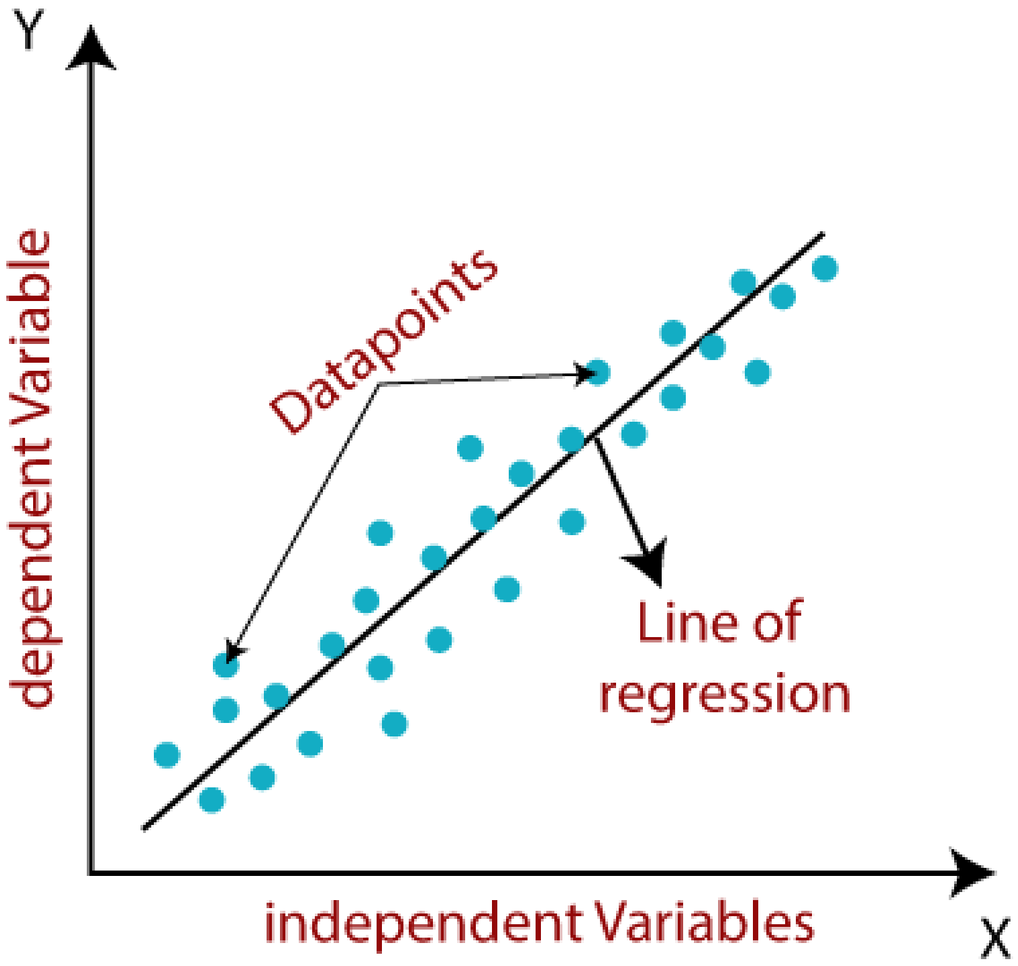
Regression

Regression

- **Regression** shows a line or curve that passes through all the data points on the target-predictor graph in such a way that the vertical distance between the data points and the regression line is minimum.
- It is used for prediction, forecasting, time series modeling, and determining the causal-effect relationship between variables.



