TUGAS KONSEP DAN APLIKASI DATA MAINING

Naïve Bayes

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KEMENTRIAN RISET DAN TEKNOLOGI PENDIDIKAN TINGGI
SEKOLAH TINGGI MANAJEMEN INFORMATIKA KOMPUTER
PRADNYA PARAMITA
MALANG
2020

1. Buatlah dataset 30 record dengan kriteria dan ketentuan yang ada !

Jawaban :

Day	Discount	Free Delivery	Buy
Weekday	Yes	Yes	No
Weekday	No	No	No
Weekday	Yes	Yes	No
Holiday	No	No	No
Holiday	No	No	No
Weekend	No	No	No
Weekend	No	No	No
Weekday	Yes	Yes	No
Weekday	Yes	Yes	Yes
Holiday	Yes	Yes	Yes
Weekend	Yes	Yes	Yes
Holiday	Yes	Yes	Yes
Weekend	Yes	No	Yes
Weekend	Yes	Yes	Yes
Holiday	Yes	Yes	Yes
Holiday	No	Yes	Yes
Weekend	Yes	Yes	Yes
Holiday	Yes	Yes	Yes
Weekend	Yes	Yes	Yes
Weekday	Yes	Yes	Yes
Weekday	Yes	Yes	Yes
Holiday	Yes	Yes	Yes
Weekday	Yes	No	Yes
Holiday	Yes	Yes	Yes
Weekend	Yes	Yes	Yes
Weekday	Yes	Yes	Yes
Holiday	No	Yes	Yes
Holiday	Yes	Yes	Yes
Weekday	Yes	Yes	Yes
Holiday	No	Yes	Yes

2. Hitunglah Probabilitas dibawah ini !

Frequency Table		Buy		
		yes	no	
day	weekday	9	2	11
	weekend	7	1	8
	holiday	8	3	11
		24	6	30

Likelihood Table		Buy		
		yes	no	
day	weekday	9/24	2/6	11/30
	weekend	7/24	1/6	8/30
	holiday	8/24	3/6	11/30
		24/30	6 /30	30

Frequency Table		Buy		
		yes	no	
discount	yes	19	1	20
	no	5	5	10
		24	6	30

Likelihood Table		Buy		
		yes	no	
discount	yes	19/24	1/6	20/30
	no	5/24	5/6	10/30
		24/30	6/30	30

Frequency Table		Buy		
		yes	no	
free delivery	yes	21	2	23
	no	3	4	7
		24	6	30

Likelihood Table		Buy		
		yes	no	
free delivery	yes	21/24	2/6	23/30
	no	3/24	4/6	7/30
		24/30	6/30	30

a. P(Buy | Day = Weekday, Free Delivery = yes, Discount = Yes)

Jawaban :

Let A = Buy

Where B = Day = Weekday
Free Delivery = Yes
Discount = Yes

$$P(A|B) = \frac{P(Day = Weekday|yes) \times P(Free\ Delivery = yes|yes) \times P(Discount = yes|yes) \times p(Yes\ Buy)}{p(Discount=yes) \times p(Free\ Delivery=No) \times P(day=weekday)}$$

$$P(A|B) = \frac{\frac{9}{24} \times \frac{21}{24} \times \frac{19}{24} \times \frac{24}{30}}{\frac{20}{30} \times \frac{23}{30} \times \frac{11}{30}}$$

$$P(A|B) = 0{,}207813 \,/\, 0{,}187407 = 1{,}10881$$

b. P(Buy | Day = Weekday, Free Delivery = No, Discount = No)

Jawaban :

Let A = Buy

Where B = Day = Weekday
Free Delivery = No
Discount = No

$$P(A|B) = \frac{P(Day = Weekday|yes) \times P(Free\ Delivery = No|yes) \times P(Discount = No|yes) \times p(Yes\ Buy)}{p(Discount=No) \times p(Free\ Delivery=No) \times P(day=weekday)}$$

$$P(A|B) = \frac{\frac{9}{24} \times \frac{3}{24} \times \frac{5}{24} \times \frac{24}{30}}{\frac{10}{30} \times \frac{7}{30} \times \frac{11}{30}}$$

$$P(A|B) = 0{,}0078125 \,/\, 0{,}028519 = 0{,}273945$$

c. P(Not Buy | Day = Weekday, Free Delivery = yes, Discount = Yes)

Jawaban :

