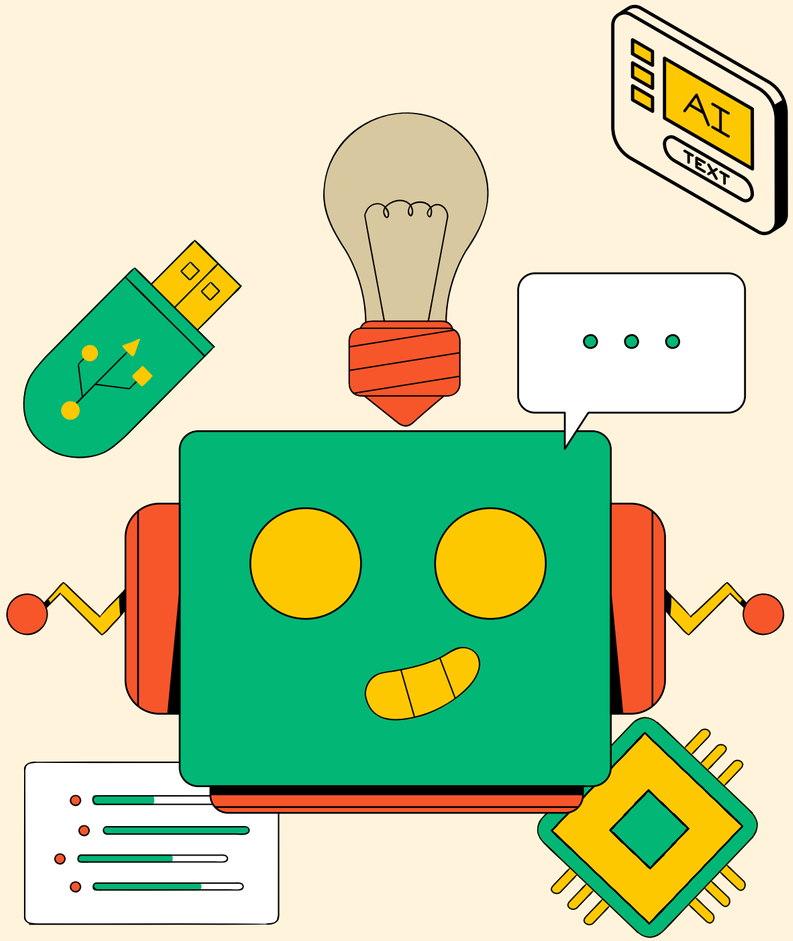
আন্তর্জাতিক ইসলামী বিশ্ববিদ্যালয় চট্টগ্রাম
International Islamic University Chittagong

PATH FINDING VISUALIZOR



Course Title: Artificial Intelligence Lab

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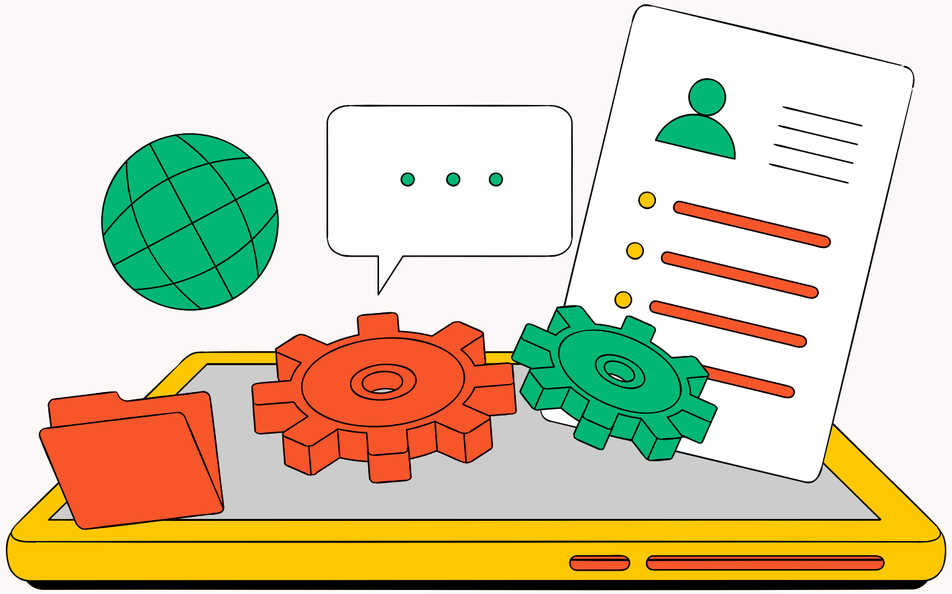

