**Assignment 1 :**

* **Introduction**
* This report presents an analysis of two datasets using classification and regression models. The first dataset is analyzed using the **K-Nearest Neighbors (KNN) classifier**, while the second dataset is processed using **Linear Regression, Lasso Regression, and Ridge Regression**.
* **Classification Dataset**

Data Split:

* + **70% Training Data**
  + **15% Validation Data**
  + **15% Test Data**

Feature Scaling: Standardization using StandardScaler

* **Regression Dataset**

Data Split:

* + **70% Training Data**
  + **15% Validation Data**
  + **15% Test Data**
* **K-Nearest Neighbors (KNN) Classifier**

KNN is a simple, non-parametric classification algorithm that predicts the class of a data point based on the majority class among its k-nearest neighbors

* **Number of Neighbors (k) = {3, 5, 7, 9}**
* **Accuracy, Precision, Recall, F1-Score, Confusion Matrix**
* **Regression Models**

#### **Linear Regression:**

linear relationship between the independent and dependent variables. It finds the best-fit line by minimizing the Mean Squared Error (MSE)

#### **Lasso Regression:**

regression adds L1 regularization to the linear model, which helps in feature selection by shrinking some coefficients to zero

#### **Ridge Regression:**

introduces L2 regularization, preventing overfitting by penalizing large coefficients, but unlike Lasso, it does not reduce coefficients to zero