Data Science Tools Installation
BRI Audit Analytics

Pre-Workshop Guide

December 2023

Contents

Introduction

This guide is a resource for students at Algoritma to use in setting up their laptop or environment prior to the scheduled workshops. In this guide, students can find a list of prerequisites that will be consistently used throughout the entire course. These prerequisites are required to be **completed before** the start of the workshop.

For new students, we will run through the installation process to ensure that the necessary programming languages and tools - such as Python - are installed. The next section will then talk about methods on how to verify whether the installs were completed successfully.

For recurring students, we recommend repeating the System Verification section once more to confirm past completed installations.

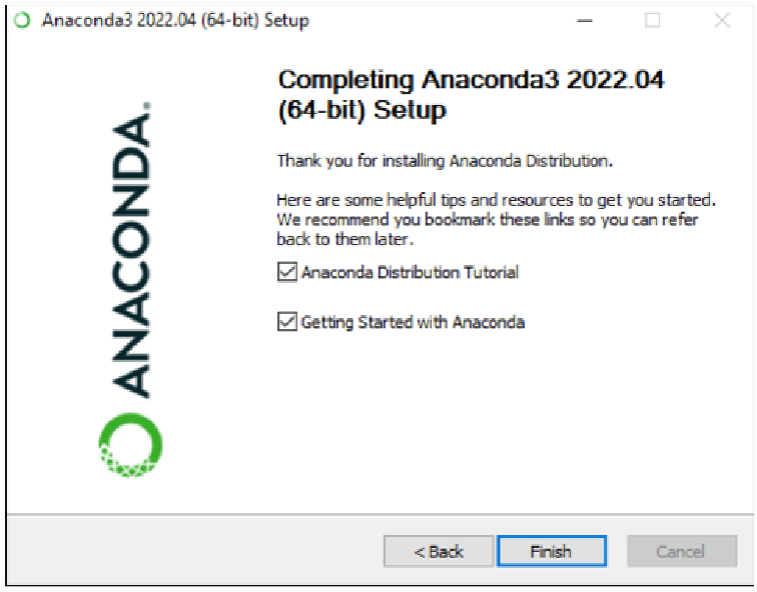
Installation

Installing Python using *Anaconda*

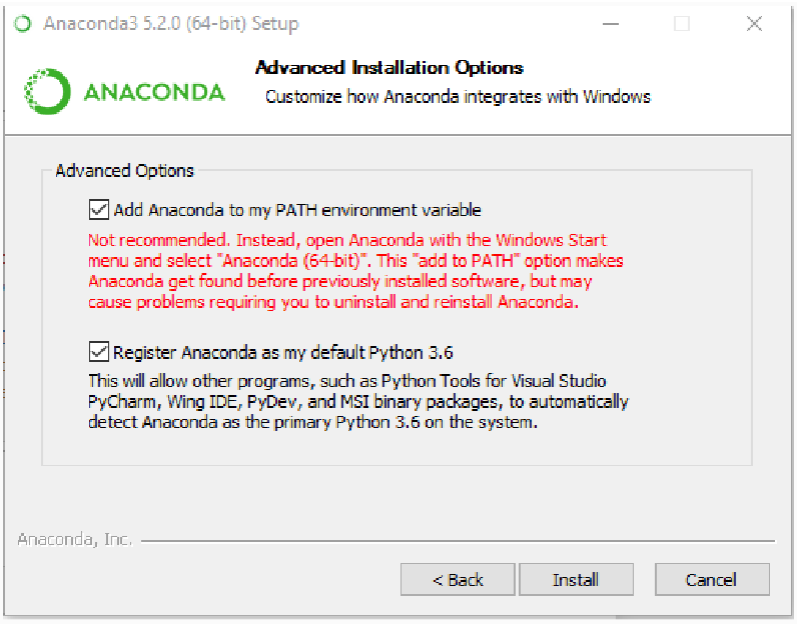
For our Python installation, we will be using and installing a package manager named ***Anaconda***. With *Anaconda*, users will not only have Python installed but also will have the necessary packages (i.e. numpy, pandas) utilized in our workshops. Also, *Anaconda* would have included the installation of ***Jupyter*** - an open-source web application that allows you to create and share Python code. For alternative, you can also install **Miniconda**, the minimal Anaconda installer version that includes only conda, Python, the packages they depend on. Once opening the link below, **please choose Python version 3 for installation**.