Submitted To:

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PRESENTATION OUTLINE

- Introduction
- Objectives
- Tools & Technologies
- Project Demonstration
- Algorithm Integration
- Testing
- Future Implementation
- Conclusion

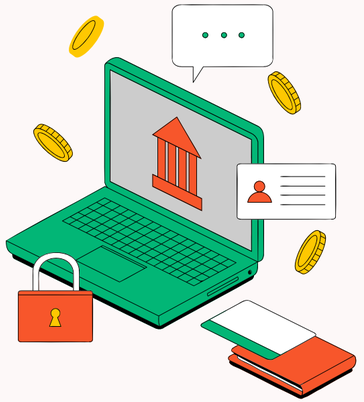
INTRODUCTION

This project is a Pathfinding Visualizer, an interactive tool designed to demonstrate how various pathfinding algorithms work in real time. It helps users understand and compare algorithms by visualizing their step-by-step process of exploring nodes and finding the shortest path.

OBJECTIVES

- An interactive tool to visualize how pathfinding algorithms work in real-time.
- Helps users understand and compare the behavior of different algorithms.
- Built using Python and Pygame for smooth graphical interface and animation.

TOOLS & TECHNOLOGIES



FRONTEND

- Pygame Library
- GUI for mouse interaction

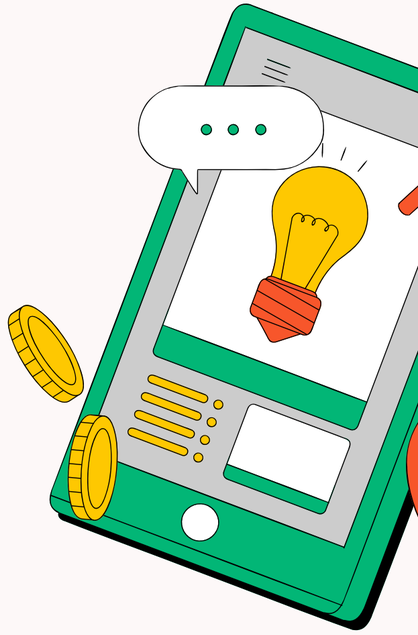
BACKEND

