FUTURE SALES PREDICTION

**AIM:**

To predict the future Sales using machine learning. It involves several steps, including feature engineering, model training, and evaluation.

**CODE:**

import pandas as pd

import numpy as np

import seaborn as sns

import matplotlib.pyplot as plt

data = pd.read\_csv('Sales.csv')

print("Description of columns : \n")

print(data.describe()) #decription of each column

print("\nNo.of Null Columns :\n",data.isnull().sum()) #count of null values in columns

data = data.dropna() #to remove null data

Output:

TV Radio Newspaper Sales

count 200.000000 200.000000 200.000000 200.000000

mean 147.042500 23.264000 30.554000 15.130500

std 85.854236 14.846809 21.778621 5.283892

min 0.700000 0.000000 0.300000 1.600000

25% 74.375000 9.975000 12.750000 11.000000

50% 149.750000 22.900000 25.750000 16.000000

75% 218.825000 36.525000 45.100000 19.050000

max 296.400000 49.600000 114.000000 27.000000

correlations = data.corr(method='pearson')

plt.figure(figsize=(15, 12))

sns.heatmap(correlations, cmap="coolwarm", annot=True)

plt.show()

We have chosen the TV, Radio and the Newspaper column as the features to train the model, and the Sales column as labels for the model:

x=data[["TV","Radio","Newspaper"]]

y=data["Sales"]

We split the data into training and test sets and use the decision tree regression algorithm to train our model:

xtrain, xtest, ytrain, ytest = train\_test\_split(x, y,test\_size=0.2,

random\_state=42)

from sklearn.tree import DecisionTreeRegressor

model = DecisionTreeRegressor()

model.fit(xtrain, ytrain)

Now let’s input the features (Total Price, Base Price) into the model and predict how much quantity can be demanded based on those values:

features = np.array([[200,40,100]])

model.predict(features)

**Final Output:**

array([19.2])

**Conclusion:**

So this is how you can train a machine learning model for the task of future sales prediction using Python. Advertisement cost(Investment) is one of the major factors that affect the Sales for the product.