Universiti Teknologi MARA

Railway Shortest Path Planner Application Using Ant Colony Optimization Algorithm

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ABSTRACT

Railway system consists of complicated, most often than not, confusing routes. As train networks expand, routes complexity increases thus indirectly affecting accustomed user. Users are left to their own devices in order to figure out the best route based on their requirements. In this paper, users requirement are determined based on the time taken to reach the destination station. The time taken to reach the destination station was influenced by how many stations that users need to pass through. The research methodology for this project consists of five phases which are, preliminary study, data collection, system design and implementation and result analysis. Project finding are based on the Railway Shortest Path Planner (RSPP) application framework that consists of input module, output module and process module. Users need to input source and destination station and the output will be the proposed shortest path and other train information's such as train types, train lines and stations involves. For the process module, Ant Colony Optimization (ACO) algorithm was used to find the shortest path. Using ACO, a Railway Shortest Path Planner (RSPP) application will be developed to help user determine their shortest path from one station to another. The shortest path is determine based on the length of route. This application will be tested using a case study of Malaysia Kuala Lumpur Railway System that integrates three types of different trains known as Light Rail Transit (LRT), Monorail line (KL Monorail) and Commuter Rail System (KTM). Result shows that ACO are suitable to be used in this project as the RSPP's result shows its accuracy against the manual calculated result.

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