Final Project Manual

Final Project Manual: Reinforcement Learning for Tic Tac Toe

Phase 1: 2D Tic Tac Toe (3x3 Grid) - Value Iteration Implementation

- **Objective:** Build an AI agent using value iteration to play 2D Tic Tac Toe on a 3x3 grid.
- **Deadline:** November 14th, 2023.

Phase 2: 2D Tic Tac Toe (4x4 Grid) - Q Learning Implementation

- **Objective:** Construct an AI agent using Q learning to play 2D Tic Tac Toe on a 4x4 grid.
- **Deadline:** November 21st, 2023.

Phase 3: 3D Tic Tac Toe (4x4x4 Grid) - Open-Ended AI Design Competition

- **Objective:** Develop an AI model for 3D Tic Tac Toe on a 4x4x4 grid, employing various approaches to create an optimal policy.
- **Deadline:** December 8th, 2023.
- You can play the game here: https://www.mathsisfun.com/games/foursight-3d-tic-tac-toe.html

Grade Distribution:

- **Final Project Demo:** 50% weightage.
- **Final Report:** 10% - Comprehensive documentation detailing the strategies employed for each phase.
- **Phase 1 and Phase 2:** 10% each. Sufficient guidance will be provided.
- **Competition Performance:** 20% - Round-robin format with 10 games per round; scoring: +1 for a win, 0 for a draw, -1 for a loss. Tiebreakers will be resolved through

additional matches.

Throughout the project, instructional support from the instructor and TAs will be available to ensure a comprehensive understanding of the concepts and techniques involved in reinforcement learning for Tic Tac Toe.

For any queries or clarifications, please feel free to reach out to the instructor or the teaching assistants.

Best of luck for a successful project journey!