AI Game Project

Team: Artificial Idiot ID: 15

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Function explanation:

Calculate Heuristic: compute the evaluation value of the board circumstances.
MinMax: Minmax search tree with alpha-beta-pruning, applying a heuristic created by ourselves as evaluation function.
Generate_step: generate all possible step for current board and current player.
Chess_count: calculate remaining pieces, can generate a deeper search if the number of pieces are low enough.
Update Board: for given steps, we have to generate the situation after that step.

Heuristic:

For each pieces alive add 100 point, plus the column*5 of that piece. If the piece reach the target zone, plus 100 point.

Through observation we found that pieces stick together make them move faster, and harder to be killed, so plus 1 point for each adjacent pieces.

opponent pieces are calculated in the same way, but in negative value and columns are in their perspective.

Final score of current board is the sum of point for all pieces.

Result:

If the search tree's depth is lower than 3, then our AI will make bold moves ; otherwise, the search tree's depth is more than 3, then our AI become very defensive, afraid to attack. And if the search tree's depth is more than 6, then TLE

We can add a new function to tell if the optimal move is followed by capture, and keep searching deeper instead of just end at fixed depth. this may help us avoiding traps and make valuable exchanges and sacrifices.