Intro To AI-ML(EAI201) --Assignment

Title::Bot Map (Campus Navigation)

WEEK-1 Report--Project Understanding & Planning

Introduction

University campuses are sometimes confusing for new students, visitors, or even staff. So, navigating between buildings to cafe or to classrooms, hostel can be time-consuming, especially for first-year students. A Chatbot, search algorithms, can help students easily locate buildings, find shortest paths. The Project "Bot Map(Campus Navigation)" is designed as an agent that models Chanakya University campus. It combines graph-based search algorithms, a chatbot interface, and data containing building information to provide accurate navigation with short time.

Problem Statement

Desing a Navigation system which helps new comer students, visitors, or any person to travel from one place to another with the shortest route using different algorithms like BFS, DFS, UCS and A* to analyse user starting and destination and finding the accurate and shortest routes to travel.

Objectives

1. To design a graph model of the Chanakya University campus with major locations and cost of travel like (10 steps=1cost) OR (2m=1cost).

2. To implement search algorithms (BFS, DFS, UCS, A*) to find routes between any two buildings/locations.

3. To build a text-based chatbot interface where users can input destination (e.g., "Find path from Hostel to Library")

4. To compare the efficiency of different search algorithms in terms of explored nodes and path cost.

Scope

Present

- To Travel from one location to another using Algorithms.
- Implementation of BFS, DFS, UCS, and A*.
- Text based Chatbot interference for user interaction/to ask queries.

Future Upgrading

- Floor Level navigation and multi paths navigation.
- Real time Navigation using GPS/ any other APIs.
- Integrating this system in a Web application.

Tools & Technology Finalization

- **Programming Language**: Python
- **Chatbot Framework**: Rasa / Dialogflow (or simple Python text interface for prototype)
- **Graph Algorithms**: BFS, DFS, UCS, A* with heuristic
- **Map Integration (optional later)**: Google Maps API / Custom campus map visualization
- **Diagramming Tools**: Draw.io for campus map and architecture diagrams