Use this link: https://repo.anaconda.com/archive/Anaconda3-2022.10-Windows-x86_64.exe, or Choose your appropriate operating system. Make sure you choose **Python 3.10 version**

- Install Anaconda



- For **Windows** users make sure to **check Add Anaconda to my PATH to environment** and then wait until the installation finished



More info on *Anaconda*:
https://docs.continuum.io/anaconda/#anaconda-navigator-or-conda

Warning: For Windows operating systems, if you can't find the conda command from your Command Prompt please add the **C:\User\Anaconda3** and the **C:\User\Anaconda3\Scripts** to the environment variable as shown here:
https://superuser.com/questions/949560/how-do-i-set-system-environment-variables-in-windows-10

■ ■ ■

System Verification

- **For Mac OS X and Linux-based OS:** Open "*Terminal*"
- **For Windows:** Open "*Anaconda Prompt*"

Verify Python Installation:

1. Type the command `python`
2. If the installation was completed successfully, there should be a response which includes information on which Python version was installed as shown below. In this case, it appears the user installed Python version 2.7.13. **But make sure yours is 3.10 or above.**
3. To exit, enter the command `quit()` or use Ctrl-D

Figure 1: python Response on Mac OS X Terminal

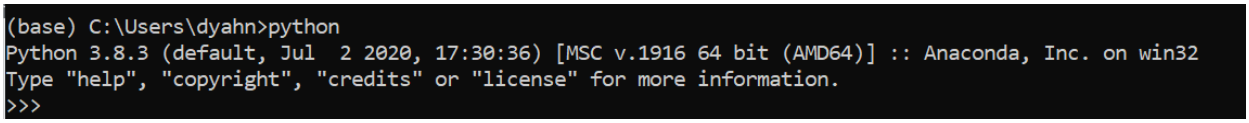


Figure 2: python Response on Windows Command Prompt

Verify Anaconda Installation

1. Type the command `conda list` in your *"Terminal"* or *"Anaconda Prompt"*.
2. If the installation was completed successfully, your terminal will give a response of list of packages like the example below. In this case, the environment has Python version 3.8 pre-installed.
3. If your terminal do not give any response, please check the Warning in the installation section, if the problem still persist please contact mentor@algorit.ma via email for further help.

