Cheat Sheet

"Big Boy"

Connection, Setup and configuration using virtual environments

The computer name on the network is: **BN356574**

To access it via ssh the address of the computer is :

BN356574.uoa.auckland.ac.nz or the IP address **130.216.209.106**

1 Connection to "Big Boy"

To connect to it using Linux :

1. SSH package must be installed
2. Simply type: `ssh -X BN356574.uoa.auckland.ac.nz` or `ssh -X 130.216.209.106`
3. You'll be asked to enter your password
4. You are now connected

To connect to it using Window you can use either PuTTY or MobaXterm.

Quick tutorial for MobaXterm:
[MobaXterm documentation]

1. Install MobaXterm : Official Website
2. Open the program and click on the top left icon named "Session"
3. Select "SSH"
4. Fill up the requested fields (Figure 1)
5. You'll be asked to enter you password
6. MobaXterm will propose you to save your password for the next time
7. You are now connected

For PuTTY you can find a tutorial here : [PuTTY tutorial]

2 Setting up a virtual environment

We do not have the *sudo* right for the computer (IT is in charge) therefore we have to use virtual environments in order to run our codes. Once you are connected you need to setup a virtual environment and install the module you need within. Since python 2.7 will not be maintained starting on 2020 this tutorial is using python 3.6.

In the terminal:

1. Go to you 'hpc directory' : `cd /hpc/YOUR_UPI/`
2. Create a folder to host your virtual environments : `mkdir Virtual_ENV`
3. Go into the folder : `cd Virtual_ENV`
4. In the terminal: `virtualenv -p /usr/bin/python3.6 NAME_OF_THE_VIRTUAL_ENV`

The virtual environment is being created, installing the basic tools (pip, wheel...) and settings it up.

3 Activation of the virtual environment

In order to use the virtual environment and install modules in it you need to **activate** it :

```
source /hpc/YOUR_UPI/Virtual_ENV/Big_Boy/bin/activate
```

From this you should be able to see next to you username, the activated virtual environment:

from
`[UPIbn356574]` *terminal line...*

to
`(Big_Boy) [UPIbn356574]` *terminal line...*

This activation **HAS TO BE DONE EVERYTIME** you want to run your code. To exit your virtual environment simply key in deactivate and press 'enter'.

[NOTE]: You don't have to deactivate your virtual environment everytime you want to do something else. The virtual environment simply load the appropriate python PATH and modules to be used when you will call it, the rest remains unaffected.

[Optional]In order to make it easier you can setup shortcuts in your /.bashrc file :

1. `vim ~/.bashrc`
2. go at the end of the file and add (press 'i' to enter into writting mode) the line : `alias BB="source /hpc/UPI/Virtual_ENV/bin/activate"`
3. press 'ESC' then `:wq` to save the file and exit vim
4. `source ~/.bashrc`

If you have done this manipulation, now to activate you virtual environment you simply have to key BB in a terminal and press 'enter'.[~/.bashrc and alias]

4 Installing the modules

In order to install the module you need to run your code you have to activate your virtual environment :

1. Activate your virtual environment: `source /hpc/YOUR_UPI/Virtual_ENV/Big_Boy/bin/activate`
2. Upgrade pip : `pip install --upgrade pip`
3. Then install the modules : `pip install NAME_OF_THE_MODULE`
4. pip should install the last version of the module your requesting

If you are just moving machine or re-creating a virtual environment you can use `pip freeze > requirements.txt` then `pip install -r requirements.txt` [Pip and requirement]

Sum-UP

List of the command lines to connect to new computer, create a new virtual environment named Big_Boy and install a list of modules.

In a terminal:

```
ssh -X BN356574.uoa.auckland.ac.nz
cd /hpc/UPI/
mkdir Virtual_ENV
cd Virtual_ENV
virtualenv -p /usr/bin/python3.6 Big_Boy
source /hpc/UPI/Virtual_ENV/Big_Boy/bin/activate
pip install --upgrade pip
pip install -r requirements.txt
```

if you haven't got any requirements file just use :

```
pip install tensorflow-gpu
pip install numpy
pip install Pillow
pip install ...
```

You have to activate your virtual environment everytime you want to use your modules.
Please find at the end of this tutorial a list of the basic packages to install to use in Machine learning

