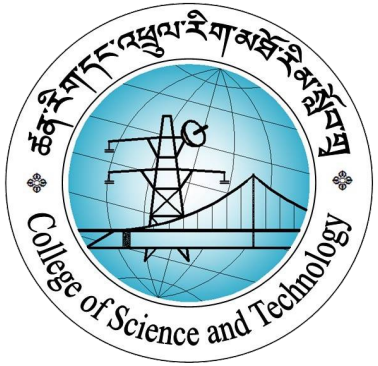


Royal University of Bhutan

Unit II: Regression

CTE309 Machine Learning

AS2024: BE Information Technology

Overview

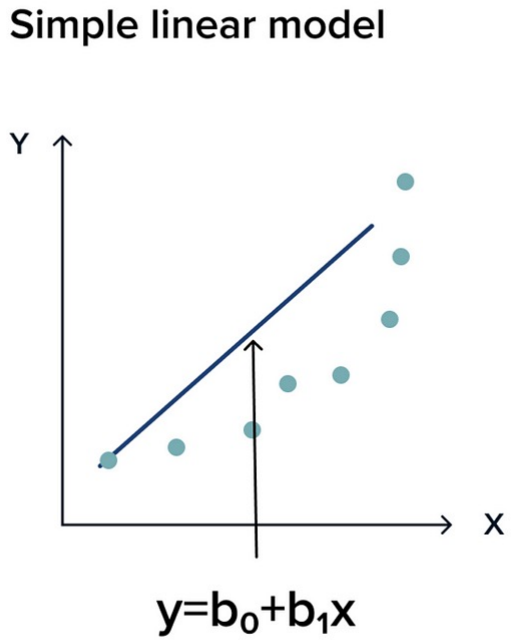
- Introduction
- What is it?
- Types
- Linear regression vs Polynomial regression
- Demo

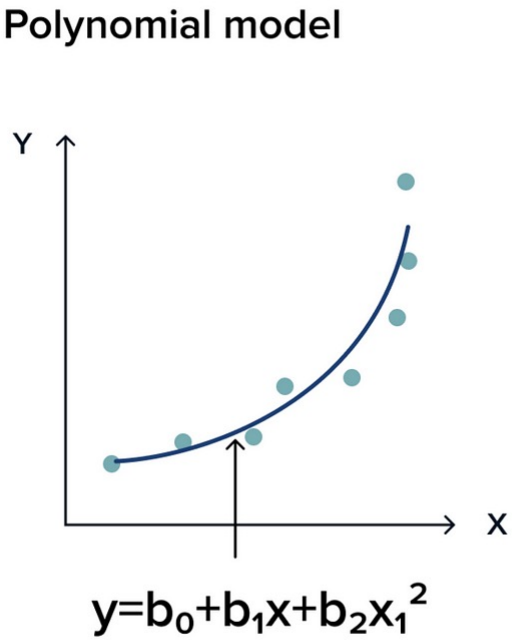
Introduciton

- In linear regression, the relationship is considered to be linear
- Data may not follow the linear pattern all the time
- Straight line may not represent the relationship
- Thus, Polynominal regression,
  - Accepts curved or non-linear relationsips

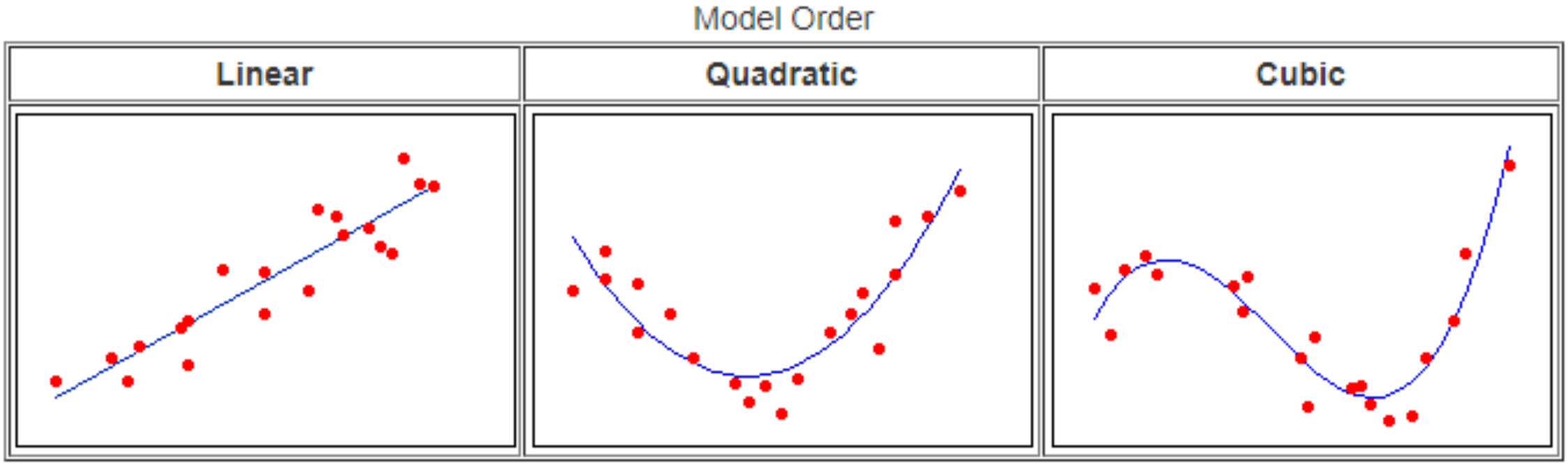
What is it?

- is a form of regression analysis that models the relationship between X and Y as an nth degree polynomial function.
- In other words, it extends the concept of linear regression to capture nonlinear relationships between variables.





Types



Degree = 1

Degree = 2

Degree = 3

Linear vs Polynomial

Simple Linear Regression

$$y = b_0 + b_1 x_1$$

Multiple Linear Regression

$$y = b_0 + b_1 x_1 + b_2 x_2 + \ldots + b_n x_n$$

Polynomial Linear Regression

$$y = b_0 + b_1 x_1 + b_2 x_1^2 + \ldots + b_n x_1^n$$

Thank you