SVKM's NMIMS

Mukesh Patel School of Technology Management & Engineering

Program: B Tech/ MBA Tech Artificial Intelligence, B Tech (AI and ML, AI and DS, CSE (DS))

Course: Machine Learning

Experiment No.04

PART B

Sap Id: 70572300052	Name: Arushi Pandey
Class : 2nd year STME	Program: CSEDS
Date of Experiment: 29-01025	Date of Submission: 1-02-25

B.1 Tasks

1. Define two Numpy arrays x and y which represents BMI and Cholesterol x= [5,15,25,35,45,55] and y= [11,16,18,30,22,38].
2. Plot a scatter plot of x and y.
3. Write a python function to compute the values of the coefficients of linear regression, b_0 and b_1.
4. Determine the predicted value of y for x=27.
5. Plot the regression line on the scatter plot.

Task 2:

1. Import LinearRegression from SKlearn.
2. Reshape x to make it two dimensional array.
3. Create a model for linear regression.
4. Train the model using model.fit
5. Determine the value of intercept (b_0) and slope(b_1). Compare the values as obtained from task 1.
6. Determine the value of r^2.

Task 3:

1. Import salary.csv into your notebooks.
2. Explore the dataset using head and describe.
3. Repeat steps 2 to 6 from task 2.
4. Plot a scatter plot of work experience vs salary
5. You can cross verify with your function written by you.
6. Deployment of the model using streamlit

Task 4: Multiple linear Regression:

B.4 Conclusion:

In conclusion, this experiment provided hands-on experience in implementing simple linear regression using both NumPy and Sklearn. By understanding the mathematical foundations of regression and applying them programmatically, students gained insights into predicting relationships between variables. Additionally, comparing manual computations with Sklearn's built-in functions helped in validating results and understanding model accuracy. This knowledge is crucial for further exploration of machine learning concepts, particularly in predictive modeling and data analysis.