INSTITUTO TECNOLÓGICO DE SONORA

JESUS ALFREDO LEONARDO ELIAS

ASIGNACIÓN 11 - MÉTODO DE REGRESIÓN LINEAL MÚLTIPLE

METODOS NUMERICOS COMPUTACIONALES

MANUEL ALEJANDRO QUINTANA GARCIA

$$y = a_0 + a_1 x_1 + a_2 x_2$$

x_1	x_2	y
1	1	18.0
1	2	12.8
2	1	25.7
2	2	20.6
3	1	35.0
3	2	29.8
4	1	45.5
4	2	40.3

$$n a_0 + (\Sigma x_1) a_1 + (\Sigma x_2) a_2 = \Sigma y$$

$$(\Sigma x_1) a_0 + (\Sigma x_1^2) a_1 + (\Sigma x_1 x_2) a_2 = \Sigma x_1 y$$

$$(\Sigma x_2) a_0 + (\Sigma x_1 x_2) a_1 + (\Sigma x_2^2) a_2 = \Sigma x_2 y$$

x_1	x_2	y	x_1^2	x_2^2	$x_1 x_2$	$x_1 y$	$x_2 y$
1	1	18.0	1	1	1	18.0	18.0
1	2	12.8	1	4	2	12.8	25.6
2	1	25.7	4	1	2	51.4	25.7
2	2	20.6	4	4	4	41.2	41.2
3	1	35.0	9	1	3	105.0	35.0
3	2	29.8	9	4	6	89.4	59.6
4	1	45.5	16	1	4	182.0	45.5
4	2	40.3	16	4	8	161.2	80.6
Σ		227.7	60	20	30	660.9	331.2

$$\begin{cases} 8a_0 + 20a_1 + 14a_2 = 227.7 \\ 20a_0 + 60a_1 + 30a_2 = 660.9 \\ 14a_0 + 30a_1 + 20a_2 = 331.2 \end{cases}$$

$a_0 = 4.05$

$a_1 = 10.25$

$a_2 = -5.18$

$\hat{y} = 4.05 + 10.25x_1 - 5.18x_2$

x_1	x_2	y	$\hat{y}$	Error
1	1	18.0	9.12	-8.88
1	2	12.8	3.94	-8.86
2	1	25.7	19.37	-6.33
2	2	20.6	14.19	-6.41
3	1	35.0	29.62	-5.38
3	2	29.8	24.44	-5.36
4	1	45.5	39.87	-5.63
4	2	40.3	34.69	-5.61