



Univ.-Prof. Dr.-Ing. W. Reinhardt

Master Thesis

Theme: Routing algorithm, spatial analysis, optimization
Supervisor: M.Sc. Md. Imran Hossain and Prof. Dr.-Ing. W. Reinhardt
Posting:

An algorithm for optimum route calculation based on feature properties around the road network

Several GI applications offer tools for calculating routes between two points of interest. Most of those tools use Dijkstra's algorithm or other renowned algorithms like Floyd-Warshall algorithm, A* algorithm etc. The thing which is common in all those algorithms is almost all of them use only one cost parameter to calculate the path. The cost parameter might be driving time to calculate the fastest route or the length to calculate the shortest or any other. Alternatively, inclusion of multiple cost parameters in the algorithm would be of great interest especially in the domain of optimization. This could be realized with an example. Let's say an evacuation unit is in operation for collecting evacuees from a certain area which is under threat of a certain disaster. A path that allows the evacuation unit to collect maximum no of evacuees and with less possible time would be the optimum solution to decrease the causality.

This study is therefore focused on developing and implementing a routing algorithm which can deal with multiple cost parameters to calculate an optimum path. This could be done either by developing a new algorithm or extending the available ones. Another task of this study is to extract the cost parameters to the suitable edges of the network from the features surrounding it e.g. buildings.

Master Thesis (30 ECTS CP)

- Algorithm development
- Algorithm implementation through software tool development
- Validation and verification

Prerequisites:

Basic knowledge about:

- Spatial analysis
- Programming (VB.net, Java or any other)
- Spatial data model
- Routing

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