Artificial Intelligence (18CSC305J)

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Ex- 10 : Team Tesla 2.0

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Experiment 10 - Implementation of Linear Regression.

Problem Statement:

Linear regression is an approach for predicting a response using a single feature.
It is assumed that the two variables are linearly related. Hence, we try to find a linear function that predicts the response value(y) as accurately as possible as a function of the feature or independent variable(x).

Algorithm :

1. Initialize the parameters.
2. Predict the value of a dependent variable by giving an independent variable.
3. Calculate the error in prediction for all data points.
4. Calculate partial derivatives a0 and a1.
5. Calculate the cost for each number and add them.

Code:
https://colab.research.google.com/drive/1rEMSmkW9szAq68uTi_LrHvARlPqVLM9t

Observation :
In Regression, we plot a graph between the variables which best fit the given data points. Linear regression shows the linear relationship between the independent variable (X-axis) and the dependent variable (Y-axis).To calculate best-fit line linear regression uses a traditional slope-intercept form. A regression line can be a Positive Linear Relationship or a Negative Linear Relationship.

The goal of the linear regression algorithm is to get the best values for a0 and a1 to find the best fit line and the best fit line should have the least error. In Linear Regression, Mean Squared Error (MSE) cost function is used, which helps to figure out the best possible values for a0 and a1, which provides the best fit line for the data points. Using the MSE function, we will change the values of a0 and a1 such that the MSE value settles at the minima. Gradient descent is a method of updating a0 and a1 to minimize the cost function (MSE).

Real World Solution:

- The relationship between drug dosage and blood pressure of patients.
- To evaluate trends and make estimates or forecasts.

Result: We successfully deployed the Linear Regression model .