Development of obstacle avoidance technique in web-based geographic information system for traffic management using open source software

ABSTRACT

The shortest path routing is one of the well-known network analysis techniques implemented in road management systems. Pg Routing as an extension of Postgre SQL/Post GIS database is an open source library that implements the Dijkstra shortest path algorithm. However, the functionality to avoid obstacles in that analysis is still limited. Therefore, this study was conducted to enable obstacle avoidance function in the existing pgRouting algorithm using OpenStreetMap road network. By implementing this function, it enhances the Dijkstra algorithm ability in network analysis. In this study a dynamic restriction feature is added at the program level to represent the obstacles on the road. With this modification the algorithm is now able to generate an alternative route by avoiding the existence of obstacles on the roads. By using OpenLayers and PHP a web-based GIS platform was developed to ease the systems usability.