

# **Weighted Sum-Dijkstra's Algorithm in Best Path Identification based on Multiple Criteria**

## **ABSTRACT**

People faced decision making in choosing a suitable path for their own preferences. Usually, more than one criterion is involved in order to match with the preferences of the decision makers. The main objective of this paper was to identify the best path selection based on multiple criteria instead of a single criterion. Dijkstra's Algorithm is a shortest path algorithm that considers a single criterion only. Weighted Sum Method (WSM) is one of the weighting methods to solve the multi criteria decision making problems (MCDM). In order to achieve the objective, Weighted Sum-Dijkstra's Algorithm (WSDA), a combination method between WSM and Dijkstra's Algorithm is applied to solve multiple criteria network problems. In this paper, Dijkstra's Algorithm and WSM are reviewed and compared as to the WSDA. In addition, two examples with equal criteria values to evaluate the performances of the approach are presented. Results show that WSDA performed better in terms of the criteria concerned as it was compared to the Dijkstra's algorithm. Moreover, the results could be directly found without considering all the alternative paths of the problem. WSDA can be user friendly to users from non-mathematical background. It is not only applicable to urban road problems, but other network problems such as pipelines and bandwidth network problems. When come to large scale data problems, Maple software is used to solve it with ease.