Muğla Sıtkı Koçman University

Computer Engineering Department

CENG3511 : Artificial Intelligence

Midterm Project Report

Project Title: Smart Route Navigator: Shortest Path Finder using Dijkstra's Algorithm on
Leaflet Map

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Objective:

The purpose of this project is to develop an easy web-app to allow users to find the fastest path between two points on a map. We use the Dijkstra's algorithm to find out the path and the map is rendered by the Leaflet. js library.

Tools and Technologies:

•\HTML, CSS, JavaScript – frontend and logic.
•\Leaflet. js Interactive Map (an update on map- puzzle) It is a map rendering library that enables mapping through data visualization.
•\Custom Dijkstra, there is a lib to do it but the task is simple enough by hand – pathfinding
• Live Server (VS Code) – to test locally

How It Works:

1. We are starting the Leaflet map in a very simple index. html.

2. Data Loading: 1) Graph (edges, nodes and coordinates) are read from a JSON file.
3. The user will click on two points in the map. The closest nodes are picked up by the system itself.
4. Dijkstra's algorithm is working in the background to find the shortest path.
5. The output shows red colored path on map and distance as the alert.

Conclusion:

This project is an example of using graph-based pathfinding over real map interface. Dijkstra's in-javascript / No pathfinding library I finished implementing Dijkstra's algorithm in JavaScript without using a pathfinding library. Leaflet. js was a great place to start in order to make the visualization interactive and visual. The system performs properly and all features are well implemented.

Files in the Project:

- \index.html – Main web page
- \style. css – Page design and layout
- \script. js – All logic and map manipulation index.
- \dijkstra. js – The algorithm itself
- \graph-data. json – Points and Connections mapped out on the world map
- \README. md – A description of the project
- \report.pdf – This document