

## KNN Algorithm Example

Name	Age	Gender	Sport	Distance
Ajay	32	M	Football	27.02
Mark	40	M	Neither	35.01
Rahul	16	F	cricket	11.00
Sara	34	F	cricket	9.00
Pratik	55	M	Neither	50.01
Arohi	40	M	cricket	35.01
Rahit	20	F	Neither	15.00
Pooja	15	M	Cricket	10.00
Laxmi	55	F	Football	50.00
Bharti	5	F	?	?

\* Euclidean's distance =

$$\sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2 + (z_1 - z_2)^2 + \dots}$$

According to the labels  
for example here, we have Age &  
Gender & let's say Male = 0  
Female = 1

\* So, let's calculate

1) Ajay & Bharti's distance

$$= \sqrt{(5 - 32)^2 + (1 - 0)^2} = 27.02$$

$$\begin{aligned} x_1 &= \text{Bharti's age} = 5 \\ x_2 &= \text{Ajay's age} = 32 \\ y_1 &= \text{Bharti's Gender} = F = 1 \\ y_2 &= \text{Ajay's Gender} = M = 0 \end{aligned}$$

Now, if  $K=3$  then sort about table in ascending order and top 3 rows will be selected for KNN algorithm.

	distance	Sport
Sara	9.00	Cricket
Pooja	10.00	Cricket
Rahul	11.00	Cricket

So, bharti's sport will be cricket.