- Python

DEVELOPMENT TOOLS

- VS Code

PROJECT DEMONSTRATION



Step-by-Step Visualization

Grid Manipulation

Algorithm Selection

Perfomance metrics

ALGORITHM INTEGRATION

01

GREEDY BEST FIRST SEARCH

02

DEPTH FIRST SEARCH

03

A* SEARCH

ALGORITHM INTEGRATION

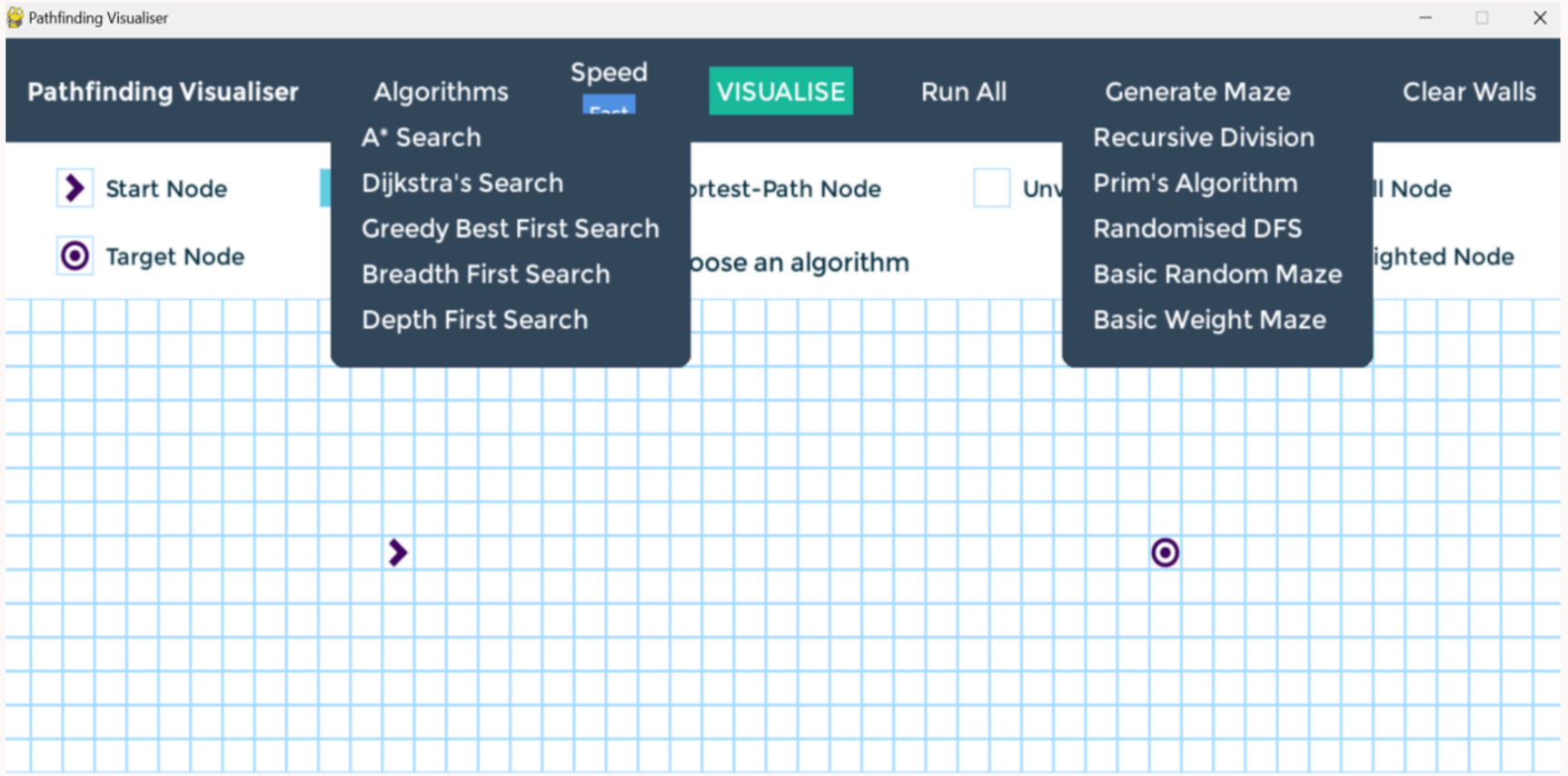
04

BREADTH FIRST SEARCH

05

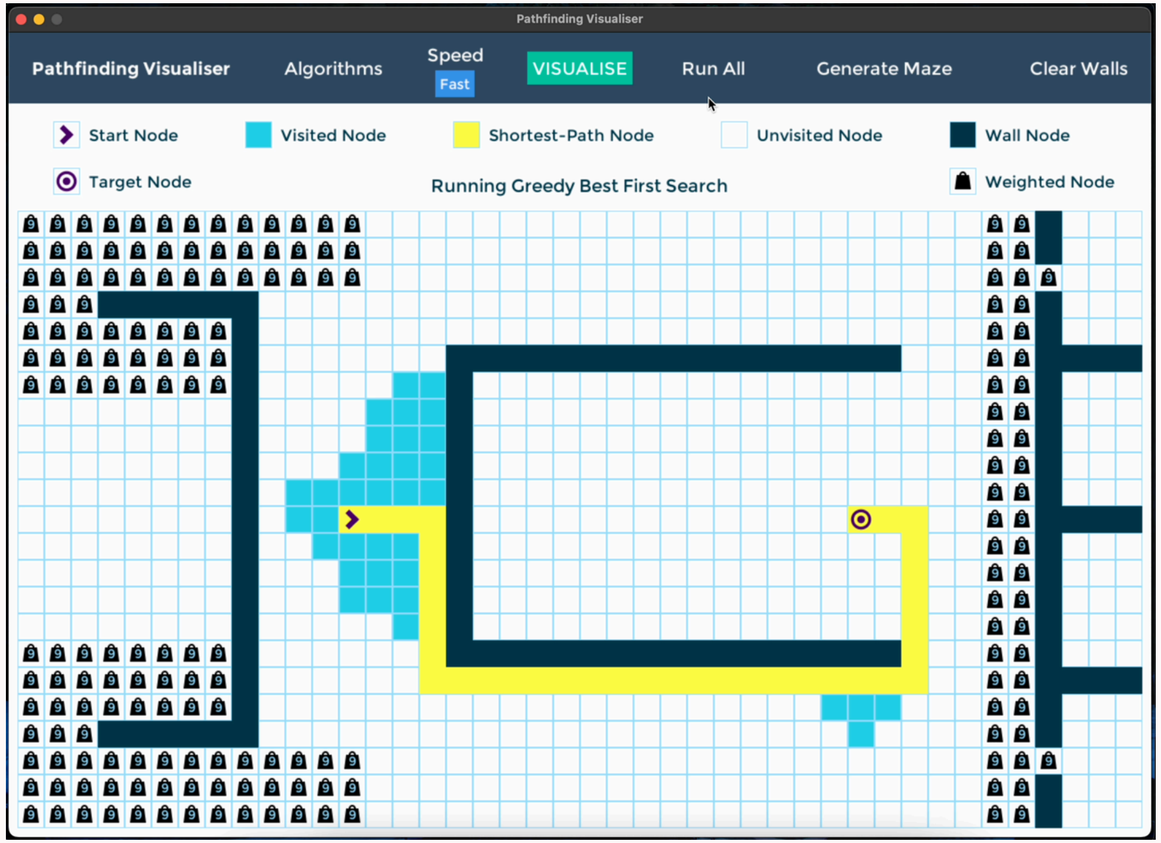
DIJKSTRA'S SEARCH

TESTING (INPUT)

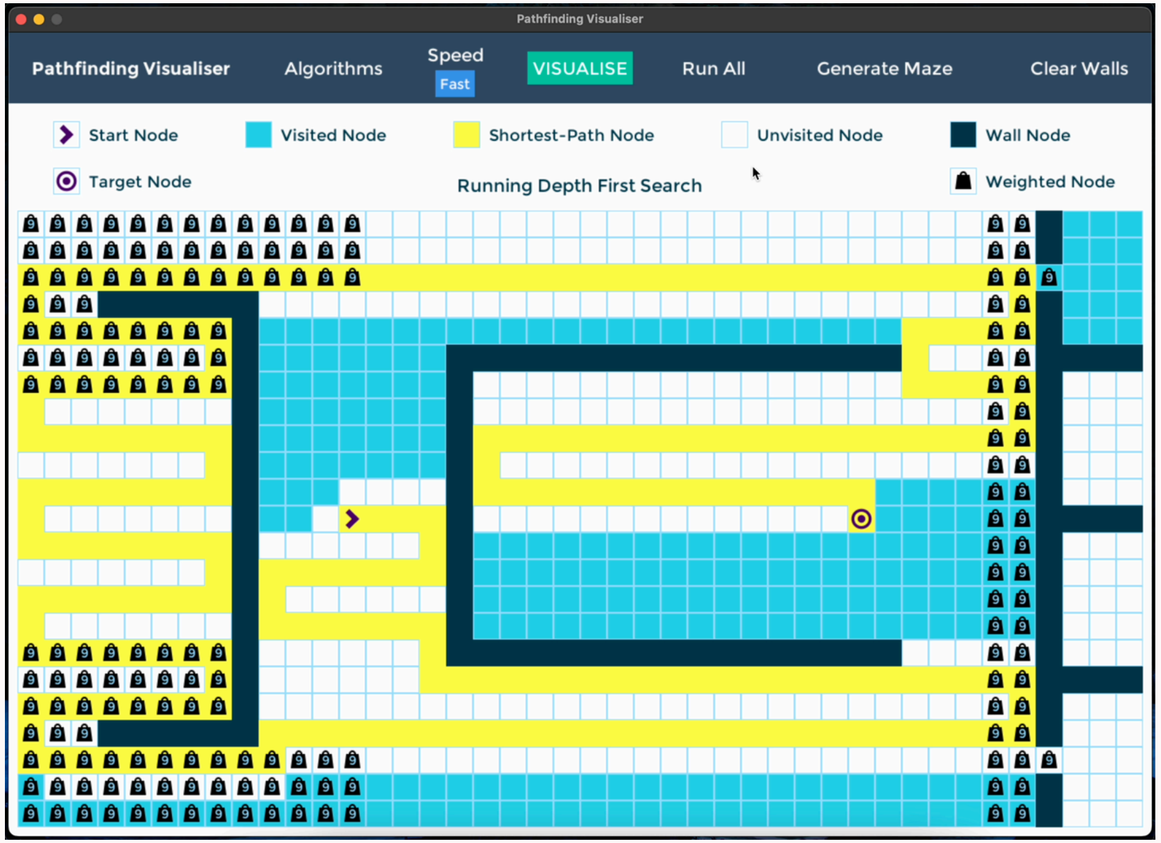


TESTING (OUTPUT)

