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Period 2

Tetris Questions

1. My genetic algorithm took until generation 3 (so 4 generations total) to produce a strategy that scored over 50,000 points over a 5-game average. To run through all these generations, my code took approximately 1.5-2 hours.
2. Yes, you should totally keep this assignment! I thought that, compared to Substitution Ciphers, the Tetris assignment was a lot more fun because it felt like we were doing something a bit more tangible and seeing your AI get high scores was something that was really awesome. And having learned how genetic algorithms work during the Substitution Cipher assignment, Tetris was an amazing way to apply my newfound skills. Though it was tougher to get to work properly, the process felt a lot smoother and was much more enjoyable. Overall, I would definitely recommend that this assignment is one that is kept for next year!
3. Best strategy: (-0.9246291009925445, 0.27261181755780184, 0.8490180040128827, -0.8177447863395337, -0.03290136048142478, -0.10423185626461584, -0.09622597238656416, -0.4836102748478328, -0.30875912196748234)
   1. The first coefficient represented the NUMBER OF HOLES in the board. I expected this coefficient to be low because holes are definitely bad.
   2. The second coefficient represented the NUMBER OF COLUMNS WITH HOLES in the board. I expected this to be at least negative because having lots of columns with holes should be bad but for some reason it ended up being positive.
   3. The third coefficient represented the NUMBER OF LINES CLEARED in the board. This was expectedly positive and on the high side as well.
   4. The first coefficient represented the SUM OF ALL THE COLUMN HEIGHTS in the board. I expected this to be negative because you would want a low sum and my expectation ended up being true.
   5. The first coefficient represented the HEIGHT OF THE TALLEST COLUMN in the board. I expected it to be negative but it ended up being quite close to 0 so I guess it wasn’t as helpful as I had thought.
   6. The first coefficient represented the HIGHEST HEIGHT – THE LOWEST HEIGHT in the board. Similar to the last one, I expected it to be negative because you wouldn’t want one column really high and another really low but it was close to 0 so I guess it wasn’t very helpful.
   7. The first coefficient represented the AVERAGE HEIGHT OF THE COLUMNS in the board. Also similar to the last two, this wasn’t nearly as helpful as I thought it would be.
   8. The first coefficient represented the NUMBER OF COLUMNS WITH NO BLOCKS in the board. I had expected this to be positive because having empty columns would probably be good but I guess not because it was clearly negative.
   9. The first coefficient represented the ABSOLUTE VALUE OF THE DIFFERENCES BETWEEN THE NEIGHBORING COLUMN HEIGHTS (BUMPINESS) in the board. This ended up as I expected because you wouldn’t want a lot of columns with different heights.