

22 25 28 28 30 35 42 42 46 48 52 57 59

21 27 29 33 44 80 87 91 104 107 108 108 119

Naïve Bayes →

Unknown instance → 400 Female 38 12000
400 Female Junior low

ID	Gender	Age	Estimated Salary	Product Purchased
71	Male	Junior	Low	No
210	Female	Senior	High	No
385	Female	Senior	Low	Yes
34	Female	Junior	Low	No
43	Male	Junior	High	No
78	Female	Junior	low	No
138	Male	Junior	High	Yes
332	Female	Senior	High	Yes
366	Female	Senior	Low	Yes
266	Female	Junior	High	Yes
365	Male	Junior	High	Yes
79	Female	Junior	low	No
284	Female	Senior	Low	Yes

Assume,

$0 \leq x \leq 45 \rightarrow \text{Junior}$
 $46 \leq x \leq 60 \rightarrow \text{Senior}$
 $0 \leq x \leq 50,000 \rightarrow \text{low}$
 $51,000 \leq x \leq 120,000 \rightarrow \text{High}$

(Prior Probability) →

$$P(\text{Yes}) = 7/13 = 0.59$$

$$P(\text{No}) = 6/13 = 0.46$$

(Conditional Probability) →

	P(Yes)	P(No)	
Gender = Male	$2/7 = 0.29$	$2/6 = 0.33$	$\Rightarrow 0.59 \times 0.71 \times 0.43 \times 0.46$
* Gender = Female	$5/7 = 0.71$	$4/6 = 0.67$	$\Rightarrow 0.08$
* Age = Junior	$3/7 = 0.43$	$5/6 = 0.83$	
Age = Senior	$4/7 = 0.57$	$1/6 = 0.17$	$\Rightarrow 0.46 \times 0.67 \times 0.83 \times 0.67$
* E. Salary = Low	$3/7 = 0.43$	$4/6 = 0.67$	$\Rightarrow 0.17$
E. Salary = High	$4/7 = 0.57$	$2/6 = 0.33$	
Prior	0.59	0.46	
Conditional	0.08	0.17	$0.17 > 0.08$

∴ 400 Female 38 12000 No

$$\frac{x - \min}{\max - \min}$$

$$\begin{cases} \max = 110000 \\ \min = 12000 \end{cases}$$

Assume,

Male = 1

Female = 0

Yes = 1

No = 0

☐ KNN →

	ID	Gender	Age	E. Salary	P. P	Normalization E. Salary	Distance	
	71	1	25	80000	0	0.63	13.05	-
	210	0	46	96000	0	0.78	8.04	-
	385	0	57	33000	1	0.19	19	-
	34	0	28	44000	0	0.29	10	✓
	43	1	35	108000	0	0.90	3.29	✓
	78	0	22	27000	0	0.13	16	-
	138	1	30	107000	1	0.89	8.11	✓
	332	0	48	110000	1	1	10.05	✓
	366	0	59	29000	1	0.15	21	-
	266	0	42	108000	1	0.90	4.1	✓
	365	1	42	104000	1	0.86	4.21	✓
	79	0	28	87000	0	0.70	10.02	-
	284	0	52	21000	1	0.08	14	✓
Unknown inst.	400	0	38	12000	Yes	0	0	

← ANS

After
Sorting:

ID	Gender	Age	N.E. Salary	P. P	Distance
43	1	35	0.90	0	3.29
266	0	42	0.90	1	4.1
365	1	42	0.86	1	4.21
210	0	46	0.78	0	8.04
138	1	30	0.89	1	8.11
34	0	28	0.29	0	10
79	0	28	0.70	0	10.02
332	0	48	1	1	10.05
71	1	25	0.63	0	13.05
284	0	52	0.08	1	14
78	0	22	0.13	0	16
385	0	57	0.19	1	19
366	0	59	0.15	1	21

Majority = 1 (Yes)

K = 5