Greedy Breadth First Search

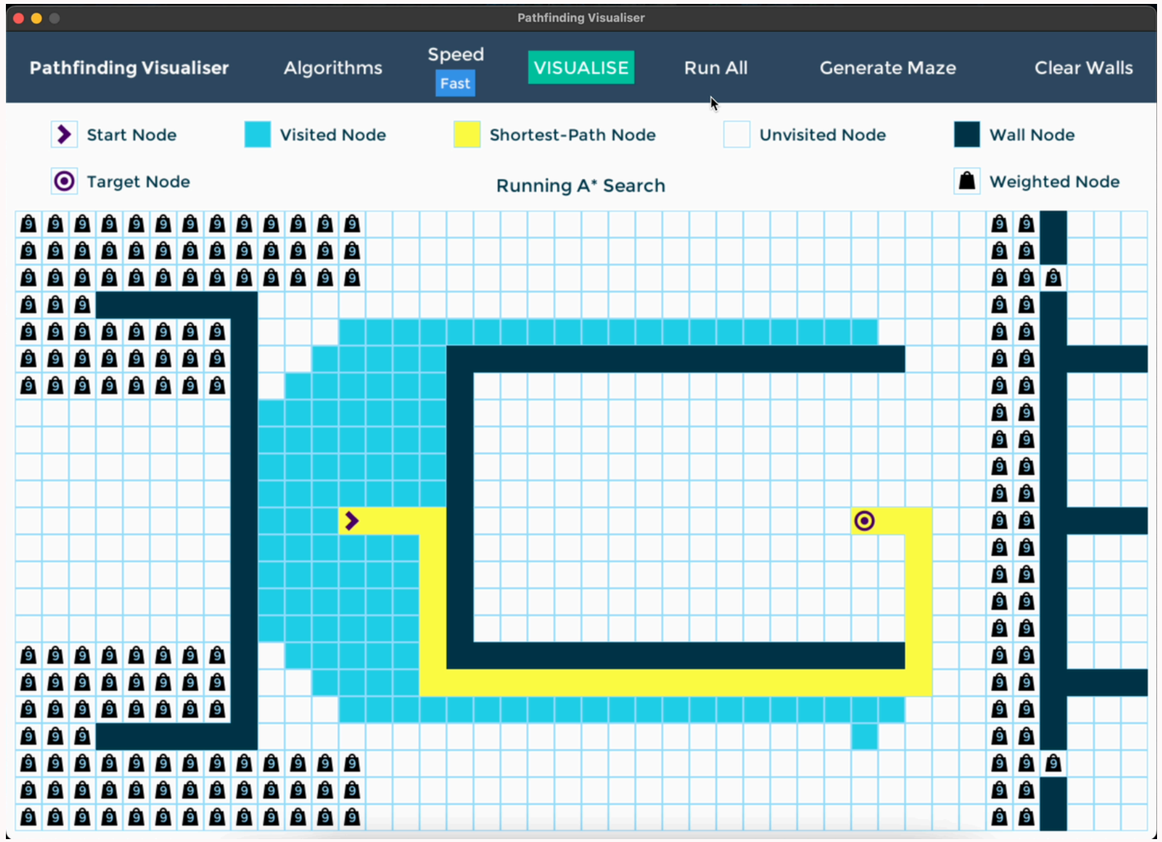


