1 K-means

Task data

Student	Age	Points
Jhon	20	10
Michael	15	7
Hanna	19	9
Lily	13	6

Solution

Jhon and Hanna (20+19)/2 = 19.5 , (10+9)/2 = 9.5 X = 19.5, Y = 9.5

Michael and Lily (15+13)/2 = 14 , (7+6)/2 = 6.5 X = 14, Y = 6.5

	Jhon	Michael	Hanna	Lily	Maths1	Maths2	Step1
X	20	15	19	13	20	15	
Y	10	7	9	6	10	7	

	Jhon	Michael	Hanna	Lily		Step2
Maths1	0	5.8309	1.4142	8.0622		
Maths2	5.8309	0	4.4721	2.2360		
					sum of Yes	Step3
Maths1	Y	N	Y	N	2	
Maths2	N	Y	N	Y	2	

		Maths1	Step4
Sum of X when Maths1 equal Yes	39	19.5 new X	
Sum of X when Maths2 equal Yes	19	9.5 new Y	
		Maths2	
Sum of Y when Maths1 equal Yes	28	14.0 new X	
Sum of Y when Maths2 equal Yes	13	6.5 new Y	

2 Knn

X1	X2	Y	distance	sorting by value nearby	Is it included in your K=3 closet neigh.	value of Y classification
7	7	out of range	(7-4)2+(7-5)2=3.15	5	no	
7	4	out of range	(7-4)2+(4-5)2=2.73	2	yes	
5	6	within range	(5-4)2+(6-5)2=2	1	yes	
2.5	4.5	within range	(2.5-4)2+(6-5)2=2.81	3	yes	
2	3		(2-4)2+(3-5)2=2.83		no	
2	2		(2-4)2+(2-5)2=3.15		no	
7	8		(7-4)2+(8-5)2=3.46		no	
8	7		(8-4)2+(7-5)2=3.41		no	
4	5	within range	(4-4)2+(5-5)2=0		yes	

3 Naïve Bayes

Task Data

name	laptop	phone
Kate	PC	Android
Tom	PC	Android
Harry	PC	Android
Annika	Mac	iPhone
Naomi	Mac	Android
Joe	Mac	iPhone
Chakotay	Mac	iPhone
Neelix	Mac	Android
Kes	PC	iPhone
B’Elanna	Mac	iPhone

What is the probability that a randomly selected person will use an iPhone?
IPhones = 5/10 = 0.5
What is the probability that a person has a given iphone using a Mac laptop?
P = 4/10 = 0.4
What is the probability that a random person uses a mac?
P = 6/10 = 0.6
What is the probability that someone uses an iPhone, since that person uses a Mac?
P = 0.4/0.6 = 0.667