Imperial College London

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Reinforcement Learning – Prof Aldo Faisal & Dr Paul Bilokon

Lab Assignment 0: Introduction

We want to make sure that everybody is ready to go with content. Therefore, the purpose of this introductory lab session is to ensure that you can log into the college systems and setup and run Python as will be necessary for the rest of the lab assignments and courseworks. Throughout this guide, we assume you will be running on a Linux system in Computing (or use remote desktop to access one).

Running Python

There are a number of ways in which Python can be installed and run. Linux comes with its own version of Python 3 installed: open a terminal window and run the command `python3`. To exit Python commands, enter `quit()`. Linux comes with both a Python 2 and Python 3 versions. We will be working in Python 3, using the pip package manager.

Virtual Environments and Packages

We can enhance the base Python installation with whichever libraries we choose. However, it is good practice to set up and run scripts in separate *virtual environments* for projects that require different libraries and packages to avoid possible dependency clashes.

Create a virtual environment called `rl` by using the command `python3 -m venv rl`. A directory `rl` will be created containing files relevant to this new virtual environment. Next, activate the environment by running the command `source rl/bin/activate`. You should now see `(rl)` in front of your username in the terminal window. Now, any modifications or package installations you carry out will be applied only to `rl` rather than the base environment.

Start by updating your package manager, run: `python3 -m pip install --user --upgrade pip`. Install the `numpy` and `matplotlib` libraries by running `pip install numpy matplotlib`. Once it has completed, run `python3` and try to `import numpy` to check the installation was successful.

Notebooks

The Jupyter package will allow you to run interactive notebooks in which you can run Python code.

Run `pip install jupyter` to install Jupyter. Once it is done, try to launch a notebook by running `jupyter notebook`. Check that you can import the `numpy` and `matplotlib` modules in your notebook. You may have to run the command `python3 -m ipykernel install --user --name=rl` to include the packages from your `rl` environment in the notebook. After you do this, restart the `jupyter notebook` and you should see your virtual environment under the 'Kernel' menu options.

Later on in the course, you will be required to install other packages (mainly PyTorch and OpenAI Gym), which you will be able to install similarly.

Another resource you may find useful in alternative to Jupyter notebooks are Colab notebooks. This allows you to run code remotely and potentially use powerful GPUs. Check the page

`https://colab.research.google.com/` to investigate this alternative.