Depth First Search

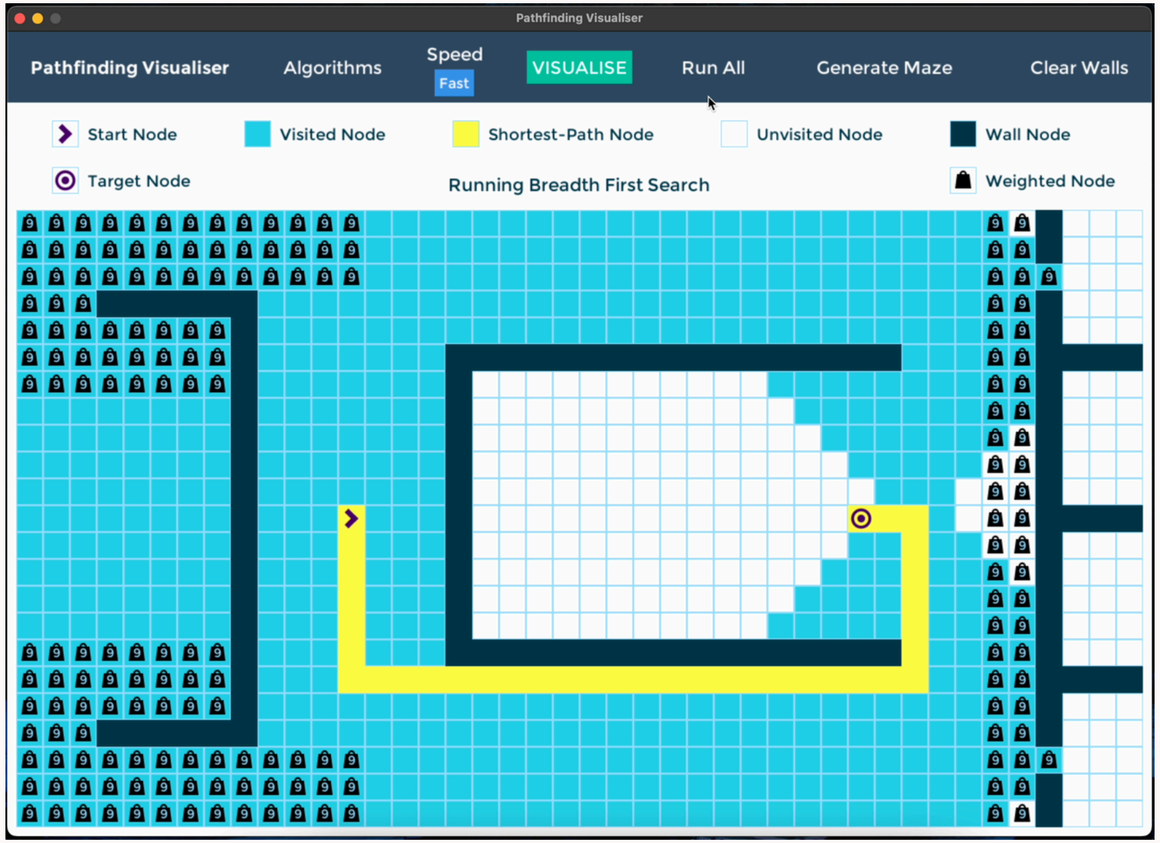


TESTING (OUTPUT)

