**The “’Don’t Get Stranded’ Strategy Game” Game Strategy**

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Our agent’s starting strategy is to attempt to move towards the middle of the board while trying to force the opponent’s piece into the corner. Moving towards the middle serves the purpose of giving our player the most opportunity for moves on the next and subsequent turns, as there is generally more space in the middle of the board than along the sides. Conversely, forcing our opponent to move into the corners or along the sides greatly limits the amount of potential moves early on in the game. One idea behind this strategy is that using the sides of the board to limit our opponent’s moves is more effective than merely pushing out individual game pieces. While along the side, for example, a player only has a maximum of 5 potential moves, whereas a player in the middle of the board has up to 8 moves. A player in the corner squares is at an even larger disadvantage, and only has 3 potential moves, with 2 of those resulting in being along a side wall.

The agent will attempt to force the opponent into the corner by pushing out pieces that are between the opponent and the middle areas of the board, preferably 1 to 3 moves ahead of where the opponent is currently located. Using any more moves ahead could potentially result in a search space that is too large for our agent to handle, and too much variation in the opponent’s potential moves. Since it is likely that the opponent will be attempting to maximize their own number of moves, our agent can remove tiles near the middle to discourage the opponent from moving towards the middle of the board and instead cause them to go closer to the corners. Since our agent weighs moving towards the middle along with the number of moves it will have, we believe that it is less susceptible to a similar strategy used by an opponent.

In the late game, our agent will begin to prioritize maximization of its own potential moves over solely moving towards the middle of the board. The purpose of this is to adopt a more defensive playstyle after an opponent has been caught in a smaller region or is relegated to the corner areas of the board. The agent will remove the tiles that would result in the quickest isolation case for the opponent, taking into account the layout of the tiles present and the location of the opponent’s piece in their region. If the opponent is in a region that is not yet completely cut off from the rest of the board, then our agent’s goal is to remove tiles so that the opponent has the longest path to escape from the dangerous region.

The point at which our agent will switch strategies is difficult to determine. We hope to be able to alter the weighting of our heuristic function in order to provide a smoother transition between early and late game strategies. The preference for maximizing our agent’s moves would be increased (and the weight for moving towards the middle decreased) the closer the opponent piece is to being isolated in its own region. In the perfect case, the weights would intersect at the exact point that the opponent player is cut off.

Our heuristic is a function of our agent’s potential moves, the number of moves remaining to get to the middle of the board, and the opponent’s potential moves. Since we are trying to minimize our heuristic value, the exact evaluation would be (x\*movesUntilMiddle) + (y\*opponentsMoves) – (z\*ourMoves), where x, y, and z are weight values assigned to each aspect of the heuristic that can be modified depending on the stage of the game. Since all of these variables could be found in linear time or less, the efficiency of this heuristic would be linear time.