



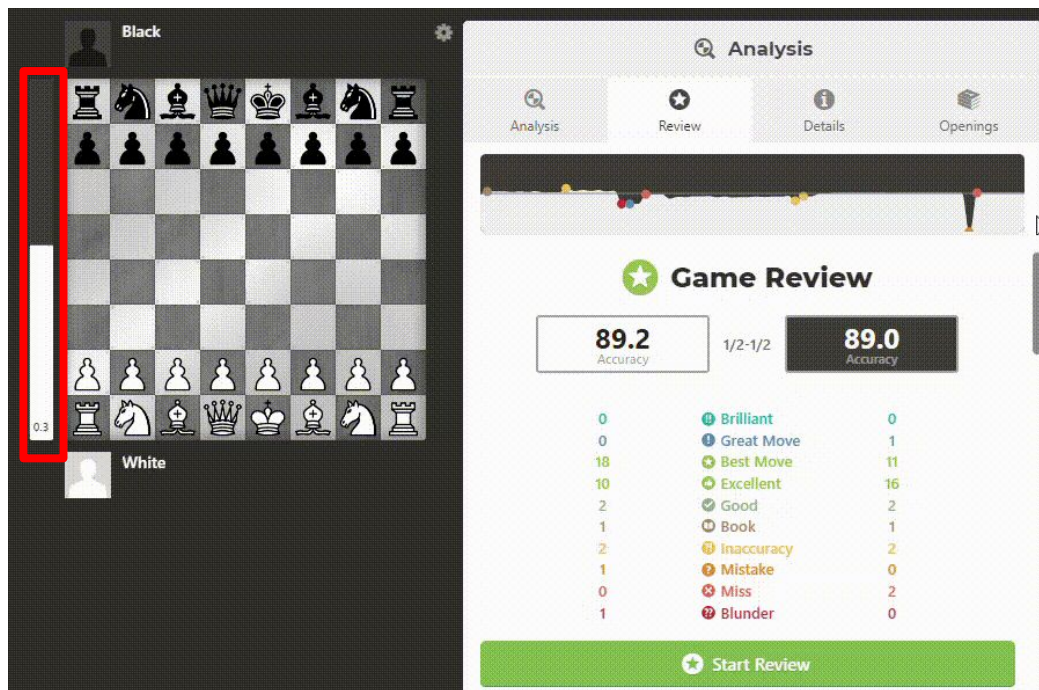
Chess Engine Optimization

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Data Information

Mate/cp



- Kaggle Dataset: [Chess Position Evaluations](#)
- 512,769,091 rows (used ~100 M rows)
- 203,986,429 chess positions

Dataset Columns:

fen (string): current board position

line (string): list of ideal future moves

depth (string): engine depth (game tree).

knodes (int): number of searched kilo-nodes.

cp (int): chess engine's evaluation of position strength for current player (centipawns).

mate (int): number of moves to a guaranteed checkmate.

Goal & Potential Uses

- Goal: Find the optimal (depth,knode) value that sufficiently gives an accurate prediction of (cp,mate)



Players

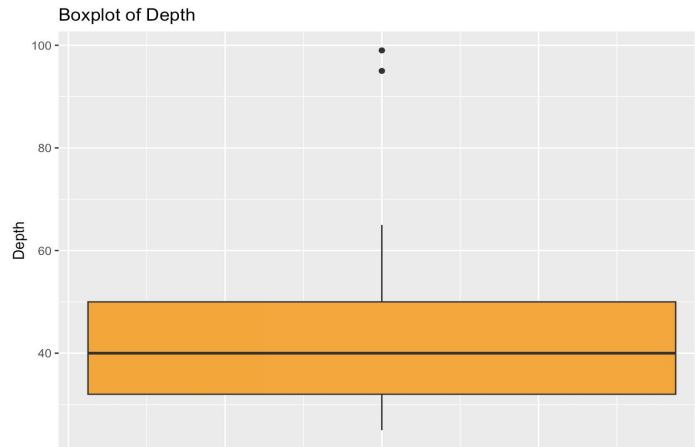
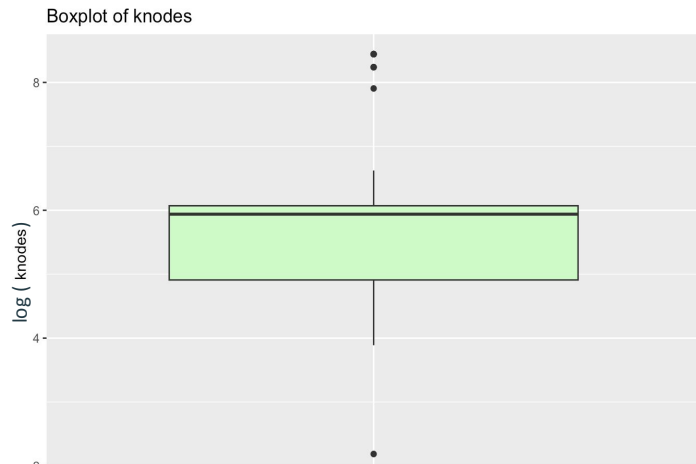