#ExploreDataWithDivyanshu

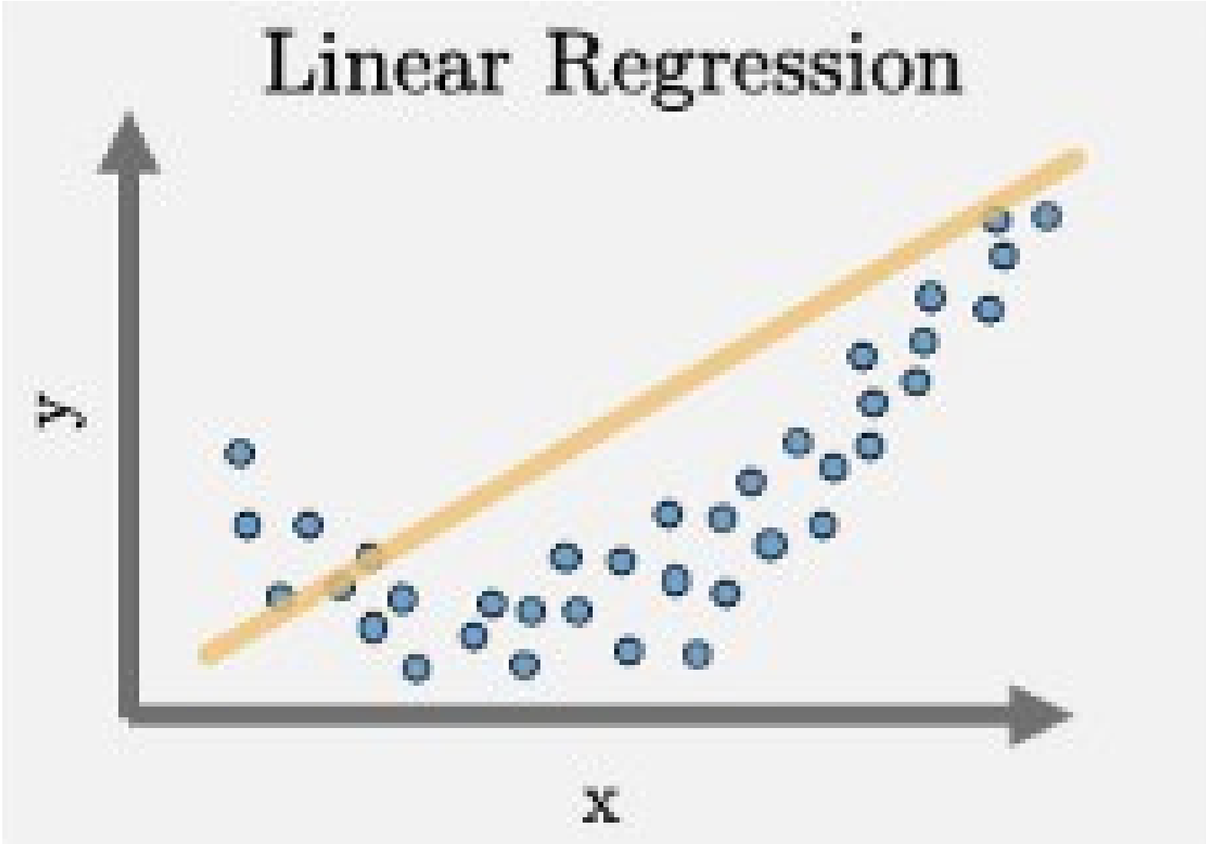
Day 14 of #66DaysOfData

Types of Regression

1. Linear Regression
2. Polynomial Regression
3. Bayesian Regression
