

# Project title

Comparison of Search-based and  
Reinforcement Learning Agents  
in Solving the Game of Snake

# TEAM MEMBERS

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# Objective

- ▶ The comparison and performance study of AI searching algorithms against human-agents in the Snake Game is the primary focus of this research.
- 1. To list a few of the various searching techniques that the artificial intelligence in games uses.
- 2. To create the snake game by utilizing a few chosen search methods.
- 3. To evaluate the algorithms output against a human agent.

# Approach

- ▶ We analyze the variations in efficiency and outcome while applying BFS, DFS, A\*, and UCS when playing the game of Snake.
- ▶ The snake begins as an empty grid and gradually fills it with a tail.
- ▶ We can apply our tail to consider the squares as walls.
- ▶ We create data by running each searching algorithm through a number of trials.
- ▶ Outputs: Bar graphs, text file data and line graphs

# Deliverables

- ▶ **Project Report**
- ▶ **Game Simulation Environment**
- ▶ **AI Implementations**
- ▶ **Comparison Metrics**
- ▶ **Experimental Data**
- ▶ **Visualizations**
- ▶ **Conclusion**
- ▶ **Code Repository**
- ▶ **Documentation**

These deliverables clearly correspond with the project's stated objectives, which include analyzing and comparing AI searching algorithms with human agents in the context of the Snake Game and making appropriate conclusions from the data gathered.

# Evaluation methodology

- ▶ In addition to doing a performance study on the human agent and a few algorithms in the snake game, the project's goal is to find a few AI-based searching methods. In terms of performance, such as the game score each algorithm obtained, the chosen algorithms DFS, BFS, A\*, UCS were tested. We deduced from the project's background research that various AI techniques are beneficial for the advancement of AI in video games.
- Comparison of Search-based and Reinforcement Learning Agents in Solving the Game of Snake