Micah Cain

CS461

03/01/2012

Blokus

The Blokus environment is a fully observable field of play. All moves are visible to the competing player or agent at all times. As the only factors acting on the field of play are the four players of a given game, the game is also deterministic. Only one player may make a move at a given time thus making the game episodic and static. The board consists of a 20 x 20 grid. The blocks of the grid may hold pieces from any given player provided the player places his blocks according to the rules of the game which are as follows:

1. A player must start play in his designated corner.
2. A player may only play pieces such that it is oriented diagonally from a previously played piece.

There are no variations to this in a standard game, thus the game is discrete.

The agent provided to the class as a template provided a heuristic consisting of two factors which are (in order of importance):

1. Length of possible move (i.e. the number of blocks occupied by a given piece wherein longer blocks are favored over shorter blocks.
2. Distance from the center of the board wherein plays closer to the center are favored over others.

I devised a few additions to this heuristic. I believed that plays which allow a player to block another player should be considered as well provided that no other player has an opportunity to block me. In this context, a block constitutes removing any agent from a given game. Thus, my addition to the heuristic can be summarized as: block if possible but not at the risk of losing the game. In all other cases, strive to achieve the highest score. I could not find sufficient evidence to refute the theory of playing closest to the center of the board versus, for example, playing close to a corner or along the edges etc. For this reason, I accepted the heuristic and left it in.