4. Logistic Regression

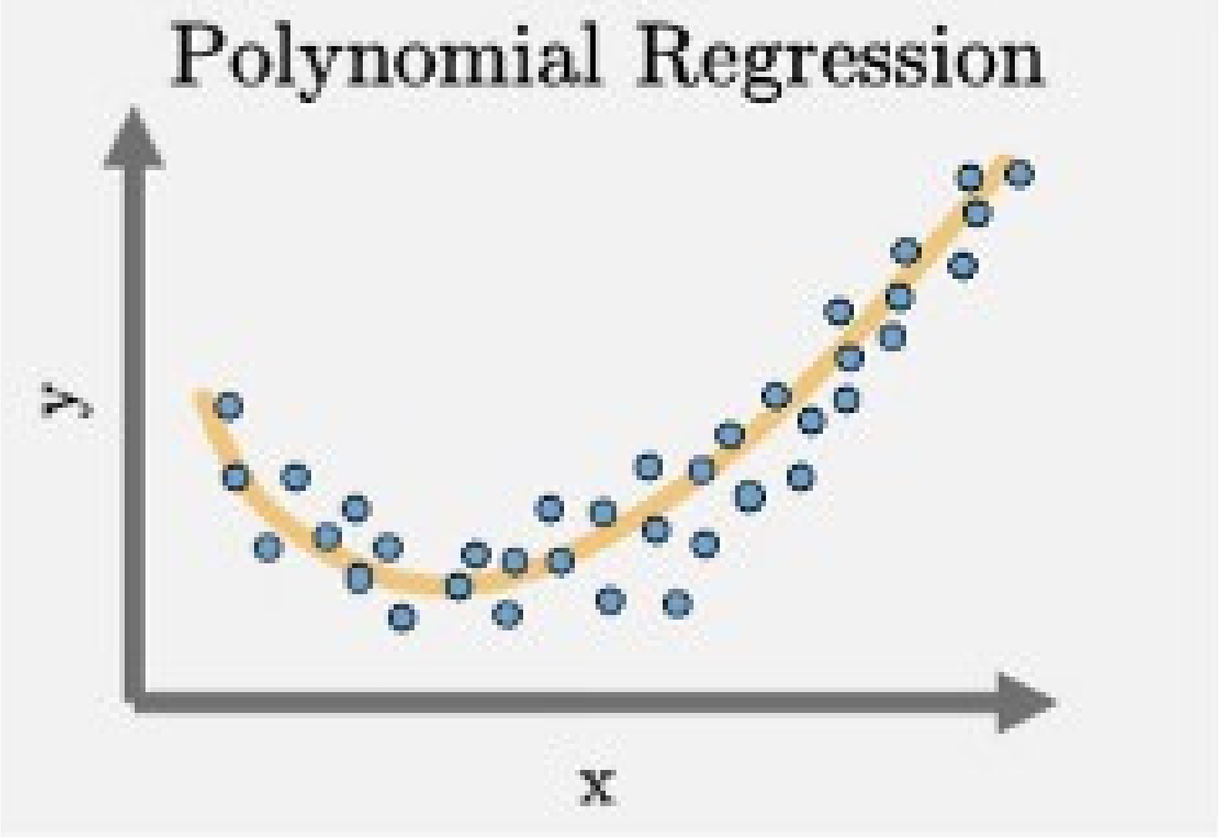
Linear Regression

- In linear regression, we fit a line minimizing the sum of mean-squared error for each data point.



