

AI Project 1

CMSC 471

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### Summary:

For our project, we wanted to try testing out a simple evaluation similar to evaluation given to us by the project's tutorial. Where evaluation 1 sets different values for each chess piece, our evaluation (3) sets all pieces besides pawns and the king to be the same value. We wanted to see how far we could get by just valuing each piece the same. We also wanted to find out whether depth was more of a factor than the algorithm in winning chess games.

We decided to do 270 trials, that is, 10 trials of each of the 27 depth-algorithm combinations. It is important to note that our results may not be statistically significant due to only having 270 trials, but we do think that our results can serve as a introductory look into chess heuristics. We found that the majority of these trials ended in stalemates, and we are not really sure why this happened. It could be the result of a bug we have not been able to discover. or it could be indicative of the heuristic being very good at reaching stalemates. What we can grasp from our data is that increased depth does give you an edge over your opponents, whereas *better* evaluations don't always lead to wins. This can be seen in that evaluation 2 seems to lose to evaluation 1 at most depth levels. Additionally, the simple heuristic evaluation we added seems to beat out evaluation 2 at most depth levels as well. We believe this could be because when valuing the "rook", "knight", "bishop" and "queen" piece the same, the AI could be more ready to give a short term loss for a long-term gain.