University of Asia Pacific

Department of Computer Science & Engineering

Project Report

Course Code: CSE 404

Course Title: Artificial Intelligence and Expert Systems Lab

Project Name**: Implementation of a small address map using A* search algorithm.**

Submitted By:

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1. ***Introduction***

The assigned problem is the implementation of a small address map from my home to UAP, using the A* search algorithm and finding out the optimal path. A* algorithm is a searching algorithm that searches for the shortest path between the initial state to the final state.

So, here in this project, I will find the most optimal path from my home (Agasadek Road) to my university (UAP) using the A* search algorithm.

2. ***Objective***

In this project, I have to reach UAP from my home Agasadek Road by using the shortest path. There are several paths between Agasadek Road to UAP. But not all of those paths are optimal. So, I need to find out the optimal path. For finding, I've used the A*(A-star) search algorithm.

3. ***Tools And Languages***

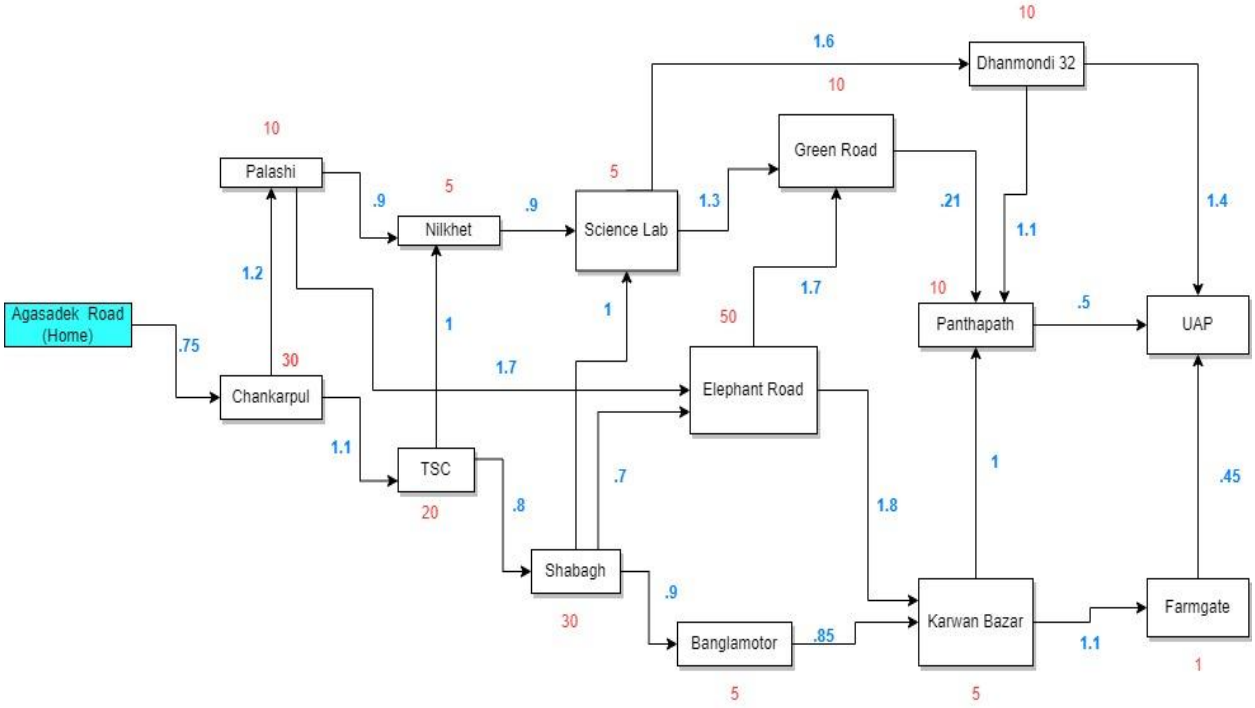
- ☐ **Map Designing:** Draw.io
- ☐ **Programming Language**: Python
- ☐ **IDE:** PyCharm
- ☐ **Distance Measurement:** Google Maps

4. ***Designed Map***

Start Node: Agasadek Road (Home)

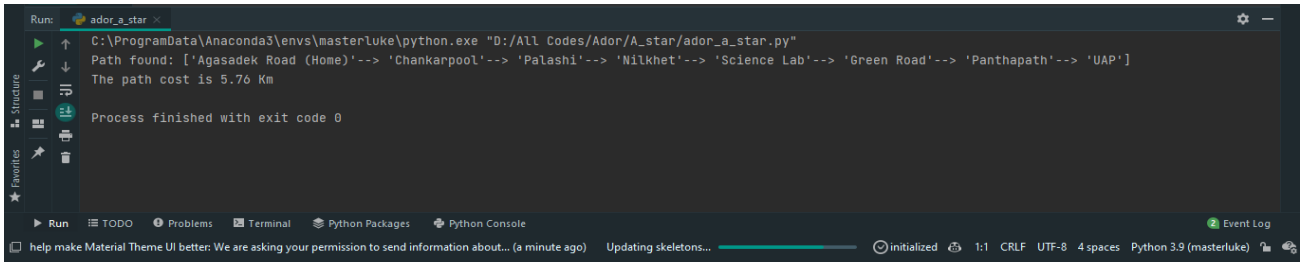
Goal Node: UAP

Cost in Distance: Kilometer (KM)
Heuristic Value (h)



5. [Source Code]

6. ***Output:***



7. ***Result Analysis:***

After Using A Star Search Algorithm on this designed map, on output we can find the shortest path :
Agasadek Road (Home) → Chankarpool → Palashi → Nilkhet →Science Lab → Green Road → Panthapath → UAP (Goal)
So, we can say that that is the most optimal and shortest path.

8. ***Conclusion***

In this project, after successful implementation, a star search algorithm gives the most optimal path as output. In conclusion, a star search algorithm is a powerful and beneficial algorithm with all the potential. So we can use this algorithm to approximate the shortest path in real-life the situation, like - in maps, games, robotics, etc.

-The End-