

Abstract

Pingdoll is logic game were played in a game board within minimal space which in sized 5x5 to play it. The game rule is how to make sure a player can fill cells in board. Thus player can make any 5 pairing pattern in a certain possible positions that is horizontal, vertical and diagonal.

Minimax algorithm is a decision rule used in decision theory for minimizing the possible loss while maximizing the potential gain. On the other hand, *Alpha-beta pruning* is a search algorithm which seeks to reduce the number of nodes that are evaluated by the *Minimax* algorithm in its search *tree*. Fitness function will be built on the game based on the two algorithms, *Minimax* and *Alpha-Beta Pruning* in order to acquire the best solution for the next step on the *AI Player* (Win or draw).

Alpha-Beta Pruning algorithm obtained a more optimum result than *Minimax* did. Optimum result here is such as victory rate on *AI Player* which is better than *Human Player* versus itself, and system performance which again is better accordance to time execution and memory consumption when it is acquiring the best solution for *AI Player*. To the output analysis on the time execution, *Alpha-Beta Pruning* algorithm needs approximately 1 minute to accomplish job and gives best solution to the *AI Player* and through the memory needs on *Alpha-Beta Pruning* when it is running the game from the first start until finish is smaller than *Minimax* algorithm with estimation percentage 78.8%.

Keyword: Pingdoll, Minimax, Alpha-Beta Pruning, Fitness Function. AI Player, Human Player