

ROUTE OPTIMIZATION USING SHORTEST PATH METHOD

MUHAMAD FAISAL AMIN BIN SHAKRI

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Universiti Teknologi Mara**

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ABSTRACT

Route optimization is very important for industry and e-commerce. Strategic planning in road selection helps to reduce many costs such as time and transportation. Therefore, the effectiveness of route planning is very essential. The method to study route optimization is called shortest path method. To address the shortest path problem in Terengganu, specifically simulation on parcel delivery route from J&T Gong Badak to J&T Chendering without any stop point. This study investigated the implementation and comparison between well known shortest path method which are Dijkstra's algorithm, Bellman-Ford, and A* algorithm. This study starts with constructing the weighted graph from the simulation case using Google Maps, the intersection of the junction will be the vertices and road segments are edges, weighted are distances. Each algorithm was tested to compute the shortest path, with results indicating that while all algorithms arrive at the same optimal route, their efficiency differs. A* algorithm, benefitting from the heuristic value helps to reduce the number of nodes travel hence got the higher nodes efficiency. Dijkstra's algorithm and Bellman-Ford also perform well but show lower results in certain aspects. As the algorithm optimization is crucial for the sustainability and effective logistic operation, this study concludes that A* algorithm is the most efficient in this case.

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