Artificial and Computational Intelligence

Assignment 1

Path Finder Agent

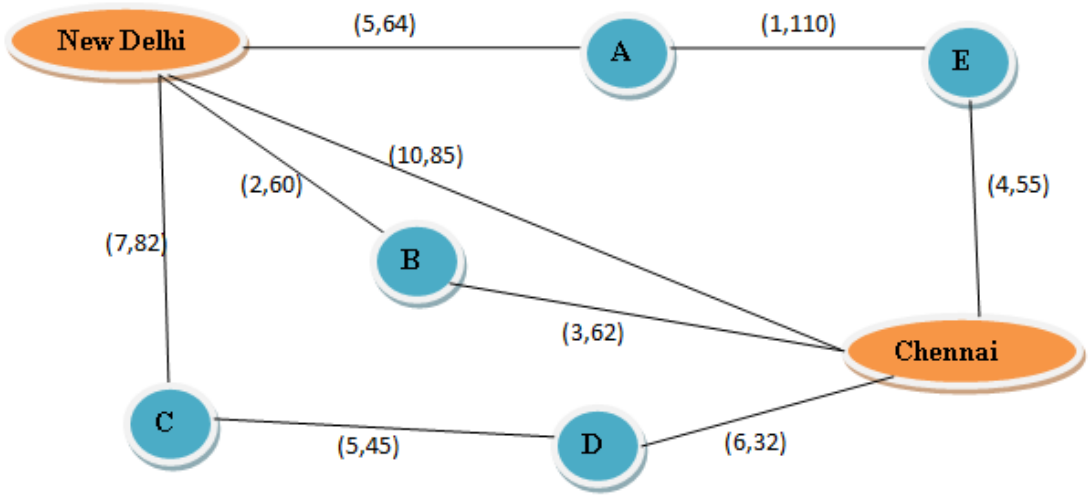
Problem Statement:

Most areas of Chennai were affected by Cyclone Michaung. Water enters residential area and power disruption in many areas affects the normal life of People in Chennai. National Disaster management team have to reach Chennai from New Delhi to do the rescue operation. Design a path finding agent to help them to reach the destination with optimal cost. The cost factor can be attributed by time taken, expected speed on a particular route which are depicted in the below map. The average of the total transmission cost across all these paths is the heuristic value h(n).

Use the following algorithm to solve the problem:

1. A* search.
2. Hill Climbing

Graph representation:



Answer the following:

1. Explain the environment of the agent [20% weightage]

2. Define the heuristic and or fitness function for the given algorithms and the given problem. [20% weightage]
3. Use appropriate data structures and implement given informed and local search algorithm and Print the path taken by the agent. [40% weightage]
4. Find and print space and time complexity using code in your implementation. [20% weightage]

Note:

- You are provided with the python notebook template which stipulates the structure of code and documentation. Use well intended python code.
- Use separate MS word document for explaining the theory part. Do not include theory part in the Python notebook except Python comments.
- The implementation code must be completely original and executable.
- Please keep your work (code, documentation) confidential. If your code is found to be plagiarized, you will be penalized severely. Parties involved in the copy will be considered equal partners and will be penalized severely.