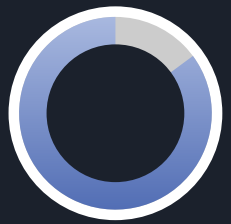
Walkover

Tablut Challenge 2021

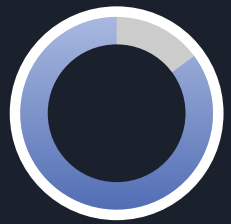
Diego Biagini, Ildebrando Simeoni

Black Heuristics

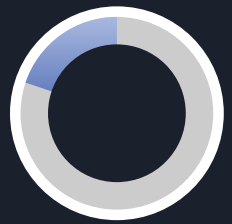
Piece Metric: number of white (rescaled) minus number of black pieces
King Surrounded: number of blacks, throne and citadels surrounding king
King Freedom: number of opponents along the four directions from king position
King Support: number of whites in the 3x3 window around the king
King Good Squares: goodness of the king position in the board



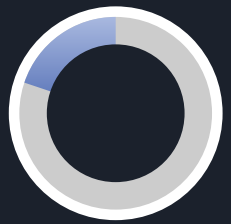
Piece Metric



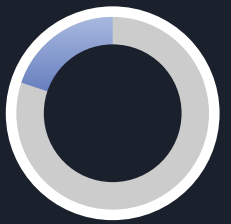
King Surrounded



King Freedom



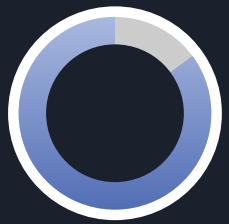
King Support



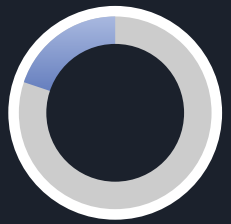
King Good Squares

White heuristics (early game)

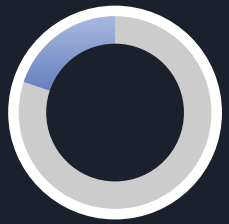
Piece Metric: number of white (rescaled) minus number of black pieces
King Surrounded: number of blacks, throne and citadels surrounding king
King Good Squares: goodness of the king position in the board
Free Cross: number of pawns in the cross passing through throne



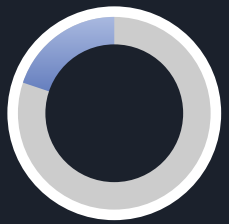
Piece Metric



King Surrounded



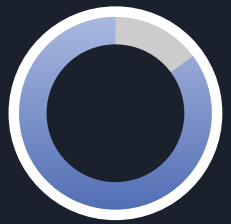
King Good Squares



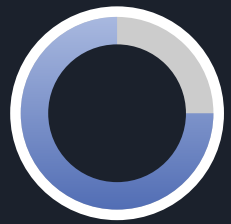
Free Cross

White heuristics (endgame)

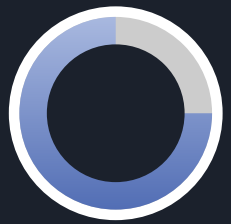
Piece Metric: number of white (rescaled) minus number of black pieces
King Surrounded: number of blacks, throne and citadels surrounding king
King Freedom: number of opponents along the four directions from king position
King Support: number of whites in the 3x3 window around the king
Free Cross: number of pawns in the cross passing through throne



