TIC TAC TOE IMPLEMENTATION USING MULTI AGENTS

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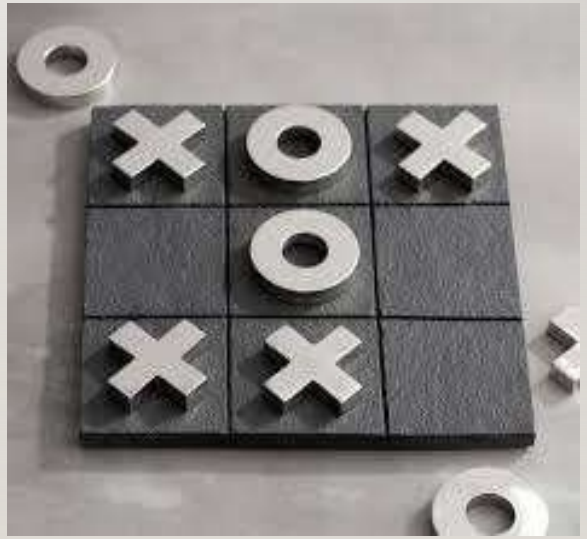
TIC TAC TOE

- Comparison of Min-Max, Alpha-Beta Algorithm and Reinforcement Learning Agents in solving the Tic Tac Toe Game.



OBJECTIVES

- Design Adversarial Search Algorithm and Reinforcement Agents to solve Tic Tac Toe game.
- Design of 3 Artificial Intelligence Agents

  Q learning Technique

  Min-Max Algorithm

  Alpha-Beta Pruning
- Plays Tic Tac Toe game multiple times among them to find the efficient Algorithm.

OBJECTIVES

- The player who gets the three consecutive symbols in a row or column or diagonally gains a winning point.
- Compare the efficiency of three algorithms by calculating the corresponding performance metrics and to find out which performs better either adversarial search or Reinforcement Learning.

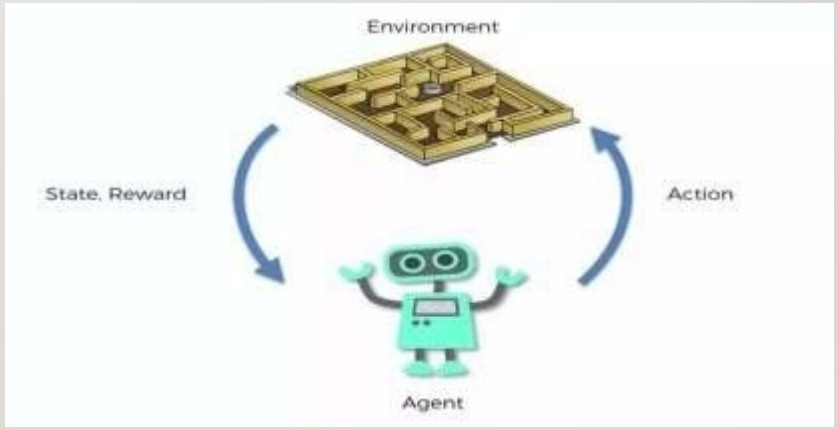
APPROACHES

- The first Approach is Q-Learning from Reinforcement Learning.
- The Second approach we used is from

  Adversarial Search.

  1. Min-Max Algorithm
  2. Alpha-Beta Pruning.
- Technology Stack

  1. Python 3



DELIVERABLES

- User Documentation model which gives details about the Tic Tac Toe game implementation using Min-Max, Alpha-Beta and Reinforcement Learning Agents.
- Algorithms developed for AI Agents using Python Programming Language(.py files)
- Github Repository link for Python code and related files.
- Youtube video Demonstrating project implementation and slides

EVALUATION METHODOLOGY

- Project is evaluated based on the implementation of all the AI agents.
- Calculate the number of wins of the corresponding agent through which it plays multiple times one on one to find the efficient Agent.
- A comparison table given for the three agents based on the Tic Tac Toe moves and corresponding score and also the win rate.
- Graphs depicting the performance comparisons.
- Time and space complexity comparison for the three agents implemented.