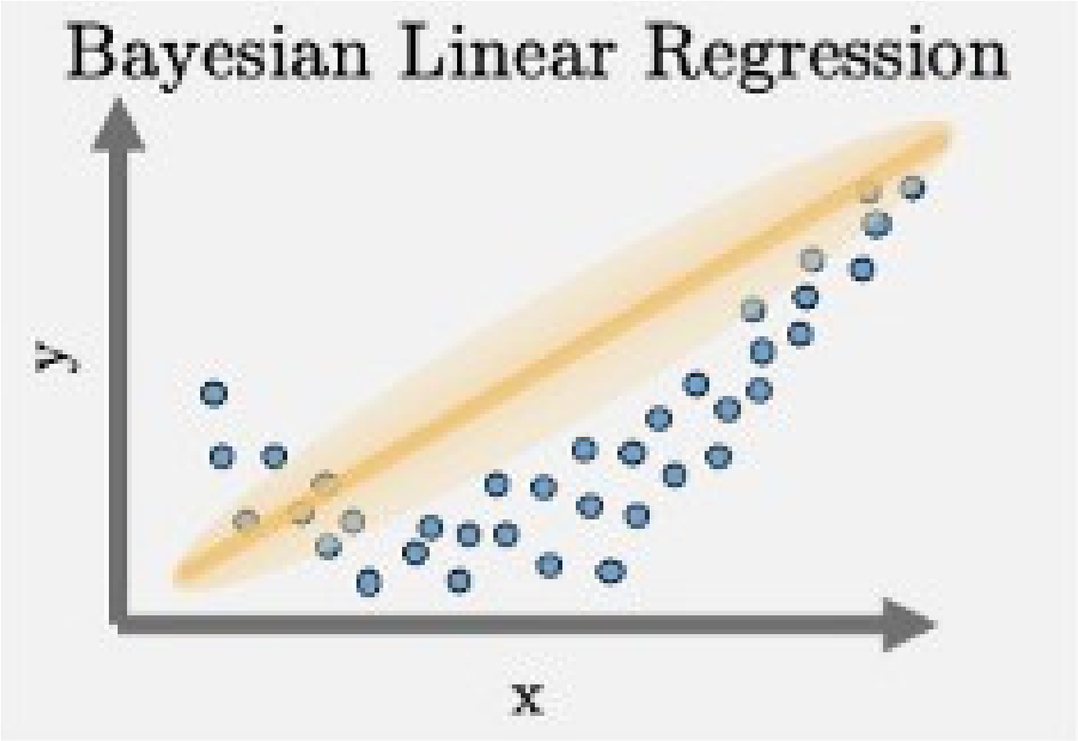
Polynomial Regression

- In polynomial regression, we fit a polynomial of order k(k+1 unknowns) minimizing the sum of mean-squared error for each data point.



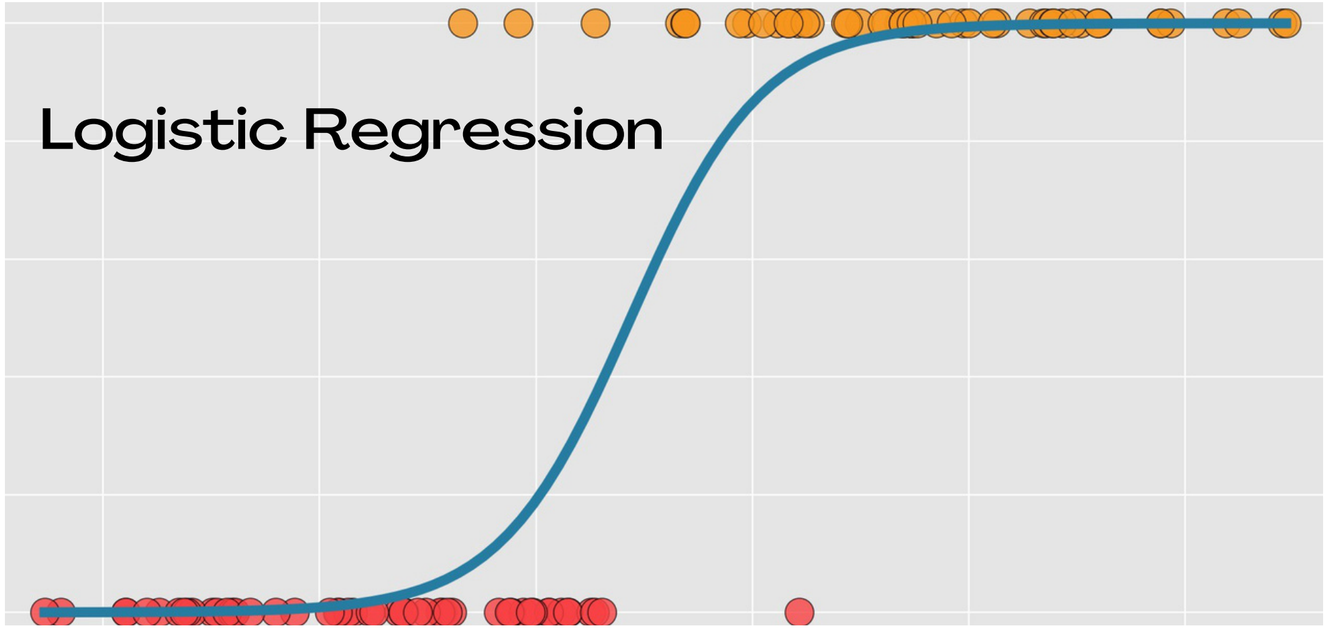
Bayesian Regression

- In bayesian regression, for each data point, we fit a gaussian distribution by minimizing the mean-squared error. As the number of the data points x increases, it converges to point estimates i.e, $n \to \infty$, standard-deviation $\to 0$.



Logistic Regression

- It comes under classification(not regression).
- In logistic regression, we fit a line or polynomial with sigmoid activation minimizing the sum of mean squared error for each data point. The labels y are binary class labels.



Not so popular types of regressive algorithms

- **Ridge Regression:**
  In ridge regression, we can fit either a line or polynomial minimizing the sum of mean squared error for each data point and the weighted L2 norm if the function parameters beta.
- **Lasso Regression:**
  in Lasso regression, we can fit either a line or polynomial minimizing the sum of mean squared error for each datapoint and the weighted L1 norm if the function parameters beta.