SHORTEST PATH TRAJECTORY SYSTEM BASED ON DIJKSTRA ALGORITHM

INDAH PRATIWI PUTRI

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ABSTRAK (BAHASA MALAYSIA)

Dalam projek sarjana ini, penyelidik membincangkan penyelesaian masalah lintasan terpendek daripada satu sumber tunggal dengan menggunakan algoritma Dijkstra sebagai konsep asas. Satu masalah yang dibincangkan dalam kajian ini adalah semua orang boleh bergerak mengikut laluan yang berbeza untuk sampai kepada destinasi yang berlainan. Ini boleh memakan masa apabila mereka tidak bergerak mengikuti laluan yang terbaik. Objektif projek ini adalah untuk menentukan setiap lokasi nod yang menunjukkan semua item dalam senarai. Pembinaan laluan dengan menyambung nod telah diselidiki untuk menilai algoritma yang dicadangkan bagi masalah sumber tunggal laluan terpendek. Metodologi penyelidikan yang digunakan dalam projek ini termasuk pengubahsuaian algoritma induk yang telah dilaksanakan dalam pembangunan prototaip. Kajian ini membincangkan tentang laluan terpendek yang menitikberatkan kepada sumber tunggal pada lokasi kajian tertentu. Kajian ini dapat menghasilkan sebuah prototaip pembuat keputusan.

Kata kunci: sumber tunggal, laluan terpendek, algoritma Dijkstra, lintasan jalan

ABSTRACT (ENGLISH)

In the master project, the researcher discussed the shortest path solution to a single source problem based on Dijkstra algorithm as resolving the basic concepts. Everybody can travel by different routes to reach a different destination point. This can be time consuming if they do not travel trough the best route. This project aims to determine locations of the node that reflect all the items in the list, build the route by connecting nodes and evaluate the proposed algorithm for the single source shortest path problem. This project includes the modification of main algorithm which has been implemented in the prototype development. This study discussed the emphasis on the single source shortest path at the location of specific studies. The study will produce a decision-makers prototype.

Keywords: single source, shortest path, Dijkstra algorithm, path trajectory

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LIST OF ABBREVIATIONS

BFS	Breadth First Search
D	Digraph
DFS	Depth First Search
$D(x)$	Distance x
E	Edge
$f(x)$	Function x
e_n	Edge n
S	Space
T	Time
V	Velocity
V	Vertices
VB	Visual Basic
v_n	Vertex n
W	Weight

CHAPTER I

INTRODUCTION

In daily life, people commonly face some problems in finding an optimum path. People usually explore every possible solution in finding an optimum path, but not every solution can produce the best shortest path. Shortest path problem is a problem in finding the fastest route or path from a directed graph. Every direction in a graph should have a cost to be calculated. This shortest path problem is a way to find a new route or path in a graph with a minimum sum of weight traveled through the direction. This shortest path problem can be solved by using an algorithm of finding the best edge path between vertices in a graph. There are several variations of algorithm that can be used to determine the node that was pursued based on the direction given graph. Variations of the shortest path can be distinguished from single-source objective, pair path and generalization. A pair of shortest path is finding the shortest path for two points of nodes. All pair of shortest path is a technique to find the shortest path among all directed nodes. Single-source shortest path is finding the shortest form traveled, starting from a certain node to all other nodes in the graph. Single-objective shortest path problem is find the shortest path from any node on the graph are directed to a single destination node. Intermediate shortest path is finding the shortest way between two nodes selected through other nodes. Generalization is significantly more efficient than the simple approach to run one-pair of shortest path algorithm on all pairs of vertices that are relevant.

The contents of the thesis is for internal user only

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