ML Assignment 1 Report

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Date: 1-OCT 2022
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1. Python Machine Learning Stack (Anaconda)

install Python and its useful packages:

Anaconda is a high-performance distribution of Python and R
and includes over 100 of the most popular Python, R and Scala packages for
data science. Follow these instructions to install Anaconda.
Make sure you confirm that Anaconda is installed and working by opening
a terminal window and running the command

>> conda list

If not Working then even after a good installation then try,
"In Windows, go to view advance system settings and click Environment Variables > path >Edit >New "then add path to conda"

If Anaconda is installed and working, this will display a list of installed packages
and their versions. You can also confirm that Anaconda is installed and working
by opening a terminal window and running the command

>> python

to run the Python shell. If Anaconda is installed and working, the version
information it displays when it starts up will include" Continuum Analytics,
Inc.". Use the command

```
C:\Users\Zafar Ali>python
Python 3.9.12 (main, Apr  4 2022, 05:22:27) [MSC v.1916 64 bit (AMD64)] :: Anaconda, Inc. on
win32
```

>> quit ()
to exit the Python shell.
Read this Cheat sheet to learn how to use the" conda" command.

1.1 Task 1

In your terminal, run
>> conda info

```
C:\Users\Zafar Ali>conda info

     active environment : None
       user config file : C:\Users\Zafar Ali\.condarc
 populated config files :
          conda version : 4.12.0
    conda-build version : 3.21.8
         python version : 3.9.12.final.0
       virtual packages : __win=0=0
                          __archspec=1=x86_64
       base environment : C:\ANA  (writable)
      conda av data dir : C:\ANA\etc\conda
  conda av metadata url : None
           channel URLs : https://repo.anaconda.com/pkgs/main/win-64
                          https://repo.anaconda.com/pkgs/main/noarch
                          https://repo.anaconda.com/pkgs/r/win-64
                          https://repo.anaconda.com/pkgs/r/noarch
                          https://repo.anaconda.com/pkgs/msys2/win-64
                          https://repo.anaconda.com/pkgs/msys2/noarch
          package cache : C:\ANA\pkgs
                          C:\Users\Zafar Ali\.conda\pkgs
                          C:\Users\Zafar Ali\AppData\Local\conda\conda\pkgs
       envs directories : C:\ANA\envs
                          C:\Users\Zafar Ali\.conda\envs
                          C:\Users\Zafar Ali\AppData\Local\conda\conda\envs
               platform : win-64
             user-agent : conda/4.12.0 requests/2.27.1 CPython/3.9.12 Windows/10 Windows/1
0.0.22000
          administrator : False
             netrc file : None
           offline mode : False
```

2. Interactive Terminal (IPython/Jupyter)

IPython/Jupyter is an interactive computational environment in which you can combine code execution, rich text, mathematics, plots, and rich media. Follow this IPython Tutorial and Jupyter Documentation to get up and running on IPython/Jupyter. For more on IPython/Jupyter, check out this great Gallery of Jupyter Notebooks.

3. Plotting (Matplotlib/PyPlot)

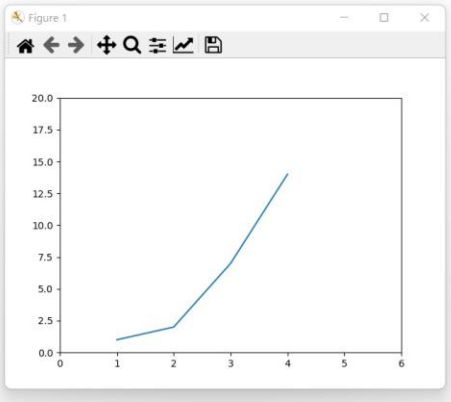
Matplotlib is the main plotting library for Python and is capable of very powerful publication quality graphics. Check out this Matplotlib Gallery if you would like to learn more about plotting using Matplotlib. Pyplot is a library within Matplotlib that is there to ease the transition from MATLAB to Python. It has a collection of MATLAB-like functions that makes plotting in Python as easy as in MATLAB. Please read through the following Pyplot Tutorial.

3.1 Task 2

Run the following script in IPython and paste the figure created by the script into your report

```
import matplotlib.pyplot as plt
plt.plot([1,2,3,4], [1,2,7,14])
plt.axis([0, 6, 0, 20])
plt.show()
```

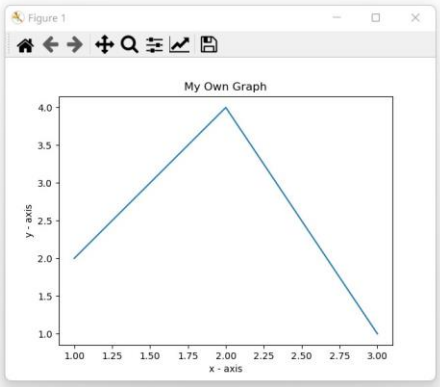
```
>>> import matplotlib.pyplot as plt
>>> plt.plot([1,2,3,4], [1,2,7,14])
[<matplotlib.lines.Line2D object at 0x0000024C849A6310>]
>>> plt.axis([0, 6, 0, 20])
(0.0, 6.0, 0.0, 20.0)
>>> plt.show()
```



3.2 Task 3

Use Matplotlib to create a figure of your choice in IPython.

```
*IDLE Shell 3.9.12*
File  Edit  Shell  Debug  Options  Window  Help
Python 3.9.12 (main, Apr  4 2022, 05:22:27) [MSC v.1916 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>> x = [1,2,3]
>>> y = [2,4,1]
>>> plt.plot(x, y)
Traceback (most recent call last):
  File "<pyshell#2>", line 1, in <module>
    plt.plot(x, y)
NameError: name 'plt' is not defined
>>> import matplotlib.pyplot as plt
>>> plt.plot(x, y)
[<matplotlib.lines.Line2D object at 0x0000020E4C12C940>]
>>> plt.xlabel('x - axis')
Text(0.5, 0, 'x - axis')
>>> plt.ylabel('y - axis')
Text(0, 0.5, 'y - axis')
>>> plt.title('My Own Graph')
Text(0.5, 1.0, 'My Own Graph')
>>> plt.show()
```



4. Version Control System (Bitbucket/GitHub

When you are working on a big project with your team, managing the changes in your code will be challenging. Version control systems (VCS) like Git help streamline this process. Read this article on why VCS is necessary. Bitbucket and GitHub are two commonly used web-based hosting services for projects that use Git version control systems. In this course, you will use GitHub.

4.1 task 4

register for a student account here for free private repository access for future projects and go through these tutorials. insert a screenshot of GitHub profile.