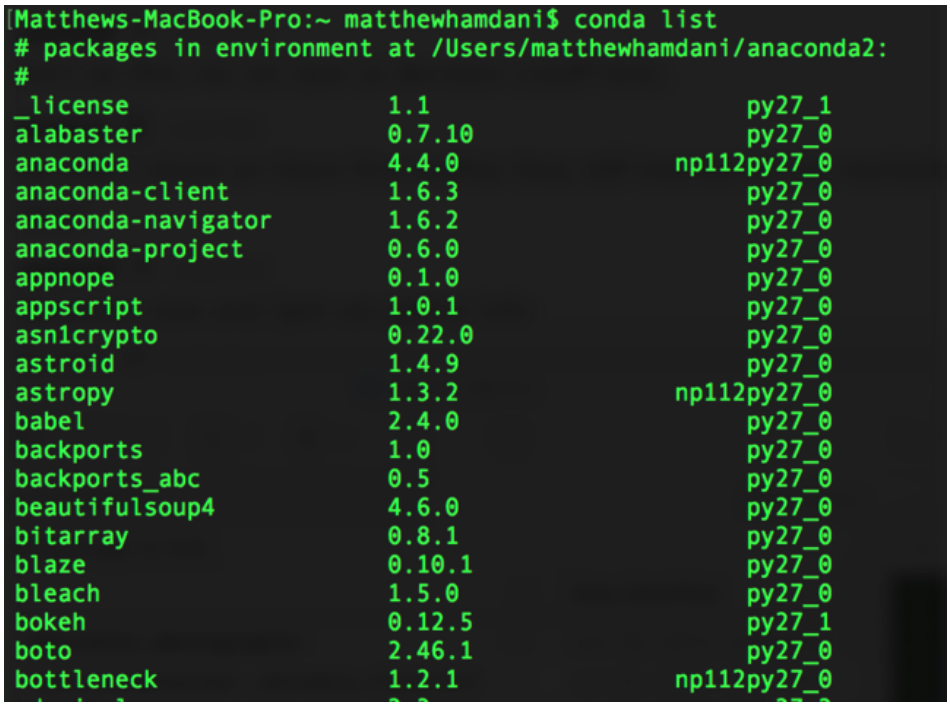


Figure 3: conda list Response on Mac OS X Terminal

```
(base) C:\Users\dyahn>conda list
# packages in environment at C:\Users\dyahn\anaconda3:
#
# Name                    Version                   Build  Channel
_ipyw_jlab_nb_ext_conf    0.1.0                    py38_0
alabaster                 0.7.12                     py_0
anaconda                  2020.07                  py38_0
anaconda-client           1.7.2                    py38_0
anaconda-navigator        1.9.12                   py38_0
anaconda-project          0.8.4                      py_0
appnope                   0.1.0                    pypi_0    pypi
argh                      0.26.2                   py38_0
asn1crypto                1.3.0                    py38_0
astroid                   2.4.2                    py38_0
astropy                   4.0.1.post1      py38he774522_1
atomicwrites              1.4.0                      py_0
attrs                     19.3.0                     py_0
autopep8                  1.5.3                      py_0
babel                     2.8.0                      py_0
backcall                  0.2.0                      py_0
backports                 1.0                        py_2
backports.functools_lru_cache 1.6.1                      py_0
backports.shutil_get_terminal_size 1.0.0                    py38_2
backports.tempfile        1.0                        py_1
backports.weakref         1.0.post1                  py_1
bar-chart-race            0.1.0                    pypi_0    pypi
bcrypt                    3.1.7            py38he774522_1
beautifulsoup4            4.8.0                    pypi_0    pypi
```

Figure 4: conda list Response on Windows Command Prompt

Verify Jupyter Installation:

1. For Mac OS X or Linux-based OS: Type the command `jupyter notebook` in your *"Terminal"*. For windows OS find your jupyter notebook in the windows search or use `Anaconda Prompt` and type in `jupyter notebook`.
2. If the installation was completed successfully, Jupyter would have started a server connection and automatically opened a new window in your browser.
3. If it does not open automatically, the *Terminal* or *Command Prompt* would have provided a URL link for you to open in your browser manually.
4. If neither of these options occurred, repeat the *Anaconda* installation process.
5. To shutdown the server and exit, use Ctrl-C then type `y` to confirm or `n` to cancel

