**1. Supervised Machine Learning Classifiers**

This section introduces common supervised machine learning classifiers, including Logistic Regression, K-Nearest Neighbors (KNN), Support Vector Machine (SVM), Decision Tree, Gaussian Naïve Bayes (GNB), Random Forest, Gradient Boosting (GB), and Linear Discriminant Analysis (LDA).

**1.1 Logistic Regression (LR)**

Logistic Regression is a classification algorithm that predicts probabilities. Instead of drawing a straight line to separate classes, it applies a transformation to ensure outputs fall between 0 and 1.

* If the probability is above a set threshold (e.g., 0.5), the model assigns the data point to one category; otherwise, it belongs to another.
* This method is widely used in binary classification problems, such as spam detection and disease diagnosis.