A* Search

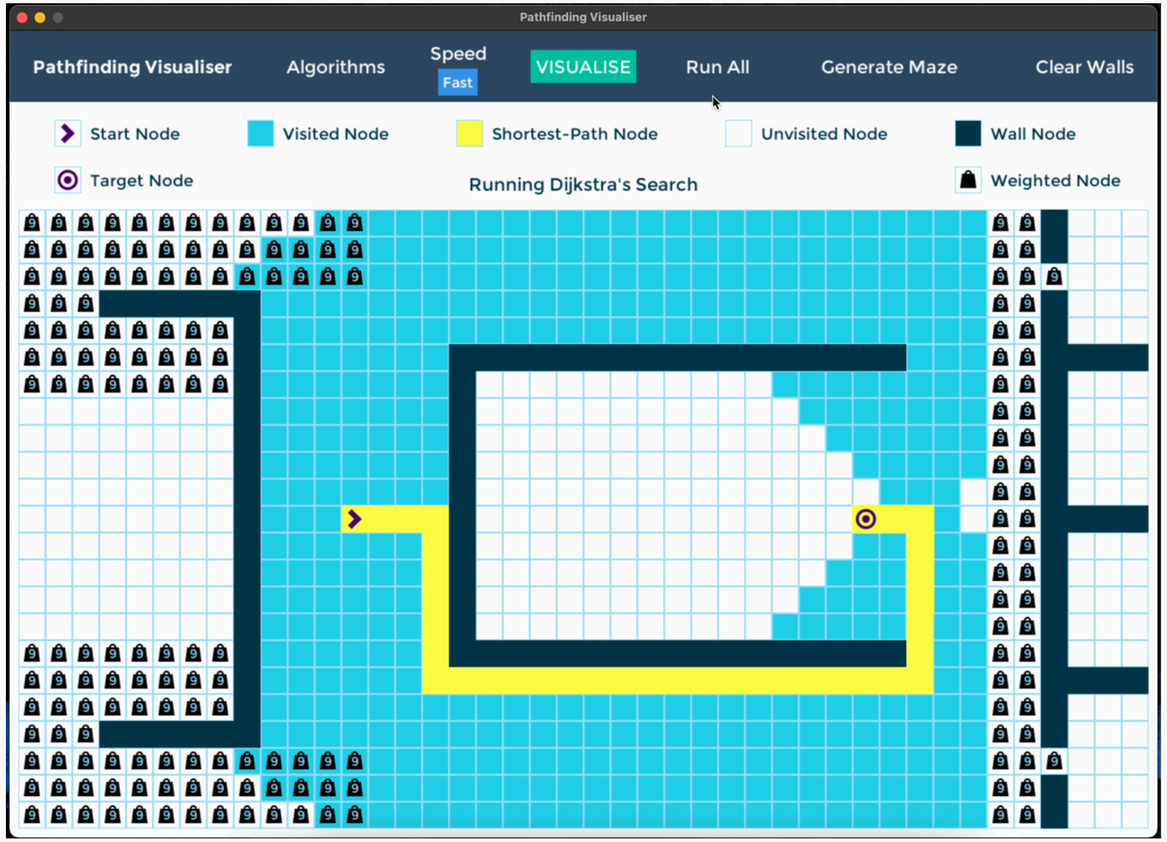


Breadth First Search

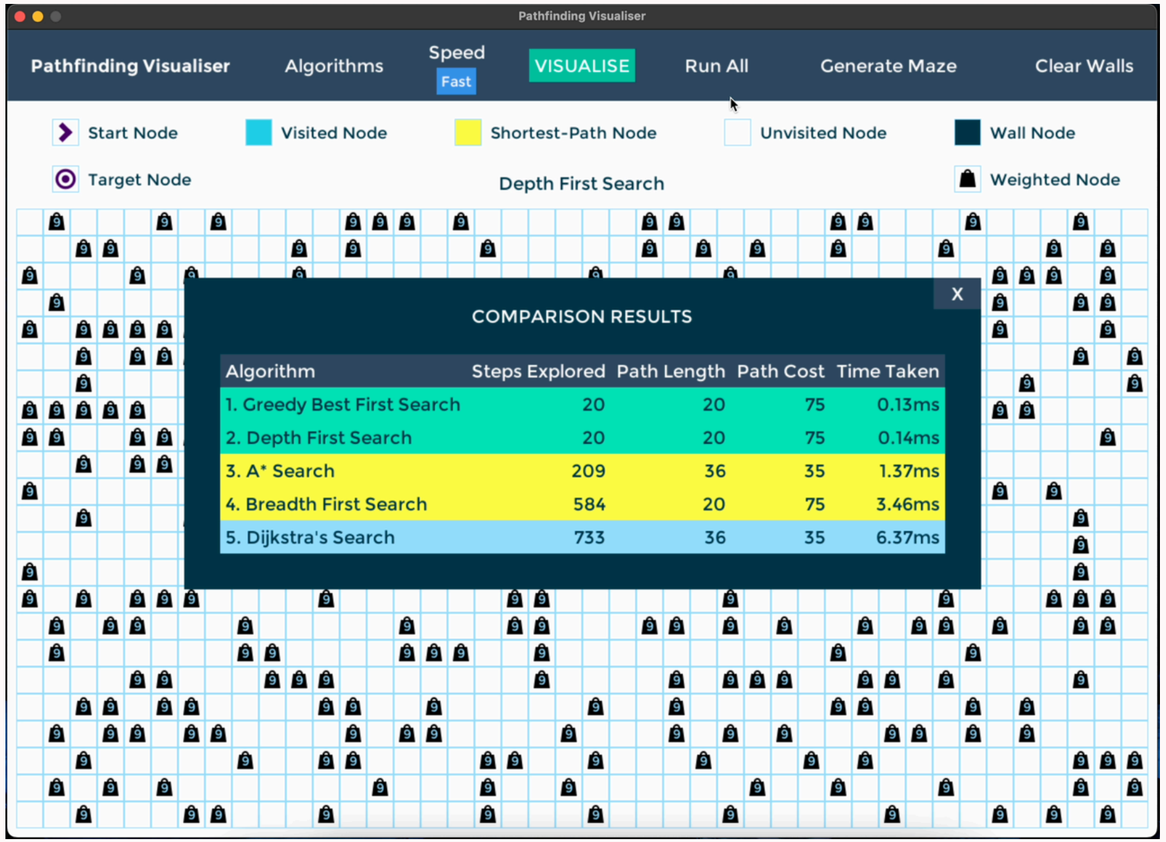


TESTING (OUTPUT)

