Tic-Tac-Toe AI Training

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Abstract:

A very simple exploration in training an AI based on many simulations, starting with a purely random AI and improving iteratively.

Summary:

As a proof of concept, I developed an AI to play the classic game of tic-tac-toe. To train the AI, I begin with a purely random AI (choose where to play an x or o randomly). I then make the random AIs play against each other millions of times and record the outcomes to develop a smarter AI. Then, a final iteration of training takes place where the smarter AI plays against itself 150,000 times, and then also plays against the random AI millions of times each first as x and then as o. These three AIs can then be played against by an individual as easy, medium, or hard difficulty, respectively.

Contents:

Tic-Tac-Toe.ipynb
- Play the game as a player against the 3 AIs
- Requires the x_wins, o_wins, and ties directories with their contents

Tic-Tac-Toe_Trainer_First_Iteration.ipynb
- Make the random AI play against itself millions of times
- Generates the first set of data for the 'smarter' AI aka medium difficulty

Tic-Tac-Toe_Trainer_Second_Iteration.ipynb
- Make the smarter AI play against itself and the random AI hundreds of thousands of times
- Generates the second set of data for the even smarter AI aka hard difficulty

x_wins, o_wins, and ties directories
- each directory contains the results of the 2 trainings saved as x_wins, o_wins, and ties .txt files