CS-171 Wumpus World Final AI Report

Team name: nullptr

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I. In about 1/2 page of text, describe what you did to make your Final AI agent "smart."

In our Final AI, we first detect if it is safe to start to explore. If our agent senses stench at the origin, it will shoot an arrow to make sure the adjacent grid is safe. After it starts to explore, we implement a function to get the perception of our knowledge-based agent. And then we update the status of every grid in the cave by applying the propositional logic and some consistency techniques we covered in the CSP lecture. As the agent explores, it will recorded all visited and safe grids. When the agent finds the gold, it will apply breadth first search from the detected safe grids and visited grids to find the best path back to the start point. In the worst case, if the agent finds there is no safe grid to continue exploring, it will choose to go back to the start point.

II. In about 1/4 page of text, describe problems you encountered and how you solved them.

The most challenging problem we encounter is to predict the status of some possibly dangerous grids. We solve this problem by looking up the text book. The textbook introduces a knowledge-based agent template that suggests to first have a "make_perception" function that gets all knowledge. And then apply propositional logic decide the status of some possibly dangerous grids. We then improve this logic by applying some techniques such arc consistency.

III. In about 1/4 page of text, provide suggestions for improving this project.

One thing I think that can improve this project is to provide a user-friendly GUI template for students. Then when students finish implementing all the logic, students can see a more real game. In addition, it will be more interesting if we allow multiplayers to play this game. Then, at the end of the quarter, agents can compete with each other. Overall, it is still good, though.