

CS-171 Wumpus World Final AI Report

Team name ProjectGucci

Member #1 (name/id) Benjamin Ponce 85348479 Member #2 (name/id or N/A) Angelica Toledo 78545136

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

In order to make our Artificial Intelligent Agent “smart”, we decided to store the location of the cells that the agent has been to, and upon the discovery of a new cell, scans adjacent cells to ensure that no immediate threats are present. To store the locations of where we have been, we decided to implement a Python dictionary where both the key and value pairs are strings, so that we can easily manipulate them and use them. We would append the letter ‘s’ if there was a stench, ‘b’ for a breeze, etc. One of the most important things that we implemented in our code was emphasizing a hierarchy of importance so that the right pieces of code would be executed under the correct circumstance. For example, we made it so that the first if statement says that if there is gold, then pick it up – as we wouldn’t want to accidentally make another move before picking up the gold. The other important aspect of the code would have to be the backtracking, where the agent traces its steps backwards to get back to the starting position. Furthermore, in the beginning, our agent would favor cells that have nothing and are completely safe. After the agent has exhausted all of those options, it would begin to more fully analyze its next move using the stored dictionary of the places it’s been with helper functions to scan adjacent safe cells from where the agent is currently positioned.

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

One of the largest bugs that appeared in our program was the implementation of where the agent has been on the board. As it turned out, our outline of what was going on and how it was storing the location was correct, but the order of hierarchy as stated in the previous question was incorrectly positioned. We had originally wanted to add the visited location of the cell at the end, so that it wouldn’t mess with any logic, but by doing so, we allowed other pieces of code to completely bypass it altogether. This in turn made our backtracking logic entirely faulty under certain circumstances, but once we found out where to put it, everything started to work out. The second issue we had was while attempting to run our program on 10,000 worlds. The first attempt at doing so resulted in a NAN output. After an hour of struggling, we found out that we had some faulty code and had to run the 10,000 worlds one-by-one to see where it went wrong and fix it.

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

An improvement that we can think of for this project would probably be to include somewhere in the manual a complete breakdown that has all the commands for running and creating the worlds. When we first wanted to run the project in the 10,000 worlds, we searched about four places before we finally found it. We think all of that information should have been included probably at the end of one manual so we wouldn’t have to keep checking Piazza or other documents over and over again. The only other improvement that we can think of is making the minimal AI submission deadline a little bit sooner, around Week 3. We are sure many other students would definitely have more time to work on finalizing it, which would result in much higher scores.