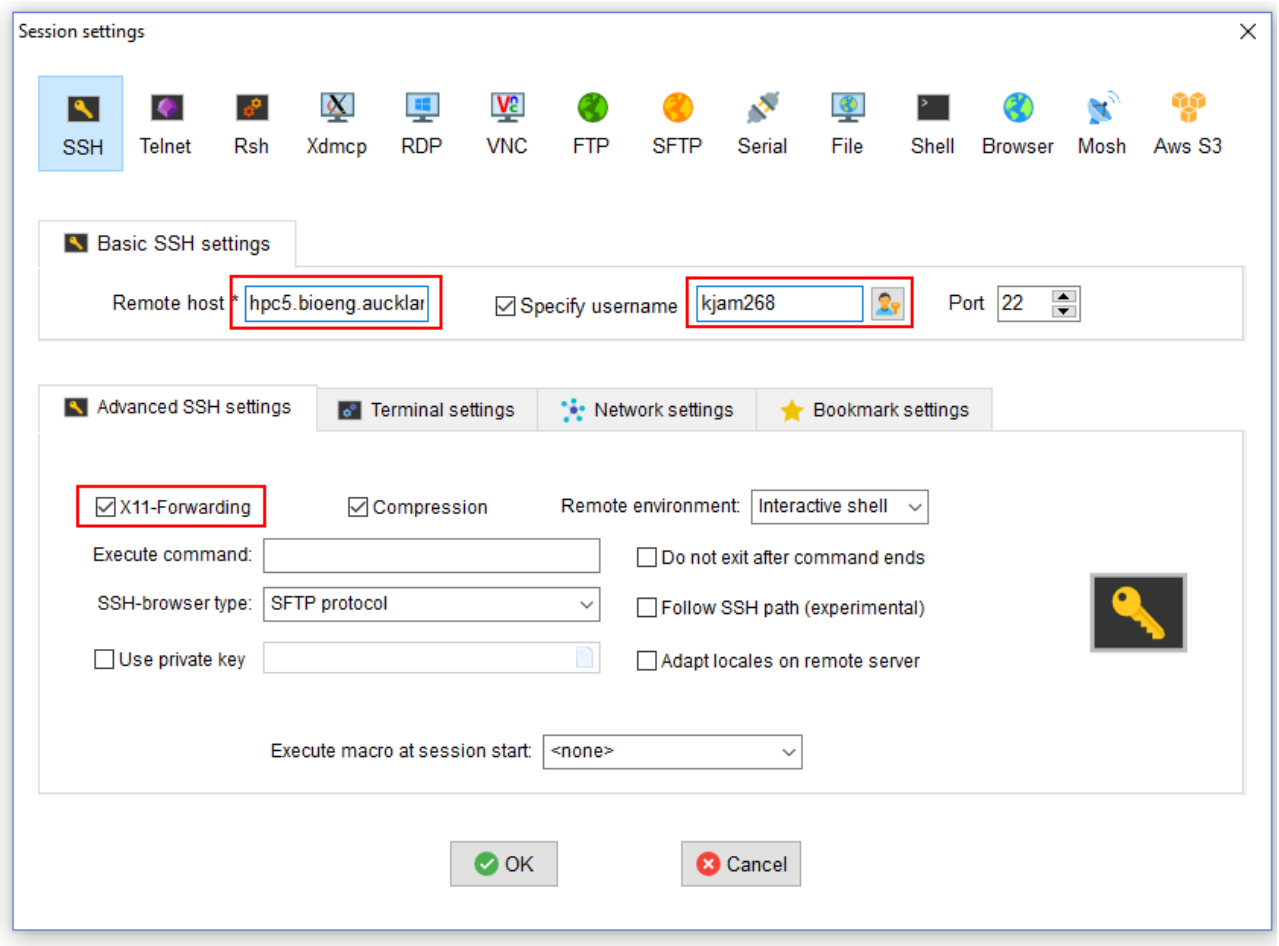

Figure 1: MobaXterm ssh connection panel.

Module to install using pip once you are in your virtual environment:

absl-py==0.7.0
astor==0.7.1
Augmentor==0.2.3
Click==7.0
cloudpickle==0.7.0
cycler==0.10.0
dask==1.1.0
decorator==4.3.2
future==0.17.1
gast==0.2.2
grpcio==1.18.0
h5py==2.9.0
imageio==2.4.1
imgaug==0.2.7
Keras==2.2.4
Keras-Applications==1.0.7
Keras-Preprocessing==1.0.5
kiwisolver==1.0.1
Markdown==3.0.1
matplotlib==3.0.2
networkx==2.2
numpy==1.16.0
opencv-python==4.0.0.21
Pillow==5.4.1
protobuf==3.6.1
pyparsing==2.3.1
python-dateutil==2.7.5
PyWavelets==1.0.1
PyYAML==3.13
scikit-image==0.14.2
scikit-learn==0.20.2
scipy==1.2.0
Shapely==1.6.4.post2
SimpleITK==1.2.0
six==1.12.0
sklearn==0.0
svgwrite==1.2.1
tensorboard==1.12.2
tensorflow-gpu==1.12.0
termcolor==1.1.0
tflearn==0.3.2
toolz==0.9.0
tqdm==4.30.0
Tree==0.2.4
Werkzeug==0.14.1