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Constructing the Most Profitable Bus Route by Flow Network Techniques

by

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of the requirements of the Degree of
Master of Science in Software Engineering

Project Supervisor

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22 July 2013

DECLARATION

I sincerely declare that:

1. I and my teammates are the sole authors of this report,
2. All the information contained in this report is certain and correct to the best of my knowledge,
3. I declare that the thesis here submitted is original except for the source materials explicitly acknowledged and that this thesis or parts of this thesis have not been previously submitted for the same degree or for a different degree, and
4. I also acknowledge that I am aware of the Rules on Handling Student Academic Dishonesty and the Regulations of the Student Discipline of the University of Macau.

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ABSTRACT

This problem discussed in this work is similar to the combination of Vehicle Routing Problem (VRP) and Travelling Salesman Problem (TSP), however new contribution is proposed. In this work, a heuristic methodology is proposed to determine the set of the bus stop from the original set of the bus stops. A new approach is proposed to construct a matrix which is collecting the probability of the passengers willing to the next bus stop on the bus from all the bus stops. With this matrix, the next bus stop will be determined to travel to from the previous bus stop. The real distance between two corresponding bus stops is calculated by Dijkstra and Depth First Search algorithm and with some additional feature to propose a new bus route. This algorithm is named by MPBR (Most Profitable Bus Route by Flow Network). The bus transportation problem was implemented in San Francisco. The result is obtained by using this approach showed reducing the passengers waiting time.

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