



## CSE 604: Artificial Intelligence

### Project 2

**Due Date: Monday, Sep 30, 2019**

**Mid-project eval: Wed, Sep 25, 2019**



### Overview

This project consists of developing and implementing a computer program that can simulate the navigation of a logical agent in a given environment. The project will help you understand logical representation and logical inference.

### Wumpus World Description

The **Wumpus world** is a cave consisting of rooms connected by passageways. Lurking somewhere in the cave is the terrible Wumpus, a beast that eats anyone who enters its room. The Wumpus can be shot by an agent, but the agent has only one arrow. Some rooms contain bottomless pits that will trap anyone who wanders into these rooms. The only mitigating feature of this bleak environment is the possibility of finding a heap of gold. The full PEAS description of the Wumpus world is given in **Section 7.2 of Russell and Norvig's AI textbook**.

For this project, you will use the exact same specifications as the one given in the book, with **one exception**: instead of a small grid, you'll be using a larger **10 X 10 grid**.

### Project Requirements

- Your AI agent must be able to navigate the Wumpus world using **either Propositional or First Order Logic (or both)**.
- Your program must be able to **load different environments** where the position and numbers of pit, gold, Wumpus can vary. You should have provisions for **both random environments, and prespecified environments**.
- The program must have the following components
  - o A proper **representation** of the environment and knowledge base
  - o Correct use of **logic** (Propositional or FOL)
  - o Use of **logical inference** (resolution, forward and backward chaining)
  - o You may use **probabilistic reasoning** for extra credit
  - o An **interface** that shows all the activities as well as the state of the **agent's "mind"** (i.e., its knowledge base and logical thought process)

## Grades distribution

Representation of the environment and knowledge base	15%
Ability to load different environments	15%
Proper use of logic	20%
Proper implementation of logical inference	20%
Functionality of user interface (i.e. what info is being provided)	20%
Aesthetics of user interface (i.e. how good it looks)	10%

There will be a **mid-project evaluation** where 33% of the marks of the project will be assigned. The remaining 67% will be assigned on the final project evaluation.

## Deadline

The deadline is **Monday, September 30**. The projects will be checked during class time 2:00 – 4:00. No submissions after the deadline will be accepted. Absolutely **no exceptions** will be made. You will send me the links to your GitHub pages on **Wed, Sep 25** for the mid-project evaluation.

## Academic Integrity Policy

The code of the project **must be your own**. Any libraries or code snippets that you use from other sources must be mentioned explicitly. Any kind of academic dishonesty will result in you getting a zero for this project, and possibly further repercussions.