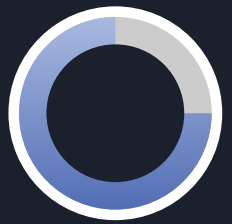
Piece Metric



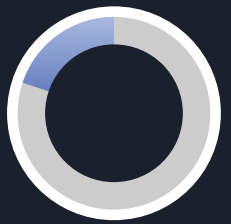
King Surrounded



King Freedom



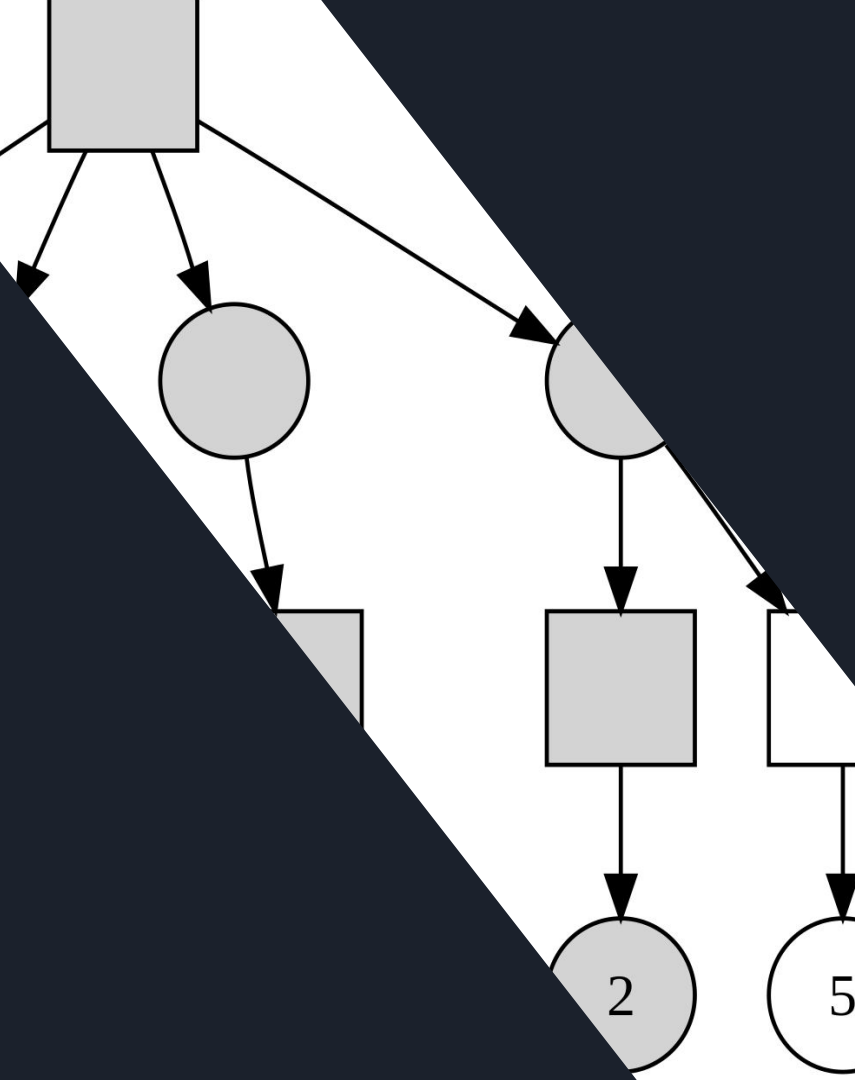
King Support



Free Cross

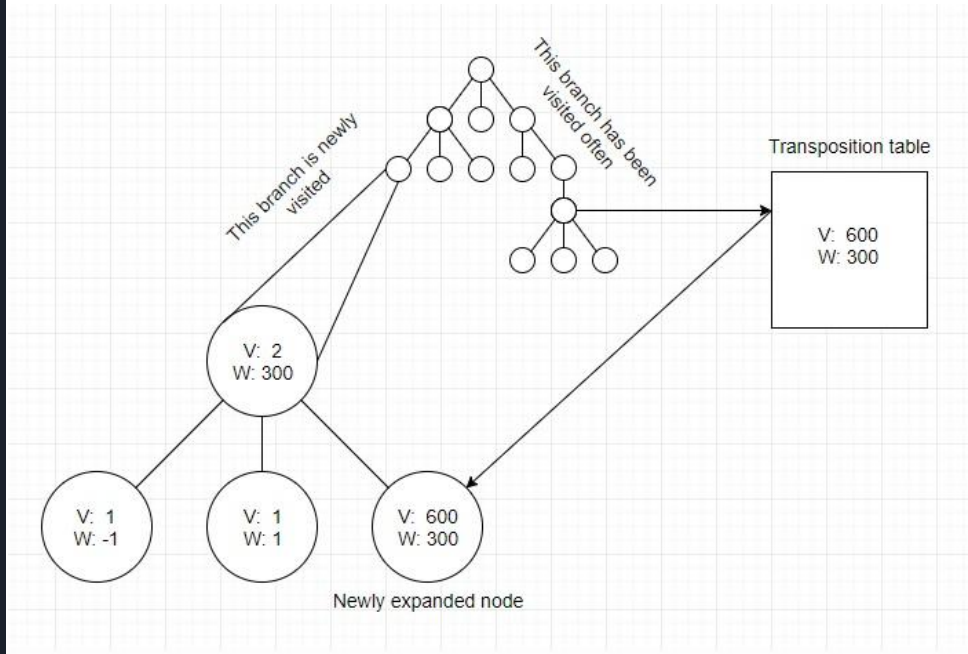
Search Algorithm

MinMax with alpha-beta pruning and iterative deepening has been used in order to explore as much of the tree as possible before the time allocated for the player runs out.



Transposition tables

Zobrist hashing is used to implement transposition tables, a special kind of hash table that is indexed by a board position and used to avoid analyzing the same position more than once.



THANKS FOR YOUR ATTENTION

WALKOVER