Commentary & Enthusiasts



Chess Engine Developers

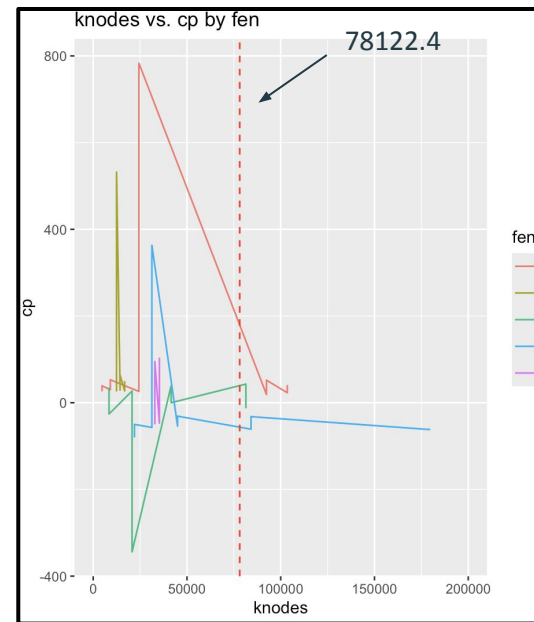
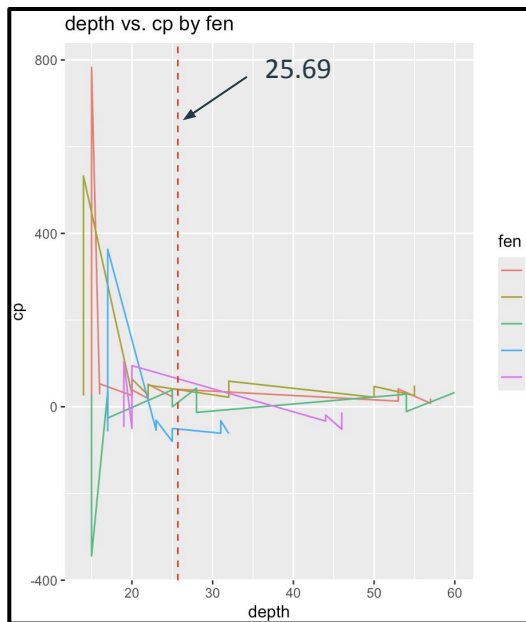
Exploratory Data Analysis



fen	mean_depth	max_depth	min_depth	mean_knodes	max_knodes	min_knodes	mean_cp	max_cp	min_cp	mean_mate	max_mate	min_mate
r1bqkbnr/pppp1ppp/2n5/1B2p3/4P3/5N2/PPPP1PPP/RNBQK2R b KQkq -	21.90278	57	15	2.67e+06	3.68e+07	4.69e+03	77.569444	783	8	NaN	NaN	NaN
rnbqkbnr/ppp1pppp/8/3p4/2PP4/8/PP2PPPP/RNBQKBNR b KQkq -	23.55556	55	14	2.04e+06	2.63e+07	1.24e+04	72.698413	532	22	NaN	NaN	NaN
rnbqkbnr/ppp2ppp/4p3/3p4/3PP3/8/PPP2PPP/RNBQKBNR w KQkq -	21.58209	60	15	1.86e+06	2.42e+07	8.42e+03	-29.283582	43	-344	NaN	NaN	NaN
rnbqkbnr/pppp1ppp/8/4p3/8/2N2P2/PPPP1PP/R1BQKBNR b KQkq -	18.85333	32	17	3.60e+04	1.80e+05	2.20e+04	11.080000	363	-80	NaN	NaN	NaN
rnbqkbnr/pppppppp/8/8/8/N7/PPPPPPPP/R1BQKBNR b KQkq -	22.01515	46	19	4.73e+05	4.94e+06	3.28e+04	2.545454	104	-52	NaN	NaN	NaN

Results

Optimal (depth,knode) Value -> (25.69, 78122.4)



Recommendations & Future Directions

- In general, the optimal solution applies
- Position-specific analysis
- Aim for more reliable target (depth, knodes) value

