

ARTIFICIAL INTELLIGENCE GROUP SOLUTION DOCUMENTATION

Compiling

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2 INTRODUCTION

This is a documentation of the journey this group part took in completing our first assignment of the semester. Which had to do with securing a Linux based Operation System environment and making sure certain packages and libraries are properly installed and functioning perfectly on the system.

Assignment requirements did not limit students on how to run the Linux environment, therefore some people chose to run Linux as a Virtual Machine (VM), while the rest settled with having a whole Linux Operating system installed on our computers, along side windows, which we already had running on the system.

This assignment required us as a group to install and test the various packages below for availability and functionality;

1. Python
2. Jupyter Notebook
3. Pandas
4. Tensor Flow
5. Keras
6. SciPy
7. NumPy
8. Scikit-Learn
9. Matplotlib

And any other packages we might find as a necessity.

Backed by data from Medium, we tested the above packages.

The data set acquired from medium was a documentation of data on the various cars and fuel consumption rates in Nigeria.

From the data set, we decided to focus more on the engine size of cars and how it affected the level of Carbon Dioxide emission into the atmosphere.

We chose this two columns of data, in order to be able to study and have a meaningful understanding of how much our environment is affected by our machines and mechanisms.

And also, so that we will be able to predict how much machines and engines will affect the our environment in the near future.

3 INSTALLATION OF LIBRARIES

To get a Linux system running on our computers, we went to the Linux Ubuntu official site and downloaded the latest version of Ubuntu.

Then from windows, we partitioned a disk-drive which is to be allocated to the Ubuntu operating system and also made the boot-able pen-drive with the setup of Ubuntu we downloaded.

Now we restarted our computers with the pen-drive in place, and right after the computer was about to boot again, we pressed on F12, in order to be able to access boot options.

From boot options, we were able to see our Ubuntu boot-able pen-drive, so we selected the pen-drive for lunch, and from there we followed the necessary process in order to get Ubuntu running on our computers.

After Ubuntu was successfully installed, from the terminal of Ubuntu we run "sudo apt-get install python" to get python running on the system.

Then, we visited the anaconda site and downloaded the anaconda set up for Linux OS Ubuntu.

After the download was complete, from research, we discovered we had to run anaconda installation from terminal, using the syntax "bash/directory of file/file name. (the directory of the downloaded Anaconda setup and the exact file name of the Anaconda setup downloaded)

Now with anaconda environment running on our system as the base, we could easily access anaconda-navigator, and from that we install the rest of the packages which includes

1. Tensor Flow
2. Keras
3. Scikit-Learn
4. Jupyter Notebook
5. Matplotlib
6. Pandas
7. NumPy
8. SciPy

4 TESTING OF LIBRARIES

In order to test the functionality of the various libraries in that makes sense and in turn helps us understand and get the information we need from the data set, we used the various libraries as follows;

MATPLOTLIB

We used matplotlib to read our CSV file and selected the columns that focuses on our research.

Then we visualized the data set with respect to the columns of Engine size and CO2 emissions, and plotted in on a scatter diagram.

This was done in order to predict the value of CO2 emissions based on the various engine sizes of the cars.

Matplotlib was also used to divide the data set into training and testing of data, in order to be able to know the correlation between the engine sizes of cars and the amount of CO2 it emits into the atmosphere.

SCIKIT-LEARN

Scikit-learn was used to also train the module, this was done to find the coefficient of the base line or regression line, because we used a linear regression module.

Scikit-Learn was also used to develop arrays for graph plotting, before we could identify the slope.

NUMPY

Numpy was used to create functions that would help use predict the CO2 Emissions from cars based on their engine sizes.

It was also used to check for data set accuracy, whereby we used numpy arrays.

PANDAS

Pandas was used in hand to plot the graph (scatter diagram), where it was used to read the imported CSV file, before we could plot the data.

ANACONDA

The anaconda environment was the foundation of all the code executed and packages installed.

Anaconda was used to install and launch Jupyter notebook for the testing of the libraries. Tensor flow and Keras alike was also installed with the Anaconda environment via Anaconda-Navigator.

JUPYTER NOTEBOOK

Jupyter notebook is the software we used in running all the codes and libraries. It served as an IDE for the code manipulation and executions. It also served as a platform for housing the data set we used in conducting our research.

PYTHON

Now finally, the core of this assignment, Python, this is the language in which we used to communicate with the computer in executing the codes and testing the various libraries.

5 CONCLUSION

In conclusion, The insight gained from our project clearly shows the greater emissions in Carbon Dioxide by vehicles with larger engine size.

Which means the larger the engine size of the car, the more Carbon Dioxide the car's engine emits into the atmosphere and the smaller the engine size of the car, the less Carbon Dioxide the car releases into the atmosphere.

In turn this means the more we continue to produce and manufacture cars with large and larger engine sizes, the more we cause harm to our environment and the more we endanger the Human Race.

Also, we were unable to use TensorFlow and Keras because of the nature of the graph, and moreover there wasn't enough data to train the model for accurate prediction.

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