Let A = Not Buy

Where B = Day = Weekday
Free Delivery = Yes
Discount = Yes

$$P(A|B) = \frac{P(Day = Weekday|no) \times P(Free\ Delivery = Yes|no) \times P(Discount = yes|no) \times p(Not\ Buy)}{p(Discount=yes) \times p(Free\ Delivery=yes) \times P(day=weekday)}$$

$$P(A|B) = \frac{\frac{2}{6} \times \frac{2}{6} \times \frac{1}{6} \times \frac{6}{30}}{\frac{20}{30} \times \frac{23}{30} \times \frac{11}{30}}$$

$$P(A|B) = 0{,}003704 \,/\, 0{,}187407 = 0{,}019763$$

d. P(Not Buy | Day = Weekday, Free Delivery = No, Discount = No)

Jawaban :

Let A = Not Buy

Where B = Day = Weekday
Free Delivery = No

Discount = No

$$P(A|B) = \frac{P(Day = Weekday|no) \times P(Free\ Delivery = No|no) \times P(Discount = No|no) \times p(Not\ Buy)}{p(Discount=No) \times p(Free\ Delivery=No) \times P(day=weekday)}$$

$$P(A|B) = \frac{\frac{2}{6} \times \frac{4}{6} \times \frac{5}{6} \times \frac{6}{30}}{\frac{10}{30} \times \frac{7}{30} \times \frac{11}{30}}$$

$$P(A|B) = 0{,}037037 \,/\, 0{,}028519 = 1{,}298701$$

e. P(Buy | Day = Weekend, Free Delivery = yes, Discount = Yes)

Jawaban :

Let A = Buy

Where B = Day = Weekend
Free Delivery = Yes
Discount = Yes

$$P(A|B) = \frac{P(Day = Weekend|yes) \times P(Free\ Delivery = yes|yes) \times P(Discount = yes|yes) \times p(Yes\ Buy)}{p(Discount=yes) \times p(Free\ Delivery=yes) \times P(day=weekend)}$$

$$P(A|B) = \frac{\frac{7}{24} \times \frac{21}{24} \times \frac{19}{24} \times \frac{24}{30}}{\frac{20}{30} \times \frac{23}{30} \times \frac{8}{30}}$$

$$P(A|B) = 0{,}161632 \,/\, 0{,}136296 = 1{,}185887$$

f. P(Buy | Day = Weekend, Free Delivery = No, Discount = No)

Jawaban :

Let A = Buy

Where B = Day = Weekend
Free Delivery = Yes
Discount = Yes

$$P(A|B) = \frac{P(Day = Weekend|yes) \times P(Free\ Delivery = no|yes) \times P(Discount = no|yes) \times p(Yes\ Buy)}{p(Discount=no) \times p(Free\ Delivery=No) \times P(day=weekend)}$$

$$P(A|B) = \frac{\frac{7}{24} \times \frac{3}{24} \times \frac{5}{24} \times \frac{24}{30}}{\frac{10}{30} \times \frac{7}{30} \times \frac{8}{30}}$$

$$P(A|B) = 0{,}006076 \,/\, 0{,}020741 = 0{,}292969$$

g. P(Not Buy | Day = Weekend, Free Delivery = yes, Discount = Yes)

Jawaban :

Let A = Not Buy

Where B = Day = Weekend
Free Delivery = Yes
Discount = Yes

$$P(A|B) = \frac{P(Day = Weekend|no) \times P(Free\ Delivery = Yes|no) \times P(Discount = yes|no) \times p(Not\ Buy)}{p(Discount=yes) \times p(Free\ Delivery=yes) \times P(day=weekend)}$$

$$P(A|B) = \frac{\frac{1}{6} \times \frac{2}{6} \times \frac{1}{6} \times \frac{6}{30}}{\frac{20}{30} \times \frac{23}{30} \times \frac{8}{30}}$$

$$P(A|B) = 0{,}001852 \,/\, 0{,}136296 = 0{,}013587$$

h. P(Not Buy | Day = Weekend, Free Delivery = No, Discount = No)

Jawaban :

Let A = Not Buy

Where B = Day = Weekend
Free Delivery = No
Discount = No

$$P(A|B) = \frac{P(Day = Weekend|no) \times P(Free\ Delivery = no|no) \times P(Discount = no|no) \times p(Not\ Buy)}{p(Discount=no) \times p(Free\ Delivery=no) \times P(day=weekend)}$$

$$P(A|B) = \frac{\frac{1}{6} \times \frac{4}{6} \times \frac{5}{6} \times \frac{6}{30}}{\frac{10}{30} \times \frac{7}{30} \times \frac{8}{30}}$$

$$P(A|B) = 0{,}018519 / 0{,}020741 = 0{,}892857$$