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Link For the GitHub Repository:
https://github.com/marylynnhayek/Projet-Final-Ai-Tic-Tac-Toe.git

Link For the Screen Recording:

We implemented a 2-player Tic-Tac-Toe game, where the second player is a bot that uses the Minimax algorithm to compute its decisions. The algorithm begins by considering the current state of the game board. It assumes that the bot is attempting to maximize its chances of winning, while the opponent (human player) is trying to minimize the bot's chances. The algorithm explores all possible moves that the bot can make. For each potential move, it calculates a score using a recursive call to the minimax function. This function recursively evaluates the possible future game states and assigns a score for each based on the assumption of optimal play by both players. It considers all possible moves and assigns scores to them, then selects the move with the highest score for the bot (maximizing) or the lowest score for the human (minimizing).

Maximizing and Minimizing Steps: During the recursion, the algorithm alternates between two phases: maximizing and minimizing. When the bot is the current player, it aims to maximize the score, representing a winning scenario. In contrast, when the human player is the current player, the algorithm assumes the opponent is minimizing the bot's score, representing a losing scenario.

Best Move: The final selected move is considered the bot's "best" move, as it maximizes its chances of winning while considering the opponent's optimal responses. After all, the goal is to maximize the expected utility.

Game Outcomes: The Algorithm considers three possible outcomes in each game state: Terminal States:
A score of **1** represents a win for the bot.
A score of **-1** represents a win for the human player.
A score of **0** indicates a draw.

The Minimax algorithm, when applied to Tic Tac Toe, ensures that the bot makes the most strategically sound moves, leading to one of the following outcomes:

Draw: If neither the bot nor the human player has a clear path to victory, the game will inevitably end in a draw. The algorithm will identify this scenario and play accordingly to avoid loss.