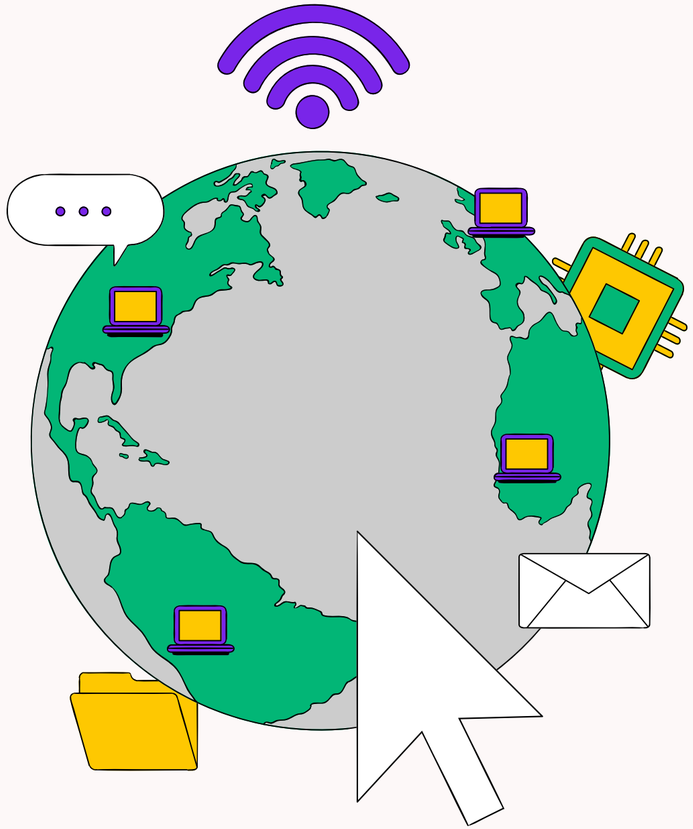
Dijkstra's Search



Results



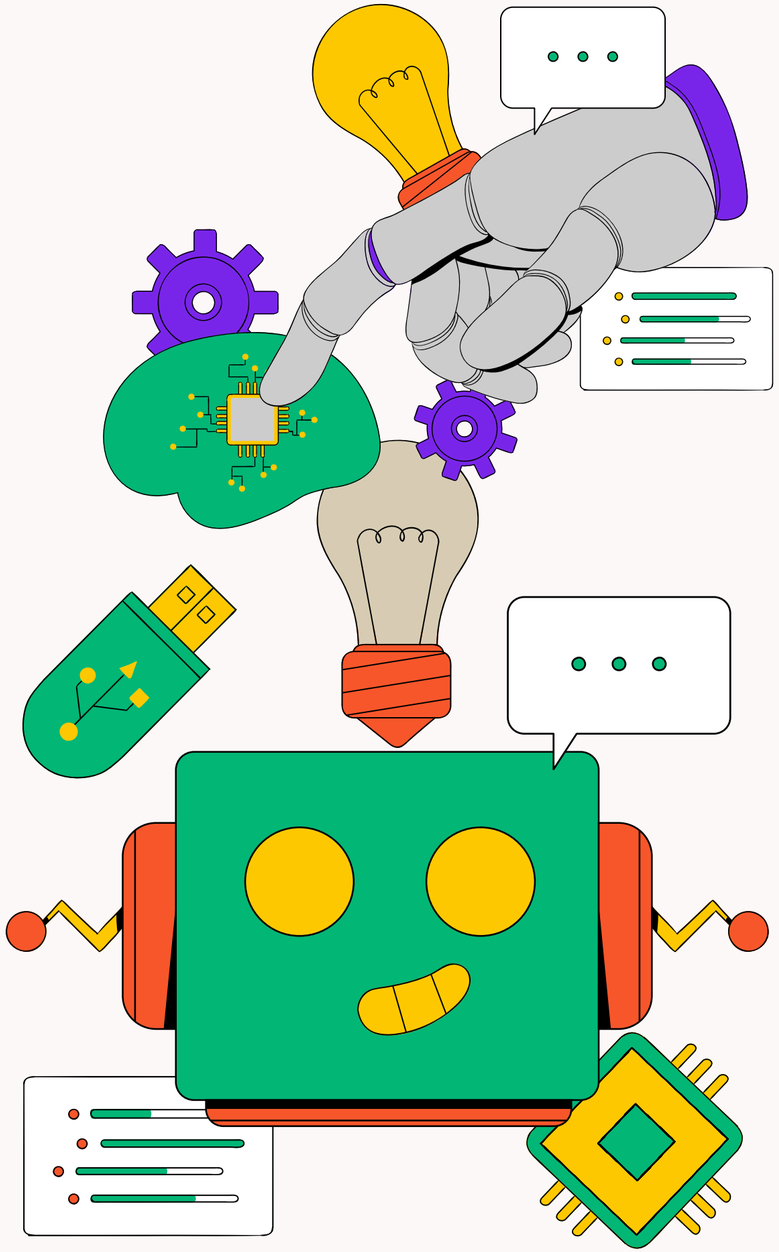
FUTURE IMPLEMENTATION



- Add more algorithms
- Add options to save and load custom grids
- Improve the user experience
- Support diagonal movement.
- Integration with real world application

CONCLUSION

This project makes learning algorithms engaging and visual. It is a great educational tool for students and educators. Future additions can make it even more interactive and useful.



THANK YOU