

Artificial Intelligence CPSC 470/570
PS 2 Grading Rubric

III. Assignment part a: a minimax Othello player (6 points)

This is being handled by the autograder:

- 2 points for passing >65% vs a random player
- 2 points for passing a set of fixed board test cases
- 2 points for passing >80% vs an inverse agent (takes the worst move possible):
 - inverse white: 0.5
 - inverse black: 0.5
 - inverse greedy white: 0.5
 - inverse greedy black: 0.5

IV. Assignment part b: an alpha-beta Othello player (6 points)

2 points are being handled by the autograder for showing that you have a better win percentage with alpha-beta than without alpha-beta when playing against a random player. (If their minimax is > 90% normally, then we don't strictly require the alpha-beta to be better – you should receive full credit in this case.)

4 points are to be assigned by graders based on a quick inspection of the alpha-beta code. The following deductions are applied:

- -4 points for no attempt at implementing alpha-beta
- -2 points if they don't alternate between max and min evaluations as depth increases
- -1 point for documentation so confusing or absent that you struggle to follow the code
- -2 points if they fail to update alpha and beta scores correctly
- -3 points for an implementation that will never cut off parts of the tree

VI. Comparing your implementations (4 points)

Their submission should contain a README file with the following comparisons:

- the total number of nodes generated (1 point)
- the number of nodes containing states that were generated previously, i.e. duplicated nodes (1 point)
- the average branching factor of the search tree (1 point)
- the runtime of the algorithm to explore the tree up to a depth of D , for different values of D (1 point)

For each of these items, you should receive full credit (1 point) for anything that gives both a comparison (“alpha-beta was better”) and some kind of experimental evaluation or data that supports this evaluation (“because I ran 100 games against a random opponent and the average was 5 less”). Receive half credit (0.5 points) for any item where they give either (1) a

comparison but no data or (2) data but no explicit evaluation. Give no credit (0 points) where there is a missing answer.

VII. Tournament (bonus points)

- +1 point for taking part in the tournament
- +1 point for getting to the semi-finals (64 students)
- +1 point for getting to the finals (16 students)
- +1 point for places 1-4 in the finals (4 students)
- +1 point for place 1 in the finals (1 student)