Developing a Chess AI

By: Blake Barnhill

Who am I?

Blake Barnhill

MEng Student

      Concentration in Software Development

My Project: Chess AI

Problem Description

Chess has been around in its current form since 1500 CE

Many strategies and styles have been developed since its conception

1997: Deep Blue Beats World Champion Garry Kasparov

Stockfish vs Leela Chess Zero

How hard is it to create a decent chess engine?

Approach

Failures with PyChess:

> Spent 10 to 15 hours learning how to develop and build an AI for PyChess

Successes with JavaScript:

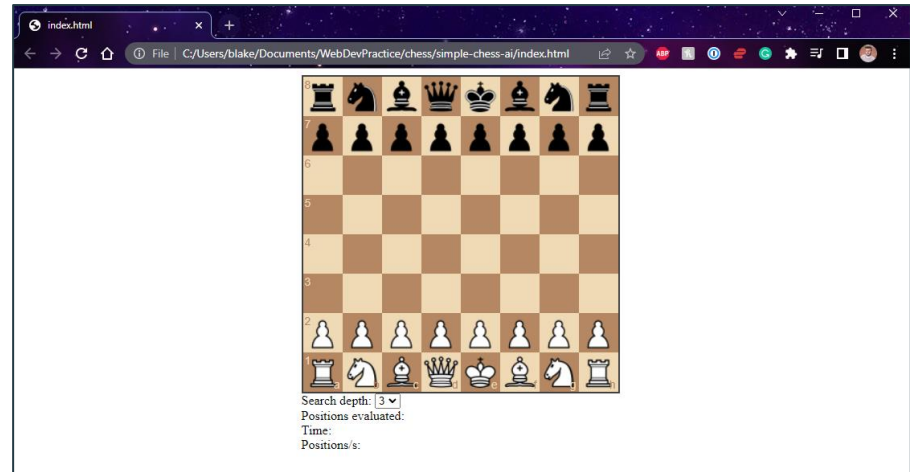> Found a Javascript library that could easily work with AI Algorithms

> Developed a MiniMax with Alpha-Beta Pruning Algorithm

JavaScript Approach

Great interface

Easy development

Decent Performance

Results

Search depth: 3
Positions evaluated: 13015
Time: 0.337s
Positions/s: 38620.178041543026

d4 Nc6

Search depth: 4
Positions evaluated: 374805
Time: 10.829s
Positions/s: 34611.22910702743

d4 f6

Search depth: 5
Positions evaluated: 9254371
Time: 246.876s
Positions/s: 37485.90790518317

d4 e5

Lessons Learned

Chess is very complex

The AI needs to be much faster to be better

JavaScript performs pretty well

Future Work

Advance my AI algorithms from a MiniMax with Alpha-Beta Pruning to some form of Neural Network

See Stockfish and Leela

Questions?