CS-371 Artificial Intelligence Minor

Assignment # 2

Title: Building an agent using python

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Workflow

1. First, I made a basic tic tac toe game using python in which two users can play with each other.
2. Then, I added a function in which I user can play with an AI agent which will be making moves randomly using Random function.
3. Then, I added logic to that agent about when and where to make the next move and how to stop the user from winning.
4. Lastly, I added another function in which AI will play with AI and we will watch them.
5. I also did research on other methods of adding logic like minimax algorithm, reinforcement learning using stable-baseline model and Q learning.

Code Explanation

The code is a implementation of the classic game Tic Tac Toe using the Pygame library in Python. It defines a 3x3 game board using nested lists and initializes the Pygame window with a white background. The game pieces are represented as images, 'X' and 'O', which are loaded and resized in the code. The `game_initiating_window()` function sets up the initial game window and displays the instructions. The `drawXO(row, col)` function draws the game piece at the specified row and column of the board. The `check_win()` function checks for a win or a draw condition and updates the winner and draw global variables accordingly.
The `ai_move()` function implements the AI's move by checking for winning moves, blocking opponent's winning moves, and making a random move if no winning move is available.
The `ai_vs_ai()` function implements a game between two AI players, where each AI takes turns making moves and checking for a win or a draw condition. The `reset_game()` function resets the game state to its initial state. The code runs the game between two AI players and displays the game window and pieces until the game ends in a win or a draw.