UDACITY

PROJECT REVIEW

CODE REVIEW 3

NOTES

Meets Specifications

Overall excellent work! Code has been written quite neatly, the heuristic analysis and paper summary are quite analytical in nature with proper reasoning provided. Keep up the good work and stay enthusiastic :)

Game Playing Agent

The minimax and alphabeta functions pass all test cases.

Correct!

Heuristic Analysis

At least three evaluation functions are implemented and analyzed.

The evaluation functions other than the examples provided are well implemented and analyzed. One of the key takeaways here should be that it's hard to beat ID_Improved with only a better heuristic. There is a trade-off between a more complex, better heuristic, and a simple, fast heuristic because the simpler function allows the search to proceed deeper in the game tree, which can be more valuable than a better estimate at a shallow depth.

A brief report lists (using a table and any appropriate visualizations) and verbally describes the performance of agents using the implemented evaluation functions. Performance data includes results from tournament.py comparing (at a minimum) the best performing student heuristic against the ID_Improved agent.

You have given apt reasoning and presented a good analysis of the evaluation functions. The table providing rankings to reflect these head-to-head competitions is quite impressive.
There are some ideas for visualizations which I would like to share that you could implement:
• Viz1: Average win of agents against different types of tournament agents in 50 game simulations)
• viz2: Boxplot of Wins (%) against heuristic scores for 50 Tournament Simulations)
• viz3: The difference in results for ID_improved and Student heuristics. Comparsion using bar plot
Also to be a little more precise in your analysis, you could calculate a bootstrapped confidence interval for each agent to check if the difference between their results is statistically signifcant
OR
do a hypothesis testing where your null hypothesis says "Heuristics have the same winrate"
and you could use a t-test for comparing winrates of two heuristics and get the confidence interval and pvalue for that.

The report makes a recommendation about which evaluation function should be used and justifies the recommendation with at least three reasons supported by the data.

Paper Summary

The write up is approximately 1 page (500 words) and includes a summary of the paper (including new techniques introduced), and the key results (if any) that were achieved.

Excellent work! The paper summary is very clear and understandable and summarizes the paper perfectly.

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Student FAQ