

General Sir John Kotelawala Defense University

Department of Electrical, Electronics & Telecommunication Engineering

Machine Learning

ET 4103

Assignment - 01

Index No : D/ENG/22/0120/ET

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Q1. Utilize the given Jupyter notebook for Linear Regression with a single variable. Comment on the code and the output of the program, explaining utilized Machine Learning concepts where necessary

Code with Explanation:

# File Location: The file we want to access is currently placed in the current working directory of Python.

import os

from google.colab import drive

drive.mount('/content/drive') # Grants Colab access to Google Drive in order to retrieve the data files

%cd "/content/drive/MyDrive/ML\_files"

Mounted at /content/drive

/content/drive/MyDrive/ML\_files

# Import the required Libraries

import pandas as pd

import numpy as np

import sklearn

import matplotlib.pyplot as plt

path = 'ex1data1.txt'

data\_path = path

data = pd.read\_csv(path, header=None, names = ["x1", "y"])

data.head() # Prints the first five rows of the data

|  |  |  |
| --- | --- | --- |
|  | x1 | y |
| 0 | 6.1101 | 17.5920 |
| 1 | 5.5277 | 9.1302 |
| 2 | 8.5186 | 13.6620 |
| 3 | 7.0032 | 11.8540 |
| 4 | 5.8598 | 6.8233 |

data.shape # Returns the shape of the data in the form (rows, columns)

(97, 3)

x1 = data['x1'] # Extracts x1 values into list

y = data['y'] # Extracts y values into list

plt.scatter(x1,y,s=30,c='r',marker='x',linewidths=1) # Prepares a scatter plot of the data

plt.xlim(min(data['x1']-1),max(data['x1']+1)) # Sets limits for the extent of the graph

plt.xlabel('Population of City in 10,000s') # Labels X axis

plt.ylabel('Profit in LKR10,000s'); # Labels Y axis