

Washington State University
School of Electrical Engineering and Computer Science
Fall 2020

CptS 440/540 Artificial Intelligence

Homework 2

Due: September 10, 2019 (11:59pm pacific time)

General Instructions: Submit your files as an attachment under Content → Homework 2 for the course CptS 440 Pullman (all sections of CptS 440 and 540 are merged under the CptS 440 Pullman section) on the Blackboard Learn system by the above deadline. Note that you may submit multiple times, but we will only grade the most recent entry submitted before the deadline.

For this homework you will implement a reflex agent with state to play the Wumpus World game. Specifically,

1. Download the latest version (3.1) of the Wumpus World simulator from GitHub at <https://github.com/holderlb/wumpus-world-simulator>.
2. Read the README for instructions on how to use the simulator.
3. For this homework, the world size is 4x4, there are no pits, the Wumpus is always in location (4,4), and the gold can be anywhere, even in (4,4).
4. Implement an agent that executes the following reflex rules (**and only these rules**).
 - a. If the Glitter percept is True, then execute the GRAB action.
 - b. If the agent is in the (1,1) location and has the gold, then CLIMB.
 - c. If the agent has an arrow, and the agent is in the top row (Y=4), and the agent's orientation=RIGHT, then SHOOT.
 - d. If the agent has an arrow, and the agent is in the rightmost column (X=4), and the agent's orientation=UP, then SHOOT.
 - e. If none of the above conditions are met, then the agent should randomly choose one of the actions: GOFORWARD, TURNLEFT, TURNRIGHT.
5. Your agent should maintain state information about the agent's location and orientation and whether it has an arrow and the gold. Your agent does not have access to the game state within the simulator, so the agent will have to update its own state after each turn. But you may copy/include/import simulator code into your agent.
6. Your agent should be implemented entirely in the Agent.h and Agent.cc files (for C++ implementations) or the Agent.py file (for Python implementations). You may also include an optional readme.txt file with any extra instructions for running your agent. Your agent should not require any user input. Your agent will be tested by copying only your Agent.h and Agent.cc files, or Agent.py file, into a fresh copy of the simulator code, and compiling and running it on several test worlds. Your grade will be based on satisfying the above requirements, performance on the test worlds, and good programming style (see the course website for links to style guides).