The Catholic University of America

AI – Project3 Report

CSC 447

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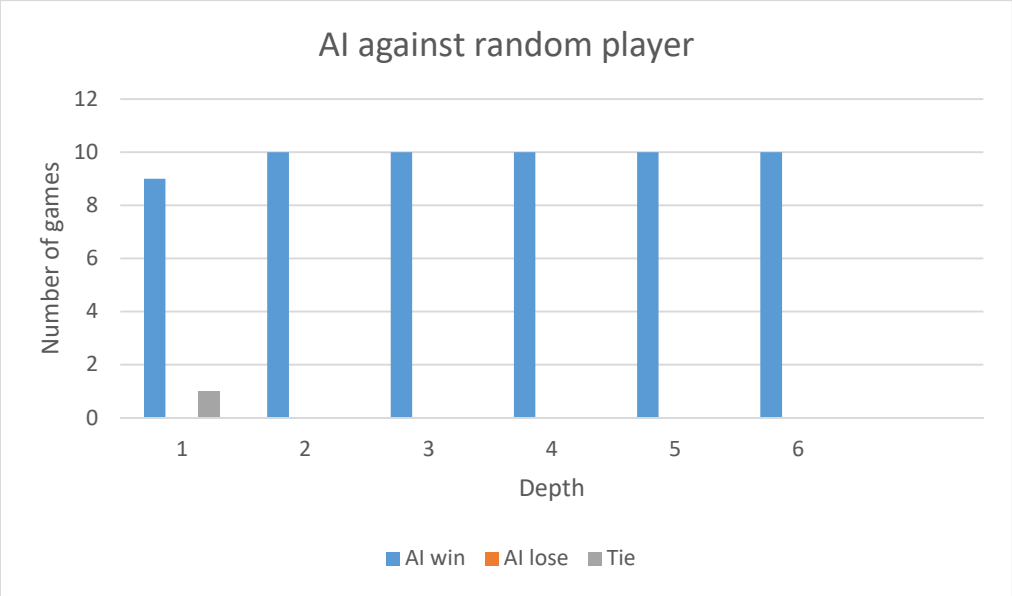
I)INTRODUCTION:

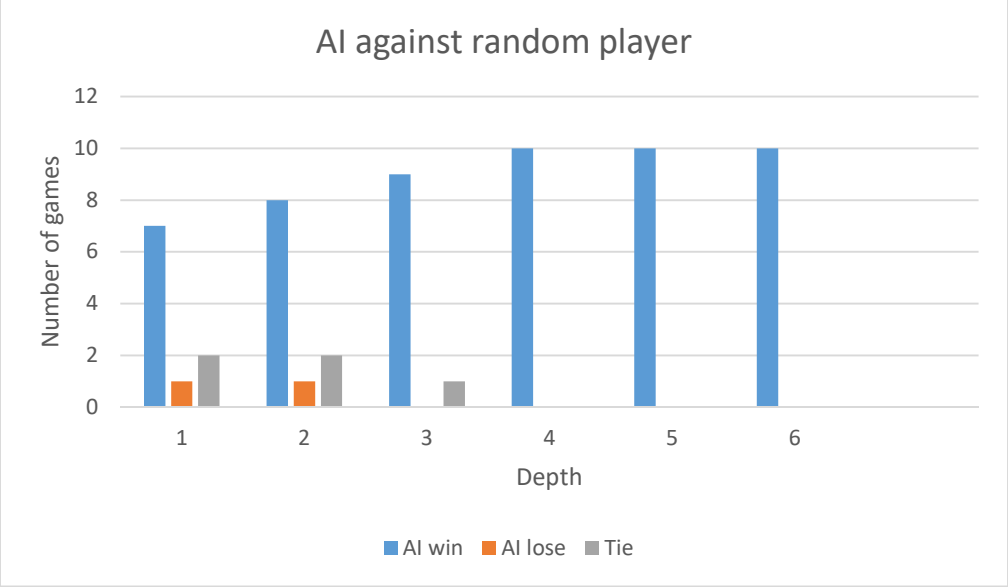
The objective of this project is to implement a general Tic-tac-toe game. Players can be either human, random player or AI. In AI player mode, alpha-beta algorithm was required to determine the best move that the computer plays.

II)RESULT AND TESTING:

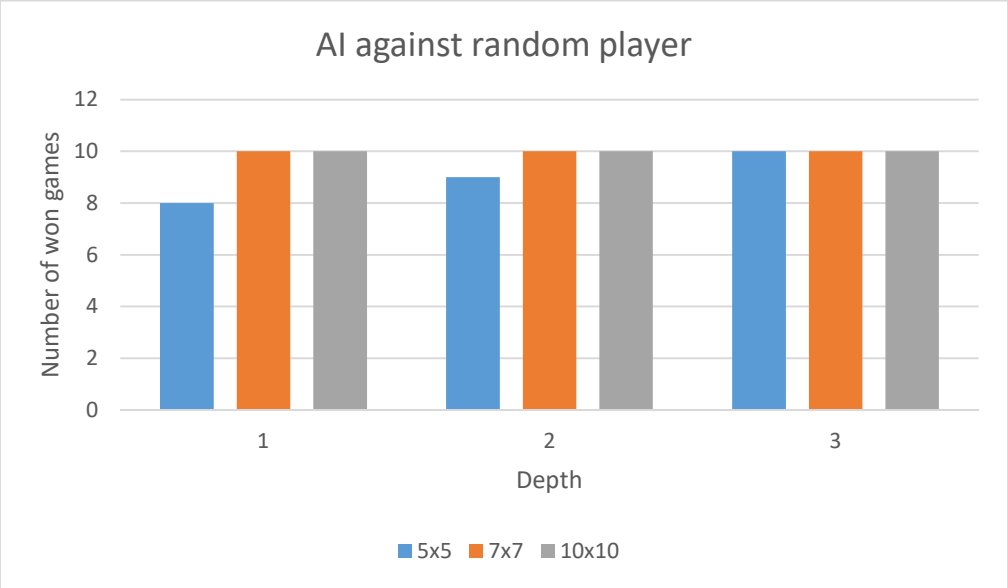
a) AI goes first with 3x3 board:



b) AI goes second with 3x3 board:



c) AI with 5x5, 7x7, 10x10 board (10 games each):



Board	Depth	Games	Ai won	Ai lost	Tie
5x5	1	10	8	1	1
	2	10	9	0	1
	3	10	10	0	0
7x7	1	10	10	0	0
	2	10	10	0	0
	3	10	10	0	0
10x10	1	10	10	0	0
	2	10	10	0	0
	3	10	10	0	0

As we can see from those graphs, the higher depth can result higher win rate for AI. However, the program cannot be able to make a move that less than 30s for higher depth (>3) and larger board (>=5x5).

III)REFERENCES

1) Belwariar R. *Implementation of Tic-Tac-Toe game*. Retrieved from https://www.geeksforgeeks.org/implementation-of-tic-tac-toe-game/

2) *Alpha-beta pruning*. Retrieved from https://en.wikipedia.org/wiki/Alpha%E2%80%93beta_pruning