COMS 572

Project 1

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I implemented the alpha-beta search algorithm to the 'Checkers game' and checked the performance of it. I compared the performances of the algorithm by the time how long the algorithms take to find out the best move.

Firstly, I applied the different depths to check how long it takes them. As you see in the table below, it takes more time to run the algorithm with larger depths. However, it takes longer with depth 1 and it does not increase that much with bigger depths. Therefore, I can say that the depth and the search time are not strongly related.

Depth	Time	Evaluation Function
1	0.000910s	None
2	0.000649s	None
4	0.000697s	None
8	0.000647s	None
16	0.000744s	None

Secondly, I also applied different evaluation functions. For example,
$function = (number\ of\ AI\ agent's\ pieces) - (number\ of\ human(user)'s\ pieces)$. With the functions, the time increased more than the machine without the function. However, the amount of increase decreased slightly. With a better heuristic, the search would perform better and the agent would have a larger chance to win. Therefore, the search will be improved by changing the evaluation values and optimize the functions as well.