Playing Djambi with MinMax AI

Djambi

Djambi is a 4 player chess like board game
Each player has:
1x Diplomator – he can move units around
1x Necromobile – he can move corpses
1x Assasin – he can “kill” units
1x Reported – kills units around him
4x Militants – moves only 2x squares and can kill
1x Leader – if you lose him, you lose the game

Optimization

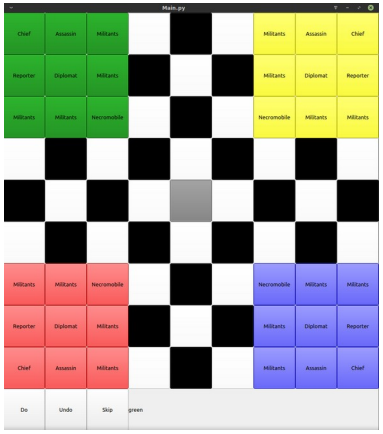
Each player’s heuristic value is calculated in the following way:

- Diplomator – worth 12 points
- Necromobile – 12
- Assasin – 18
- Reporter – 18
- Militants – 6
- Leader – 30
- Leader in the center – 48

In the event of death of the piece, the points are redistributed equally among the “living” players, keeping the floor of 0 and upper bound of 504. Additionally, the AI does not look for “friendly fire” moves while also moving bodies only around the piece that killed

Results

A functional AI that can effectively Search up to 4 levels in depth



MaxN – MinMax generalization

MinMax algorithm could be said to be a special case Of the MaxN algorithm. In MaxN every agent tried to Maximize its repsective tuple member in the Node. 2 rules must apply for the MaxN algorithm to work.

- There must exist an upper bound for the sum of all elements of the tuple (in the example it’s 9)
- Every individual value of the tuple must have a floor of 0

Shallow Pruning

Upon evaluating b node we’ve concluded that the The upper bound is 9-3=6. Upon evaluating f, we Can conclude that the upper bound is 9-7=2, given That the upper bound is lower than the lower bound We can skip the rest of the children.

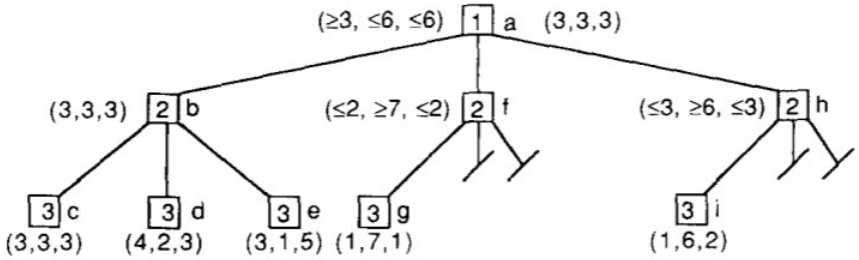


Fig. 3. Shallow pruning in three-player game tree.