

To implement the Linear Regression algorithm to solve the Binary classification problem.

PROJECT DESCRIPTION

- Programming language used : Python
- Data Structure : Lists, matrix
- File Name : LinearRegression.py
- Inputs: linear-regression.txt
- Output:
 - Linear Regression – Weight matrix such that the equation $z = W_0 + W_1 * x + W_2 * y$ is satisfied for all (x, y) belonging to the input set.

IMPLEMENTATION

- Modules created :
 - A. Linear Regression:
 1. ReadFile(): to save the input file into List of points for the given dimensions in the global variable Data_List, and the dependent variable in Y.
 2. LSReg(): to find the optimal weight based on the simplified formula :
$$W = (D D^T)^{-1} D Y$$
Function gives the optimal weight as the output.
- Termination Condition :
 - LinearRegression: No recursion used, simple calculation of optimal Weight.
- Result Interpretation:
 - Linear regression output gives the weight for the least number of unclassified points as the points cannot be classified further.