

# **TUGAS KONSEP DAN APLIKASI DATA MAINING**

**Naïve Bayes**



**Aminurachma Aisyah Nilatika  
17.52.001**

**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 :**

<b>Day</b>	<b>Discount</b>	<b>Free Delivery</b>	<b>Buy</b>
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.  $P(\text{Buy} \mid \text{Day} = \text{Weekday}, \text{Free Delivery} = \text{yes}, \text{Discount} = \text{Yes})$

**Jawaban :**

Let A = Buy

Where B = Day = Weekday

Free Delivery = Yes

Discount = Yes

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

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

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

- b.  $P(\text{Buy} \mid \text{Day} = \text{Weekday}, \text{Free Delivery} = \text{No}, \text{Discount} = \text{No})$

**Jawaban :**

Let A = Buy

Where B = Day = Weekday

Free Delivery = No

Discount = No

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

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

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

- c.  $P(\text{Not Buy} \mid \text{Day} = \text{Weekday}, \text{Free Delivery} = \text{yes}, \text{Discount} = \text{Yes})$

**Jawaban :**

Let A = Not Buy

Where B = Day = Weekday

Free Delivery = Yes

Discount = Yes

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

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

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

- d.  $P(\text{Not Buy} \mid \text{Day} = \text{Weekday}, \text{Free Delivery} = \text{No}, \text{Discount} = \text{No})$

**Jawaban :**

Let A = Not Buy

Where B = Day = Weekday

Free Delivery = No

$$\begin{aligned}
 & \text{Discount} = \text{No} \\
 P(A|B) &= \frac{P(\text{Day} = \text{Weekday} | \text{no}) \times P(\text{Free Delivery} = \text{No} | \text{no}) \times P(\text{Discount} = \text{No} | \text{no}) \times p(\text{Not Buy})}{p(\text{Discount} = \text{No}) \times p(\text{Free Delivery} = \text{No}) \times P(\text{day} = \text{weekday})} \\
 P(A|B) &= \frac{\frac{2}{6} \times \frac{4}{6} \times \frac{5}{6} \times \frac{6}{30}}{\frac{10}{30} \times \frac{7}{30} \times \frac{11}{30}} \\
 P(A|B) &= 0,037037 / 0,028519 = 1,298701
 \end{aligned}$$

e.  $P(\text{Buy} \mid \text{Day} = \text{Weekend}, \text{Free Delivery} = \text{yes}, \text{Discount} = \text{Yes})$

**Jawaban :**

Let A = Buy

Where B = Day = Weekend

Free Delivery = Yes

Discount = Yes

$$\begin{aligned}
 P(A|B) &= \frac{P(\text{Day} = \text{Weekend} | \text{yes}) \times P(\text{Free Delivery} = \text{yes} | \text{yes}) \times P(\text{Discount} = \text{yes} | \text{yes}) \times p(\text{Yes Buy})}{p(\text{Discount} = \text{yes}) \times p(\text{Free Delivery} = \text{yes}) \times P(\text{day} = \text{weekend})} \\
 P(A|B) &= \frac{\frac{7}{24} \times \frac{21}{24} \times \frac{19}{24} \times \frac{24}{30}}{\frac{20}{30} \times \frac{23}{30} \times \frac{8}{30}}
 \end{aligned}$$

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

f.  $P(\text{Buy} \mid \text{Day} = \text{Weekend}, \text{Free Delivery} = \text{No}, \text{Discount} = \text{No})$

**Jawaban :**

Let A = Buy

Where B = Day = Weekend

Free Delivery = Yes

Discount = Yes

$$\begin{aligned}
 P(A|B) &= \frac{P(\text{Day} = \text{Weekend} | \text{yes}) \times P(\text{Free Delivery} = \text{no} | \text{yes}) \times P(\text{Discount} = \text{no} | \text{yes}) \times p(\text{Yes Buy})}{p(\text{Discount} = \text{no}) \times p(\text{Free Delivery} = \text{No}) \times P(\text{day} = \text{weekend})} \\
 P(A|B) &= \frac{\frac{7}{24} \times \frac{3}{24} \times \frac{5}{24} \times \frac{24}{30}}{\frac{10}{30} \times \frac{7}{30} \times \frac{8}{30}}
 \end{aligned}$$

$$P(A|B) = 0,006076 / 0,136296 = 1,185887$$

g.  $P(\text{Not Buy} \mid \text{Day} = \text{Weekend}, \text{Free Delivery} = \text{yes}, \text{Discount} = \text{Yes})$

**Jawaban :**

Let A = Not Buy

Where B = Day = Weekend

Free Delivery = Yes

Discount = Yes

$$\begin{aligned}
 P(A|B) &= \frac{P(\text{Day} = \text{Weekend} | \text{no}) \times P(\text{Free Delivery} = \text{Yes} | \text{no}) \times P(\text{Discount} = \text{yes} | \text{no}) \times p(\text{Not Buy})}{p(\text{Discount} = \text{yes}) \times p(\text{Free Delivery} = \text{yes}) \times P(\text{day} = \text{weekend})} \\
 P(A|B) &= \frac{\frac{1}{6} \times \frac{2}{6} \times \frac{1}{6} \times \frac{6}{30}}{\frac{20}{30} \times \frac{23}{30} \times \frac{8}{30}}
 \end{aligned}$$

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

h.  $P(\text{Not Buy} \mid \text{Day} = \text{Weekend}, \text{Free Delivery} = \text{No}, \text{Discount} = \text{No})$

**Jawaban :**

Let A = Not Buy

Where B = Day = Weekend

Free Delivery = No

Discount = No

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

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

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