عنوان مقاله:

Modeling different decision strategies in a time tabled multimodal route planning by integrating the quantifier-guided OWA operators, fuzzy AHP weighting method and TOPSIS

محل انتشار:

تعداد صفحات اصل مقاله: 22

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خلاصه مقاله:

The purpose of Multi-modal Multi-criteria Personalized Route Planning (MMPRP) is to provide an optimal route between an origin-destination pair by considering weights of effective criteria in a way this route can be a combination of public and private modes of transportation. In this paper, the fuzzy analytical hierarchy process (fuzzy AHP) and the quantifier-guided ordered weighted averaging (Q-OWA) operators were integrated to calculate the weights of the criteria. Accordingly, a user determines the relative weights with fuzzy AHP method at first. Then, by considering his/her slightly decision strategy, the final weights (the ordered weights) were calculated and K-shortest route determined using K-shortest route algorithm. In the next step, the proposed model presented the best route to user using TOPSIS method. In this study, subway, BRT, bus, taxi, and walking transportation modes were considered for traveling. Also, time, fare, and minimum changes in mode of transportation were considered as effective criteria. This model is implemented in a web-based geographical information system for an area in the center of Tehran and results proved that on average 85.00% of the users with different decision strategies selected the route proposed by the model as the best route.

کلمات کلیدی:

multimodal multi-criteria route planning, decision strategies, fuzzy AHP, OWA operators, TOPSIS

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