International Institute of Information Technology, Bangalore

Software Requirements Specification

For

Multi Modal Route Planning

Prepared by
Anoop Toffy - MT2016016
Harshit Joshi - MT2016059
Mohd Awais - MT2016086
Mehul Singh - MT2016083

Guided By:
Dr. S. Rajagopalan

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1. Introduction

1.1 Purpose

The purpose of Multi Modal Route Planning is to provide the user with optimal, feasible and personalized route plan between source and destination. The system is designed to provide various travel approaches and provides a combination of different modes of transport (bus and train).

1.2 Intended Audience and Reading Suggestions

This document is intended for all individuals participating in and/or supervising the project. Readers interested in a brief overview of the product should focus on the rest of Part 1 (Introduction), as well as Part 2 of the document (System Features), which provide a brief overview of the requirements of the system.

1.3 Product Scope

The scope of the system is to identify the fastest (considering average speeds for bus and train) possible route between a given source and destination by incorporating feasible combination of multiple modes of transport. The system is expected to take source, destination and departure time as inputs and the system should return an optimal route with respect to travel time that shows what roads to use and what modes of transport to take.

In this version of the system we are working on the use case of Bengaluru Metro Train and Bengaluru Metropolitan Transport Corporation (BMTC) Bus Services. A static data set recorded during a normal day in Bangalore city by BMTC is being considered for the system.

1.4 References

- *https://www.mybmtc.com/*
- *http://www.bmrc.co.in/English/*
- *IEEE 830 Software Requirement Specification Template: https://en.wikipedia.org/wiki/Software_requirements_specification*
- *Haicong Yu, Feng Lu, A MULTI-MODAL ROUTE PLANNING APPROACH WITH AN IMPROVED GENETIC ALGORITHM.*

2. System Features

2.1 Stimulus/Response Sequences

1. User visits Application home page.
2. Application asks the user to enter source and destination.
3. User confirms.
4. Application stores the locations and finds the shortest optimal multi modal path.

2.2 Functional Requirements

REQ-1: Get source and destination location.

1.1 Prompt user to enter source, destination and departure time.
1.2 Check for valid locations, if valid skip 3.
1.3 Prompt the user to re-enter the data and go to 1.

REQ-2: Provide an optimal path using multiple modes of transport.
(Uses heuristic based approach to solve label constrained shortest path problem.)

2.3 Non-Functional Requirements

2.3.1 Performance: The system is expected to return to a result in reasonable time. Since real time data needs more sophisticated approach, in this version we are restricting our system to function on static data collected from BMTC data base.

2.3.2 Reliability: Reliability of the system revolves around the heuristics being followed. The algorithms used must provide correct results even for large database.

2.3.3 Availability: There are no high concerns about availability of program. If for any reason the program makes stands unavailable or crashes for some time, this event is not going to affect the user.

2.3.4 Security: There are no security requirements as of now.

2.3.5 Maintainability: The program must be designed in a way that updates can be done without changing the already developed structure.