*MIDEM CONFERENCE*

*ABSTRACT SUBMISSION*

**Comparison of Pathfinding Algorithms**

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**ABSTRACT**

Pathfinding algorithms play a crucial role in various fields, such as navigation, robotics, video games, and mathematics. With the help of these algorithms, applications like Google Maps can provide precise instructions on how to navigate from location A to location B. This research paper explores and compares five notable pathfinding algorithms: Dijkstra’s algorithm, A\*, Depth-First Search (DFS), Breadth-First Search (BFS) and The Wall Follower algorithm.

The focus of the comparison is on four critical metrics:

* Optimality: Does the algorithm always find the shortest path?
* Time Complexity: How quickly does the algorithm solve the maze?
* Memory Usage: How much memory does the algorithm consume during execution?
* Exploration Efficiency: What percentage of maze cells does the algorithm visit to find a solution?

By applying each algorithm to a maze and visualizing its process, the paper provides an intuitive understanding of their differences [1]. This analysis aims to offer valuable insights into the trade-offs between efficiency and exploration strategies employed by these algorithms.

A screenshot of a game

Description automatically generated

Figure 1: Visualization of all algorithms with details about their performance