Regression & Classification

Type 3 | Introduction | Practice

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Algorithms

SIMPLE LINEAR REGRESSION

$$y = b_0 + b_1 x_1$$

MULTI LINEAR REGRESSION

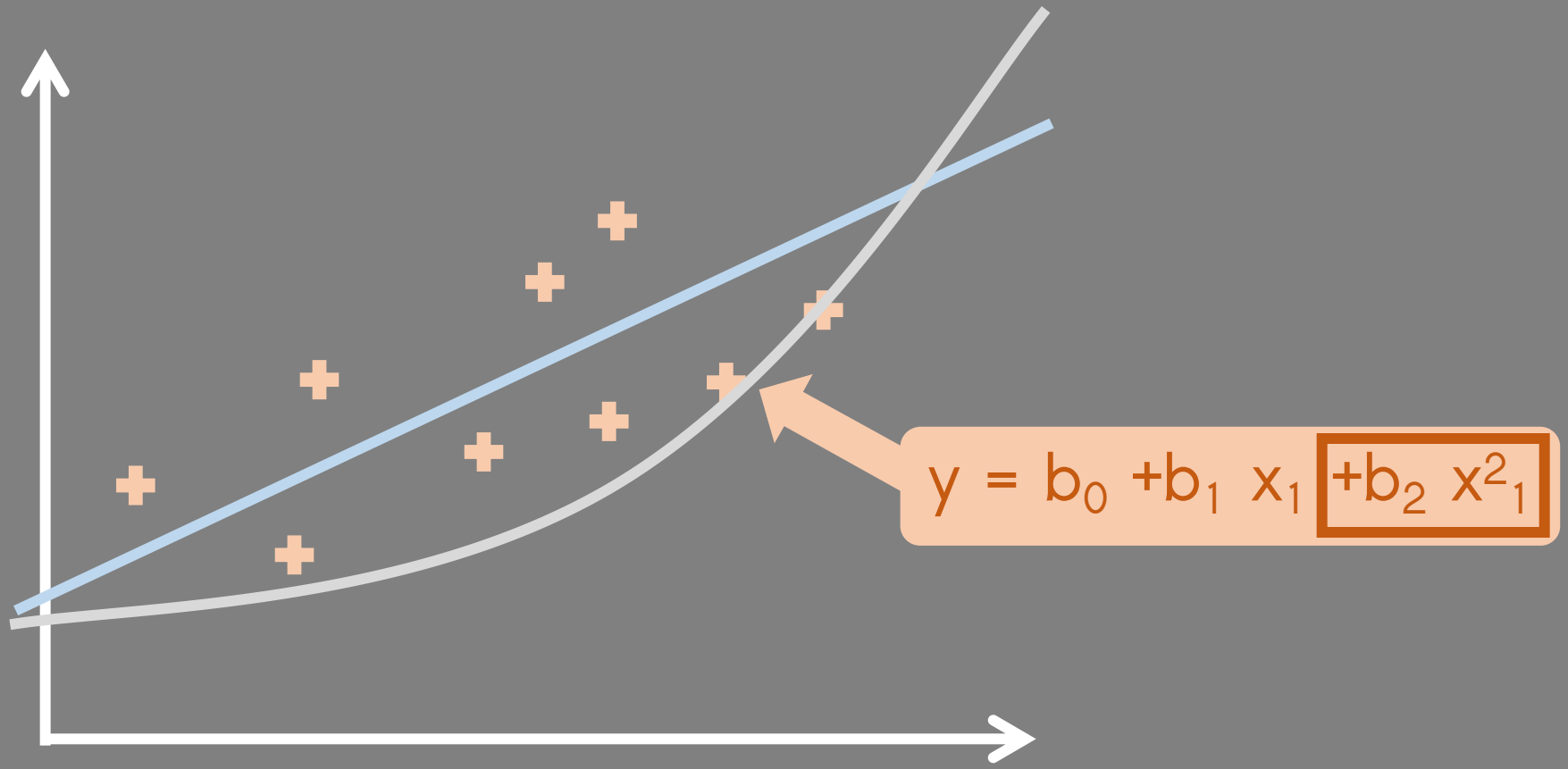
$$y = b_0 + b_1 x_1 + b_2 x_2 + \ldots + b_n x_n$$

POLYNOMIAL LINEAR REGRESSION

$$y = b_0 + b_1 x_1 + b_2 x^2_1 + b_2 x^3_1 \ldots + b_n x^n_1$$

The Difference

SIMPLE vs. POLYNOMIAL



Defining Linearity

THE QUESTION

- WHY IS IT STILL CALLED: LINEAR??
  - The same variable is squared
  - The path followed by BEST FIT LINE is Parabolic

POLYNOMIAL LINEAR REGRESSION

$$y = b_0 + b_1 x_1 + b_2 x^2_1 + b_2 x^3_1 \ldots + b_n x^n_1$$

- We aren't talking about **X** variables, they are NON LINEAR
- We are talking about Co-efficients, they are unknowns. Predict that and plot w.r.t. X

Problem Statement

PROBLEM STATEMENT

- In a Company, there is an opening for a new position for an Experienced Employee
- The new candidate who seems promising for the position and it is time for Offer Negotiation
- The employee has 20+yrs of Experience and has been earning 160K and expects at least more than that
- But a Control Freak from H.R. team manages to get data of previous company and the data is as follows

Problem Statement

THE DATA OF PREVIOUS COMPANY

Position	Level	Salary
Business Analyst	1	45000
Junior Consultant	2	50000
Senior Consultant	3	60000
Manager	4	80000
Country Manager	5	110000
Region Manager	6	150000
Partner	7	200000
Senior Partner	8	300000
C-level	9	500000
CEO	10	1000000

Problem Statement

NON LINEAR NATURE DETECTED!

Polynomial Regression

BLUFF DETECTOR

- The Candidate has been on Level 6 i.e. Regional Manager and it takes minimum 4 years to get to Level 7
- Let us make a Bluff Detector using the Regressor

LET's CODE