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Tugas 12 Data Mining Regresi

(https://github.com/WildanDevanata/Datamining/tree/main/Tugas_Minggu12)

Tentukan persamaan regresi berikut:

	Usia Mobil (tahun)	Harga Mobil ($100)
	X	y
1	5	85
2	4	103
3	6	70
4	5	82
5	5	89
6	5	98
7	6	66
8	6	95
9	2	169
10	7	70
11	7	48

X = {5,4,6,5,5,6,6,2,7,7,7}

Y = {85,103,70,82,89,98,66,95,169,70,48}

1. **Langkah 1: Hitung rata-rata $\overline{x}$ dan $\overline{y}$**

$$\overline{x} = \frac{\sum x}{n} \quad \overline{y} = \frac{\sum y}{n}$$

Jumlah data (nnn) = 11

∑x=5+4+6+5+5+6+6+2+7+7+7 = 60

∑y=85+103+70+82+89+98+66+95+169+70+48 = 975

$\overline{x} = \frac{60}{11} = 5.454$

$\overline{y} = \frac{975}{11} = 88.636$

2. Langkah 2: Hitung bbb (slope)

$$b = \frac{\sum(xi - \overline{x})(yi - \overline{y})}{\sum(xi - \overline{x})2}$$

xi	yi	$xi - \overline{x}$	$yi - \overline{y}$	$(xi - \overline{x})(yi - \overline{y})$	$(xi - \overline{x})2$
5	85	-0.454	-3.636	1.651	0.206
4	103	-1.454	14.364	-20.876	2.114
6	70	0.546	-18.636	-10.169	0.298
5	82	-0.454	-6.636	3.014	0.206
5	89	-0.454	0.364	-0.165	0.206
6	98	0.546	9.364	5.111	0.298
6	66	0.546	-22.636	-12.357	0.298
2	95	-3.454	6.364	-21.973	11.937
7	169	1.546	80.364	124.224	2.392
7	70	1.546	-18.636	-28.798	2.392
7	48	1.546	-40.636	-62.822	2.392

Hasil:

1. $\sum(xi - \overline{x})(yi - \overline{y})$ = 1.651 – 20.876 – 10.169 + 3.014 – 0.165 + 5.111 – 12.357 – 21.973 + 124.224 – 28.798 – 62.822 = **–23.166**
2. $\sum(xi - \overline{x})2$ = 0.206 + 2.114 + 0.298 + 0.206 + 0.206 + 0.298 + 0.298 + 11.937 + 2.392 + 2.392 + 2.392 = **22.749**

$$b = \frac{-23.166}{22.749} = -1.018$$

3. Langkah 3: Hitung a(intercept)

$$a = \overline{y} - b.\overline{x}$$

$$a = 88.636 - (-1.018)(5.454)$$

$$a = 88.636 + 5.546 = 94.182$$

Persamaan Regresi:

$$y = 94.182 - 1.018x$$