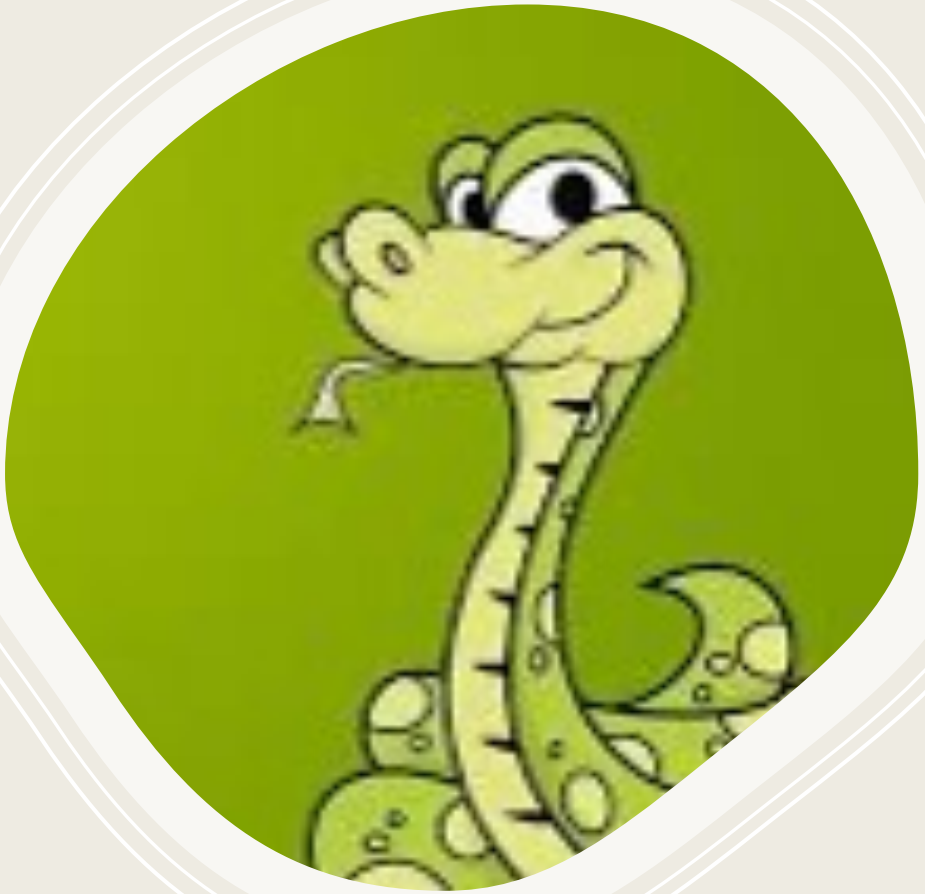
University of New Haven

Intro Artificial Intelligence

TERM PROJECT PRESENTATION BY

NAGASREE RAYALA(00719044)

LALITHA PENMETSA(00719012)



TOPIC :

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

Objectives

Design search-based Learning agents and Reinforcement-based Learning agents to solve the game

Design 4 Learning agents (3 – search based and 1-Reinforcement agents)

Play snake game with all these learning agents

Snake game logic depends on

- 1)Snake grows when it eats food.
- 2)Snake dies when it hits the wall or if it bites itself.

Comparing the difference between search-based Reinforcement Learning agents

Comparing the difference between search-based Reinforcement Learning agents

Approach

These are the Learning Agents we are choosing:

- Search-based Learning agents

1)Breadth First Search

2)Depth First Search

3)A*Search

4)Hamilton Search

- Reinforcement-based Learning agents

1)Q-Learning Agents

2)SARSA Agents

3)Advantage Actor-Critic Agents

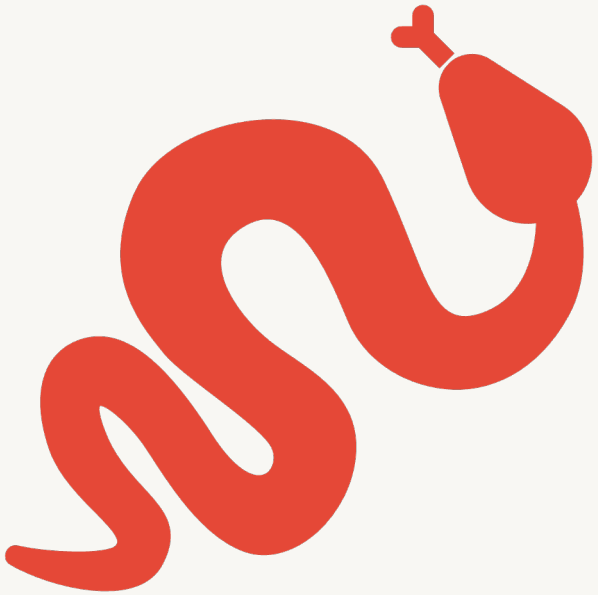
- Technology Stack

Python3

Deliverables

- User documentation manual which gives details about the snake game implementation using search-based and reinforcement learning agent.
- Algorithms developed for Learning agent using python programming language(.py files)
- GitHub repository link for project code and related files.
- YouTube video demonstrating project implementation and slides.

Evaluation Methodology



Project is evaluated based on the implementation of all the learning agents.

A comparison table given for all the Learning agents based on the snake average length and average steps.

Graphs depicting the performance comparisons.

Optimal time and space complexity for all the Learning agents implemented.

The results mentioned shouldn’t be vague and give a categorical inference to user to choose the learning agent.

As it’s a team project, the contribution of the teammates and their communication should also be considered.

THANK YOU