BIRZEIT UNIVERSITY

Design and Analysis of Algorithms (COM336)

Fall Semester 2021/2022

Project # 4

Tic-Tac-Toe AI Algorithm

Let us combine what we have learnt so far about minimax and evaluation function to write a proper Tic-Tac-Toe AI (Artificial Intelligence) that plays a perfect game. This AI will consider all possible scenarios and makes the most optimal move.

let's build some Tic-Tac-Toe AIs that all conform to a consistent interface, and see for ourselves why interfaces are so helpful.

We're going to write several different Tic-Tac-Toe AIs, each of which will choose their moves using different strategies of varying degrees of complexity. And we won't be the only ones doing this. We also want to be able to challenge your friends and family to a duel - your best AI against theirs.

Game scenarios:

1. AI that makes random moves

   We're going to start by writing one of the simplest AIs possible. This AI will look at the board, find all the legal moves, and return one of them at random.

   We'll write a function called **random_ai** that conforms to our AI interface. This means that it accepts 2 arguments - a Tic-Tac-Toe board and the current player - and returns the co-ordinates of a move.
2. Two human players to play against each other.
3. Tic-tac-toe unbeatable (Minimax algorithm).

Good Luck