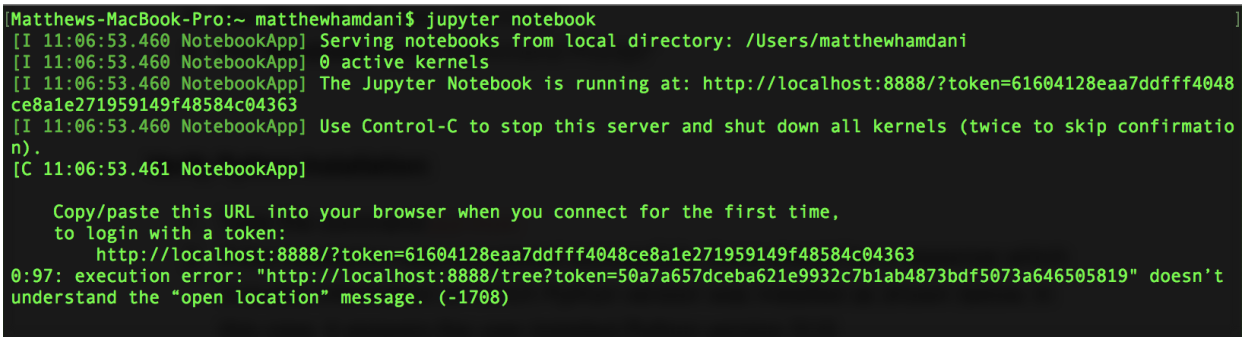


Figure 5: jupyter notebook Response on Mac OS X Terminal

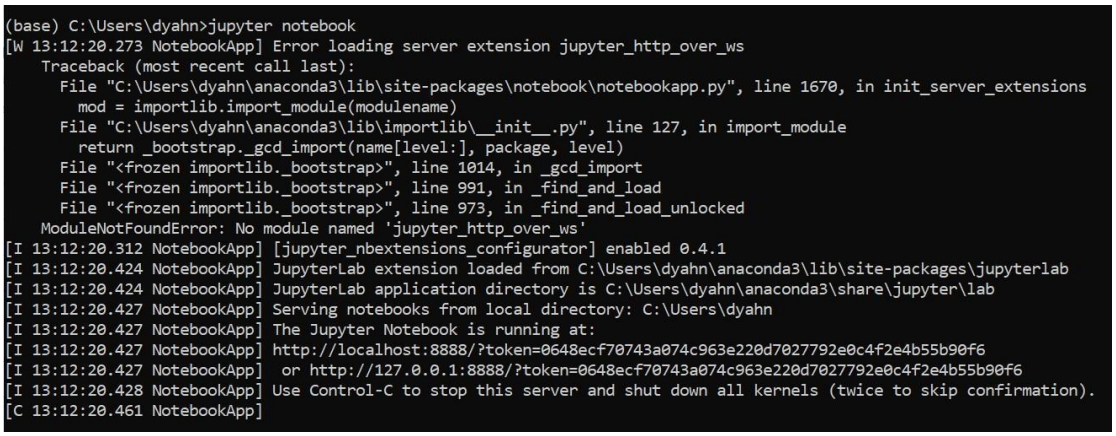


Figure 6: jupyter notebook Response on Windows Anaconda Prompt

Library Installation

Installing Packages and Running Jupyter Notebook:

1. After the anaconda installation has been verified, please re-open anaconda prompt and install all the required packages:

Data Analytics			
Material	**List Library**	**Version**	**Installation**
• P4DA • DWV • PS	pandas	2.0.0/Latest	pip install pandas
	numpy	1.26.1/Latest	pip install numpy
	ipykernel	6.24.0/Latest	pip install ipykernel
	matplotlib	3.8.1/Latest	pip install matplotlib
	yfinance	0.2.31/Latest	pip install yfinance
Data Science			
Material	**List Library**	**Version**	**Installation**
• Regression Model • Unsupervised Learning • Classification in Machine Learning	openpyxl	3.1.2/Latest	pip install openpyxl
	scikit-learn	1.3.2/Latest	pip install scikit-learn
	scipy	1.11.3/Latest	pip install scipy
	seaborn	0.13.0/Latest	pip install seaborn
	statsmodels	0.14.0/Latest	pip install statsmodels
	gower	0.1.2/Latest	pip install gower
	plotly	5.18.0/Latest	pip install plotly
	imbalanced-learn	0.11.0/Latest	pip install imbalanced-learn
	nbformat	5.9.2/Latest	pip install nbformat

Command Installation:

```
pip install pandas numpy matplotlib ipykernel seaborn openpyxl
scikit-learn plotly imbalanced-learn gower statsmodels nbformat
```

Optional Command Installation :

If an error occurred during installation using the previous command installation, we can install one by one package that we would like to install.

```
pip install pandas -> install
pip install numpy -> install
etc
```

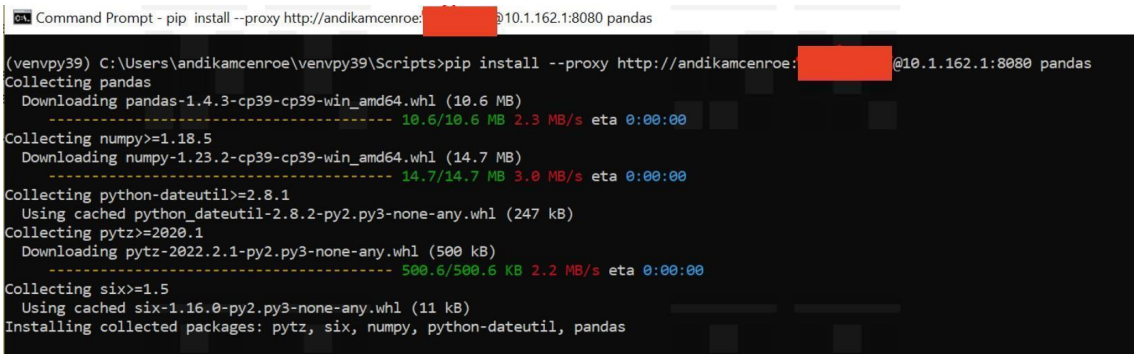


Figure 7: Pip Installation Response on Anaconda Prompt

2. Start your jupyter by run this command: `jupyter notebook`

Figure 8: Jupyter Page on Web Browser