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KNN - Task 01

Here, the table:

then, input = 22

and $k=3$, this means we will find 3 closest value.

Now, we use

Euclidean Distance,

$$d(x, y) = \sqrt{(x_1 - y_1)^2 + (x_2 - y_2)^2 + \dots + (x_n - y_n)^2}$$

Now,

$$D_1 = \sqrt{(22 - 31)^2} = 9$$

$$D_2 = \sqrt{(22 - 30)^2} = 8$$

$$D_3 = \sqrt{(22 - 25)^2} = 3$$

$$D_4 = \sqrt{(22 - 21)^2} = 1$$

$$D_5 = \sqrt{(22 - 23)^2} = 1$$

$$D_6 = \sqrt{(22 - 22)^2} = 0$$

$$D_7 = \sqrt{(22 - 22)^2} = 0$$

age	income (K)	Distance	
21	60	1	a
20	55	2	b
22	60	0	c
22	61	0	d
23	65	1	e
21	62	1	f
25	65	3	g
30	70	8	h
31	68	9	i
22	60.333		

$c > d > a > e > f > b > g > h > i$

$$D_8 = \sqrt{(22 - 20)^2} = 2$$

$$D_9 = \sqrt{(22 - 21)^2} = 1$$

p.t.c

then,

$k=3$, nearest neighbours

$x=22$, then.

age=22 then Distance = 0, income = 60

age = 22, then Distance = 0, income = 61

age = 21, then Distance = 1, income = 60

$$\text{Predicted income} = \frac{60 + 61 + 60}{3}$$

$$= 60.333$$

Ans: