Assignment 2: Logistic Regression

Steps

(i) Load the required libraries

(ii) Import the Dataset.

(iii) Preprocess the Dataset

(iv) Split the dataset into testing and training dataset.

(v) Separate dependent and independent variable

(vi) Manual Method:

(a) Initialize weights (theta).

(b) for each iteration

(i) Initialize the parameters for model

(ii) Calculate sigmoid function value for the parameters.

(iii) Calculate Gradient value as

$$\text{Gradient} = \frac{X\_train * (\text{sigmoid}(\text{Parameters}) - Y\_train)}{\text{len}(Y\_train)}$$

(iv) Update theta as

theta -= learning rate * Gradient

(v) Calculate new sigmoid value over updated parameters

(vi) Calculate Loss for the iteration.

(c) Predict value of y for X_test by predicting probability value of based on the weight of the der iterations.

(d) Plot the decision boundary and calculate Accuracy confusion matrix and classification report.

(vii) Scikit-Learn Method

(a) Load Logistic Regressor() model, Train then predict, calculate classification report and plot.

(viii) Compare the results for both methods.