Department of Electronics, Telecommunications and Informatics - DETI

Course: Artificial Intelligence

Tetris

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AI agent

- Our AI agent makes decisions where to place the new piece based on 4 heuristics:

1. Bumpiness
2. Height
3. Complete lines
4. Holes

Source: https://codemyroad.wordpress.com/2013/04/14/tetris-ai-the-near-perfect-player/

Functions

- Get_all_positions(piece,game)- returns a list of all the possible positions in every possible rotation for our current piece
- Get_heuristics(game,list_positions)- returns the best position based on the previously mentioned heuristics. The AI agent choses the position for which the heuristic is the biggest
- Identify_block(piece)- identifies the piece based on the coordinates of the piece in the game and returns the shape of that piece
- intersects_onright(piece)- used for shifting the piece on the right side, returns bool value if the piece intersects with the grid

Functions

- Get_holes(game)- returns the number of “holes” or unreachable positions that are not in the game
- Get_heights(game)- returns a list of highest points for each column of the game. The values start from 1 going up.
- Get_bumpiness(heights)- sums the absolute differences between the highest points of all two consecutive columns of the game

Functions

- Delete_rows(game)- returns the number of deleted rows that the piece in that position will generate
- getMinValues(positions,best_minimum_x=8,best_minimum_y=30)- returns the value of the x coordinate that is on the most left side and the value of the y coordinate that is the lowest on screen
- Get_solution(state)- main function that calls all other functions needed to find the best position and then converts the best position into inputs as a string and returns the solution string