



COMSATS University Islamabad – Abbottabad Campus
Department of Electrical & Computer Engineering

Proposal: CSC462– Artificial Intelligence

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Title:

Competitive Maze Solver

Short Description:

I will try to make a maze solver game (two players i.e. Human vs Ai) in which I will apply adversarial search algorithms (optimal moves) as we studied it deeply. I'm interested in games, that's why I chose this topic. Solve a maze while strategically placing blocks to hinder the opponent.

SP Summary

- A complete maze solver game between 2 players and both players will try to hinder each other to win the game.
- It seems to be a creative and interesting game to solve, that's why I preferred this to be my SP.
- The objective is to determine a path from a beginning point to an ending point given a 2D matrix that represents a maze. To find the best way and

cross the maze effectively, the suggested approach uses well-known maze-solving algorithms like Depth-First Search (DFS), Breadth-First Search (BFS), and A* Search.

- **Steps of the project...**

- Make use of a grid with walls and routes (10x10).
- Create a function for creating mazes that makes sure the start and finish locations are connected.
- Show the maze as a 2D list with paths at 0 and walls at 1.
- Create player action functions:
Move: right, left, up, down.
Block Placement
- Apply adversarial search: AI assesses both its own and the adversary's paths. Score is equal to the distance to the exit minus the distance the opponent must travel.
- Blocks should be placed to impede the adversary.
- The maze is dynamically updated with every block or move.

Objectives / Outcomes

- Compare well-known maze-solving algorithms (DFS, BFS, A*).
- See how mazes are created and how they lead to solutions.
- Examine the complexity and performance of the algorithm.

References (if any)

Used ChatGPT to explain the whole concept of Maza solver