



RPPPOOP Semester Project (2021-22)

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Stream: **SY Computer and IT**



Project Topic:

Visualisation of Shortest Path Finding Algorithms.

- Dijkstra's Algorithm
- A* Algorithm



What exactly is our Problem

At times we are stuck in place and have to reach another location at earliest, in such case finding the shortest path becomes very necessary

When we are connecting few PCs or devices, we need to make sure that have the shortest path so that we can save on the material



Our Solution

Hence on the above stated problem we hereby suggest to use our automated graphic representation of Shortest path using dijkstra and A* Algorithm.

Use of these algorithms will help us find the shortest path and thus help us overcome the above stated problems.

These two algorithms follow different methods to find out the shortest path, we'll talk about them in the upcoming slides



Other implementation

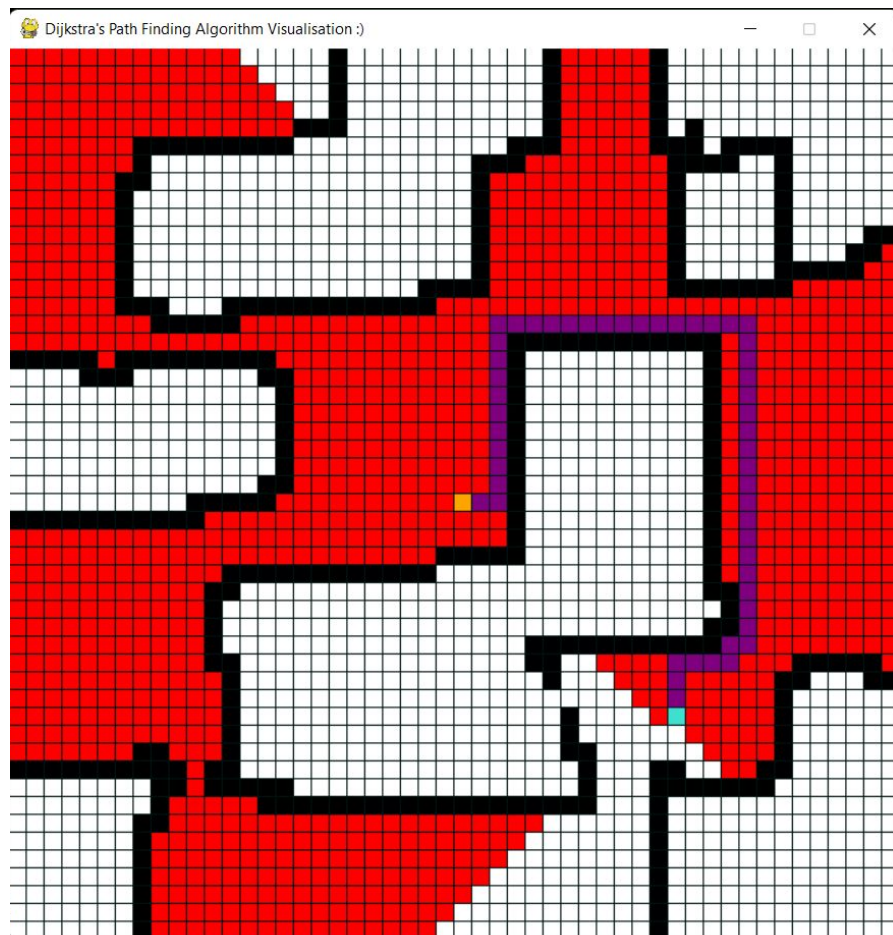
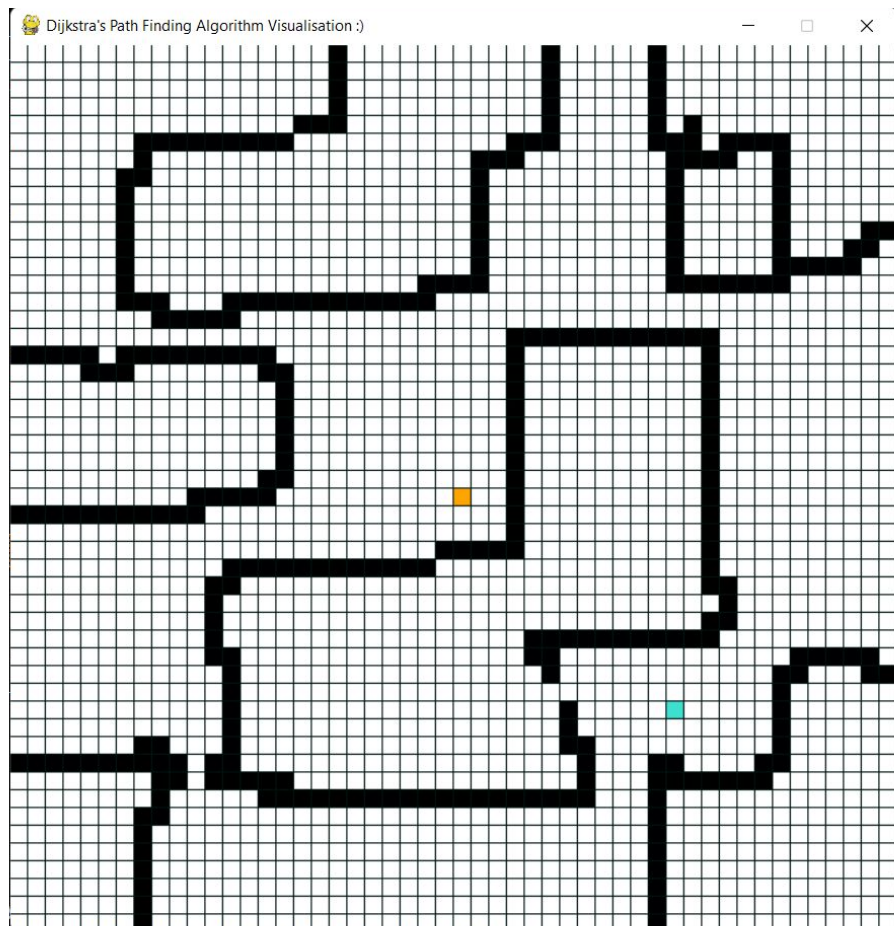
- **Digital Mapping Services in Google Maps**
- **Social Networking Applications**
- **Telephone Network**
- **IP routing to find Open shortest Path First**
- **Robotic Path**



