# COMP9016 Lab #1

Dr Ruairi O'Reilly

September 20, 2019

## 1 GETTING STARTED

### 1.1 SETTING UP UP YOUR IDE

It is critical for the successful completion of this module that you are competent in developing with python and comfortable working with the IDE Jupyter Notebook. To this end you are going to spend some time getting your IDE setup. Download and install Jupyter Notebook either directly:
https://jupyter.org/install
or install it via the Ananconda Distribution
https://www.anaconda.com/distribution/

Once this is completed create a directory called "COMP9016" and save it:

- On the mapped network drive if you using a lab machine in CIT.

- Wherever you like if using your own machine.

### 1.2 AIMA DATA REPOSITORY

Clone the repository:

git clone https://github.com/aimacode/aima-python.git

Once the download is complete, copy all files into your "COMP9016" directory. (Note: This can be tedious as each folder and sub-folder will have to be uploaded and the naming conventions maintained onto Jupyter Notebook - **Note:** Moving the entire folder into Jupyter

Notebook web accessible location will simplify this)

Once this is completed create two more high level directories within "COMP9016" that are as follows "LabWork" and "Assignments". Use these for storing you work for the remainder of the semester, get used to referencing code from parent directories.

### 1.2.1 # ISSUE 1: GIT CLONE DOES NOT COPY THE AIMA-DATA FOLDER

There are a number of solutions for this, try running `git clone` again or go to the aima-data repo and download the data folder directly https://github.com/aimacode/aima-data/tree/f6cbea61ad0c21c6b7be826d17af5a8d3a7c2c86
and extract it to the correct location on your machine "aima
aima-data".

### 1.2.2 # ISSUE 2: MISSING MODULE "IPYTHONBLOCKS"

If using a lab machine in CIT you may get an error stating that "ipythonblocks" is missing. You need to create a python environment and install the module.

To alleviate this you will create an environment for COMP9016:

- Open a terminal

- Enter `conda create -name <env-name> python=3.7 anaconda`

- Enter `pip install ipythonblocks`

- Enter `jupyter notebook`

- The problem should be resolved.

- In future when logging onto the machine use `conda activate <env-name>` to access this environment.

If using your own laptop, `pip install ipythonblocks` should sort it out.

### 1.3 GETTING USED TO THE AIMA DATA REPO:

Launch "index.ipynb" and review the following sections. Spend some time reading the associated python code referenced also:

1. Introduction

2. Agents

## 1.4 Agent-based representation of knowledge

### 1.4.1 Getting started with agent-based representations

Create a simple agent-based game in a 1-dimensional world. Ideally, the objects within the world relate will relate to a knowledge-based representation scheme (Give context for the decisions you make in relation to the world, its agent, percepts and the actions carried out). Specify a PEAS description including at least four percepts and four actions of your choosing and specify the conditions under which the game is complete.

Implement this game in Python using any of the libraries made available from the AIMA python repo. The specification for the Agent, Environment, and Program to enable the game to run must be included. All code should be in a single python file.

**NOTE**: You should assume that your code will be executed in a **sub-directory** of the AIMA data repository called "studentSubmissions". As such it is critical you use relative paths consistent with this i.e. if importing code ensure you specify parent folder first.

Write a clear and concise description of the agent-based game. The purpose of this is to articulate an understanding of the underlying concepts being implemented both from a theoretical and practical perspective.

### 1.4.2 Extra Credit: Extending the world

Extend the world into a 2D environment and include a means of visualising your agent's progress within the world. Introduce a piece of bespoke functionality of your choosing (random spontaneous events, performance measure indicators, more complex manoeuvres - e.g. think a rope ladder that can cross a pit)

## 1.5 Review

Congrats on having completed your introductory lab for COMP9016 and getting started!