

This thesis describes design and implementation of an application capable of finding the shortest paths in real world map data, while taking elevation data into account. Path finding is fast and can be adjusted to user's needs without the need for graph rebuilding, what differentiates this application from others, that only allow user to work with predefined search profiles.

In addition to path finding, the application can generate highly compact graph from map data in OSM format. This allows fast access to information necessary for finding the shortest path. The application can render map data with custom rendering style and contour lines, but also can display map from OpenStreetMaps project servers.