MACHINE LEARNING

NUMPY LIBRARY

1) Matrix product

import numpy as np

  x =np.array([[1, 2], [3, 4]])

y =np.array([[5, 6], [7, 8]])

  v =np.array([9, 10])

w =np.array([11, 12])

  print(np.dot(v, w))

  print(np.dot(x, v))

print(np.dot(x, y))

Out put:

2) Basic Array Operations

import numpy as np

a = np.array([[1, 2],[3, 4]])

b = np.array([[4, 3],[2, 1]])

print ("Adding 1 to every element:", a + 1)

print ("\nSubtracting 2 from each element:", b - 2)

print ("\nSum of all array " "elements: ", a.sum())

print ("\nArray sum:\n", a + b)

Out put:

3) Slicing of Array

import numpy as np

arr = np.array([[-1, 2, 0, 4],[4, -0.5, 6, 0],[2.6, 0, 7, 8],[3, -7, 4, 2.0]])

print("Initial Array: ")

print(arr)

sliced\_arr = arr[:2, :2]

print (sliced\_arr)

Out put:

PANDAS LIBRARARY

4) Python program using Pandas for arranging a given set of data into a table

import pandas as pd

data ={"country": ["Brazil", "Russia", "India", "China", "South Africa"],

"capital": ["Brasilia", "Moscow", "New Dehli", "Beijing", "Pretoria"],

"area": [8.516, 17.10, 3.286, 9.597, 1.221],

"population": [200.4, 143.5, 1252, 1357, 52.98] }

data\_table =pd.DataFrame(data)

print(data\_table)

Out put:

MATPLOTLIB LIBRARARY

5) Ploting of Line, Bar and Scatter graphs

from matplotlib import pyplot as plt

x = [5, 2, 9, 4, 7]

y = [10, 5, 8, 4, 2]

plt.plot(x,y)

plt.show()

plt.bar(x,y)

plt.show()

plt.scatter(x, y)

plt.show()

Out put:

6) Ploting of graph with all the names

import matplotlib.pyplot as plt

import numpy as np

x = np.linspace(0, 10,10)

y= np.linspace(0,8,10)

plt.plot(x, y, label ='linear',color='red')

plt.legend()

plt.xlabel('Time')

plt.ylabel('Velocity')

plt.title('Time Vs Velocity')

plt.show()

Out put:

7) Simple Linear Regression

# Importing the libraries

import numpy as np

import matplotlib.pyplot as plt

import pandas as pd

# Importing the dataset

dataset = pd.read\_csv('Salary\_Data.csv')

X = dataset.iloc[:, :-1].values

y = dataset.iloc[:, 1].values

# Splitting the dataset into the Training set and Test set

from sklearn.model\_selection import train\_test\_split

X\_train, X\_test, y\_train, y\_test = train\_test\_split(X, y, test\_size = 1/3, random\_state = 0)

# Fitting Simple Linear Regression to the Training set

from sklearn.linear\_model import LinearRegression

regressor = LinearRegression()

regressor.fit(X\_train, y\_train)

# Predicting the Test set results

y\_pred = regressor.predict(X\_test)

# Visualising the Training set results

plt.scatter(X\_train, y\_train, color = 'red')

plt.plot(X\_train, regressor.predict(X\_train), color = 'blue')

plt.title('Salary vs Experience (Training set)')

plt.xlabel('Years of Experience')

plt.ylabel('Salary')

plt.show()

# Visualising the Test set results

plt.scatter(X\_test, y\_test, color = 'red')

plt.plot(X\_train, regressor.predict(X\_train), color = 'blue')

plt.title('Salary vs Experience (Test set)')

plt.xlabel('Years of Experience')

plt.ylabel('Salary')

plt.show()

Out put: