Travel Planning in Public Transport Networks Applying the Algorithm A* for Metropolitan District of Quito

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Abstract : The present project consists in applying the informed search algorithm A star (A*) to solve traveler problems, applying it by urban public transportation routes. The digitization of the information allowed to identify 26% of the total of routes that are registered within the Metropolitan District of Quito. For the validation of this information, data were taken in field on the travel times and the difference with respect to the times estimated by the program, resulting in that the difference between them was not greater than 2:20 minutes. We validate A* algorithm with the Dijkstra algorithm, comparing nodes vectors based on the public transport stops, the validation was established through the student t-test hypothesis. Then we verified that the times estimated by the program using the A* algorithm are similar to those registered on field. Furthermore, we review the performance of the algorithm generating iterations in both algorithms. Finally, with these iterations, a hypothesis test was carried out again with student t-test where it was concluded that the iterations of the base algorithm Dijsktra are greater than those generated by the algorithm A*.

Keywords : algorithm A*, graph, mobility, public transport, travel planning, routes

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