMS: PostgreSQL), whereby a number of variables, including weather conditions, road network, traffic status, vehicle specification data and road gradient are manipulated by the user to achieve shortest and most fuel efficient route. This study also provides neighbouring techniques for emergency response teams, so as to traverse the shortest route to an accident.

The project started with a Literature Review studying the historic advancements of Location Based Services and Geographic Information Systems, in particular Open Source GIS. Case Studies were reviewed so as to gain knowledge from past experiences. The methodology used for this project followed the DSDM methodology and requirements were drawn following the MoSCoW priorities. A full working version of the project which is presented in a Web Interface can be accessed online.