Dijkstra's Algorithm

Dijkstra's algorithm allows us to find the shortest path between any two vertices of a graph. It differs from the minimum spanning tree because the shortest distance between two vertices might not include all the vertices of the graph.

output

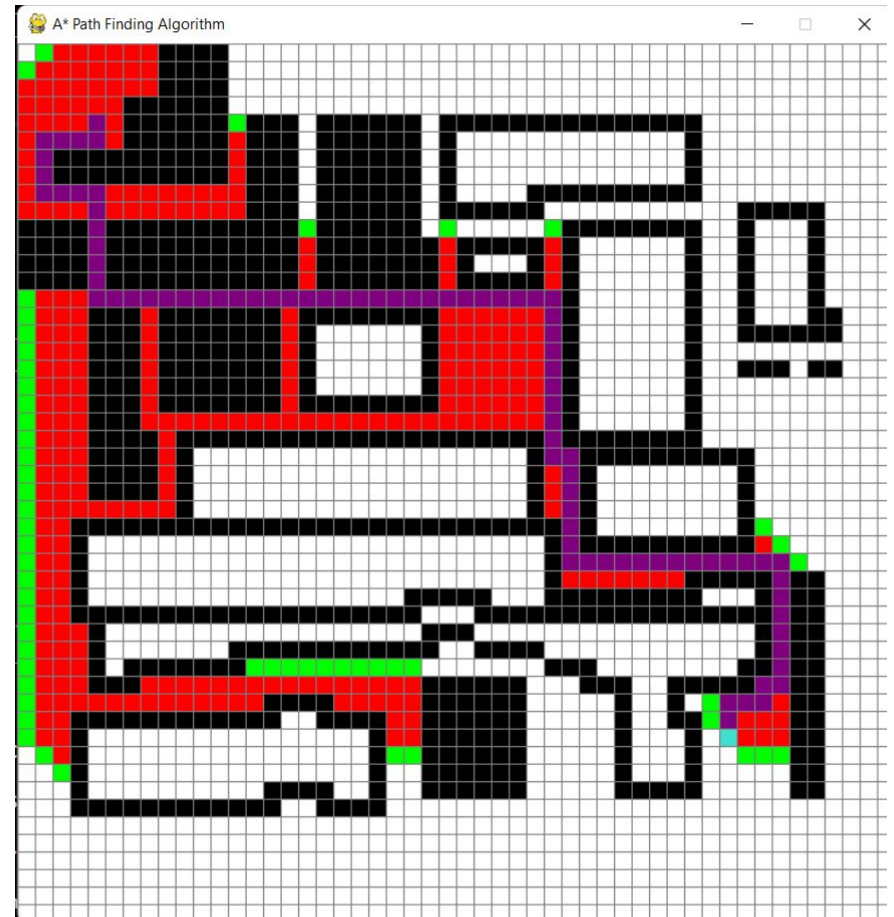
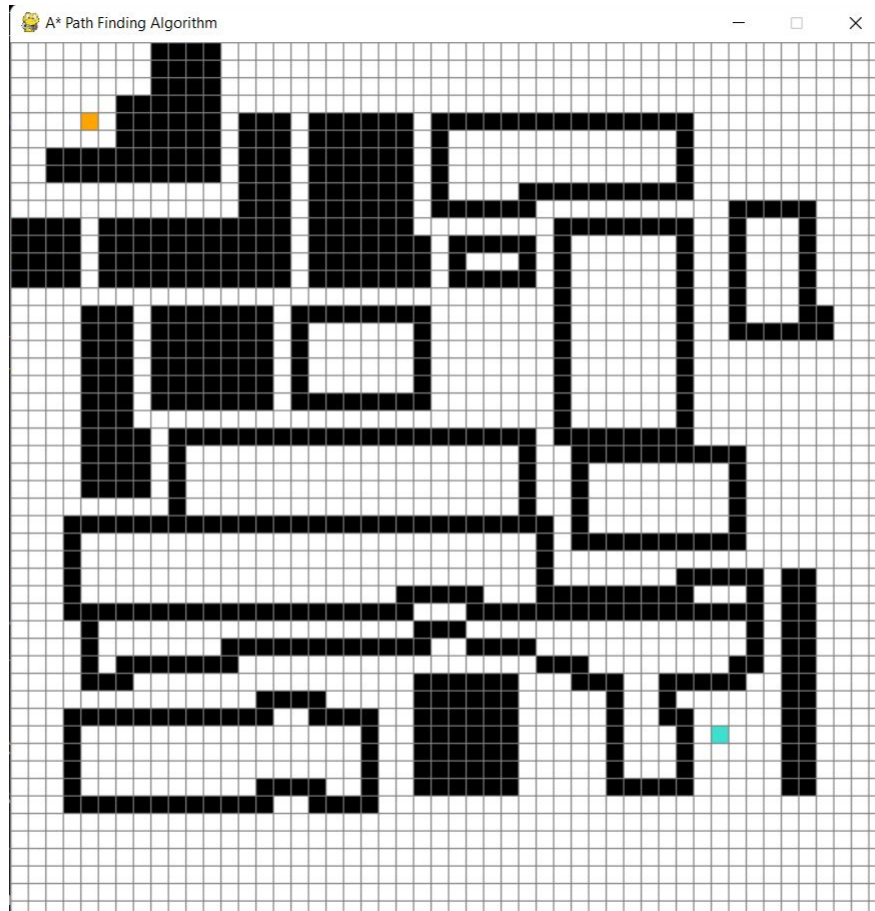




A* Algorithm

The A* Shortest Path algorithm computes the shortest path between two nodes. A* is an informed search algorithm as it uses a heuristic function to guide the graph traversal. The algorithm supports weighted graphs with positive relationship weights.

Output





Demerits

Uniform Scanning takes a lot of time if the points are at two far ends

Shortest path Algorithm will have n complexity with no result if the endpoint is not set.

Complexity increases with increase in the area and obstructions.



Conclusion

The following project shows us the Graphical representation of the two shortest path algorithms which can be used in many real life applications.

It also displays the path if there are any obstructions present between the two given points, this can be very useful in real life where we need to find the path from one location to another in a city.