CS4092D Machine Learning Lab
Module3 (LR): Exercise
Linear Regression
S4 MCA: Winter 2022-23

Date: 03-Feb-2023

Q. Implement the Linear Regression **(LR)** model, with multiple variables, using the Gradient Decent Algorithm from scratch using Python. You must use only the basic libraries in Python to implement this exercise. We have shared the Airfoil Self-Noise dataset from NASA, as 'AirfoilSelfNoise.csv' for implementing this problem. The dependent variable in the dataset is the feature 'SSPL'. All the necessary feature descriptions can be found in the 'Feature descriptions' file.

For building the LR model, **divide your dataset into train and test sets**: you may **randomly** take 70% of the datapoints(rows) in the dataset as the train-dataset and the remaining 30% of the datapoints goes to the test-dataset.

Run the performance evaluation metrics for your LR model on the given data set. Compare your **model's performance** with respect to Python's LinearRegression() function defined in sklearn.linear_model.

Note: There are three error metrics that are commonly used for evaluating and reporting the performance of a Linear regression model:

- Mean Squared Error (MSE).
- Root Mean Squared Error (RMSE).
- Mean Absolute Error (MAE)