

## 6. Method of Least Squares:

(pp. 1001)

### Method of Least Squares (Least Squares Regression):

Examp 6.1:

$$q = \sum_{i=1}^n (y_i - a - bx_i)^2 \quad : \text{Sum of squares of errors}$$

x	y
-5	-2
2	4
7	3.5

$$\frac{\partial q}{\partial a} = 0 \Rightarrow -2 \sum (y_i - a - bx_i) = 0$$

$$\frac{\partial q}{\partial b} = 0 \Rightarrow -2 \sum x_i (y_i - a - bx_i) = 0$$

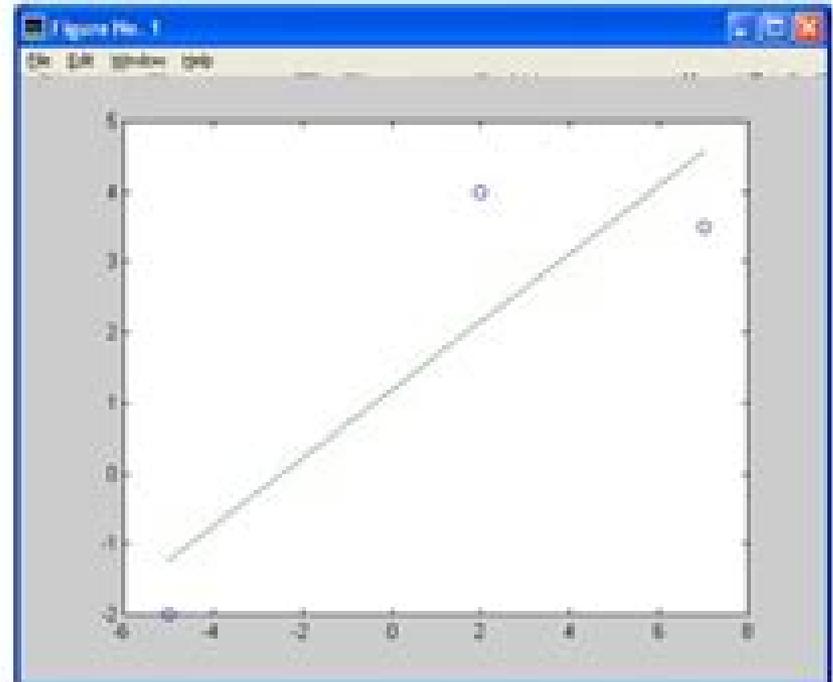
$$\begin{bmatrix} n & \sum x_i \\ \sum x_i & \sum x_i^2 \end{bmatrix} \begin{Bmatrix} a \\ b \end{Bmatrix} = \begin{Bmatrix} \sum y_i \\ \sum x_i y_i \end{Bmatrix}$$

$$y = a + bx$$

$$\begin{bmatrix} 3 & 4 \\ 4 & 78 \end{bmatrix} \begin{Bmatrix} a \\ b \end{Bmatrix} = \begin{Bmatrix} 5.5 \\ 42.5 \end{Bmatrix}$$

$$\begin{Bmatrix} a \\ b \end{Bmatrix} = \frac{1}{218} \begin{bmatrix} 78 & -4 \\ -4 & 3 \end{bmatrix} \begin{Bmatrix} 5.5 \\ 42.5 \end{Bmatrix} \quad \begin{array}{l} a = 1.188 \\ b = 0.484 \end{array}$$

$$y = 1.188 + 0.484x$$



# Least Squares Methods For System Identification

**G Psacharopoulos**



## **Least Squares Methods For System Identification:**

## **Least Squares Methods For System Identification** Book Review: Unveiling the Magic of Language

In an electronic era where connections and knowledge reign supreme, the enchanting power of language has been apparent than ever. Its ability to stir emotions, provoke thought, and instigate transformation is truly remarkable. This extraordinary book, aptly titled "**Least Squares Methods For System Identification**," written by a very acclaimed author, immerses readers in a captivating exploration of the significance of language and its profound impact on our existence. Throughout this critique, we shall delve to the book's central themes, evaluate its unique writing style, and assess its overall influence on its readership.

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