Date: 12-09-2025
 Date: 12 01 20

LAB - :	17 : Naive	Bayes	classifiens	Dat	e: <u>12-09-2023</u>
Day	Outlook	Temp	Humidity	wind	PlayTenni
J	Sunny	Hot	High	weak	No
2	Sunny	Hot	High	g Laong	No
3	Ovencast			weak	yes
4	Rain			weak	yes
5	Rain			weak	yes
6	Rain				70
7					yes
8					No
9					yes
10					yes
					yes
	_			9	yes
					4c5
					No
	(Out10013 = 90	inny,		Humidity	= HPgh,
	Day  1 2 3 4 5 6 7 8 9 10 11 12 13 14  Given	Day Outlook  I Sunmy 2 Sunmy 3 Ovencast 4 Rain 5 Rain 6 Rain 7 Ovencast 8 Sunmy 9 Sunmy 10 Rain 11 Sunmy 12 Ovencast 13 Ovencast 14 Rain Criven a new  X' = (outlook = St  Wind = St	Day Outlook Temp  I Sunny Hot  2 Sunny Hot  3 Overcast Hot  4 Rain Mild  5 Rain Cool  6 Rain Cool  7 Overcast cool  8 Sunny Mild  9 Sunny Mild  10 Rain Mild  11 Sunny Mild  12 Overcast Mild  12 Overcast Hot  13 Overcast Hot  14 Rain Mild  Given a new instan  X' = (outlook = Sunny, The Word = Strong)  P(pluy = yes) = 9	Day Outlook Temp Humidity  I Sunmy Hot High  2 Sunmy Hot High  3 Overcast Hot High  4 Rain mild High  5 Rain Cool Normal  6 Rain Cool Normal  7 Overcast Cool Normal  8 Sunmy mild High  9 Sunmy Gool Normal  10 Rain mild Normal  11 Sunmy mild Normal  12 Overcast mild High  13 Overcast Hot Normal  14 Rain mild High  Civen a new instance	Day Outlook Temp Humidity wind  I Summy Hot High weak  2 Summy Hot High strong  3 Overcast Hot High weak  4 Raim mild High weak  5 Raim Cool Normal weak  6 Raim Cool Normal strong  7 Overcast cool Normal strong  8 Summy mild High weak  9 Summy mild High weak  10 Raim mild Normal weak  11 Summy mild Normal weak  12 Summy mild Normal weak  13 Overcast mild High Strong  14 Raim mild High Strong  15 Overcast mild High Strong  16 Overcast Hot Normal weak  17 Summy mild High Strong  18 Overcast Hot Normal weak  19 Overcast Hot Normal weak  10 Raim mild High Strong  11 Raim mild High Strong  12 Overcast Hot Normal weak  13 Overcast Hot Normal weak  14 Raim mild High Strong  15 Overcast The Normal weak  16 Overcast The Normal weak  17 Summy Temp = Cool Humidity  18 Wind = 9trong  19 Oplay = yes) = 9   14

Date :

Outlook	yes	No	
gunny	2 9	3 5	
Ovencust	419	0   5	
Ruin	319	2 5	
Temp.	yes	No	
Hot	219	2 5	
mild	419	2/5	
Cool	3 9	1/5	
Humidity	-yes	10	
High	3 9	415	
Nonmal	619	1/5	
wind	yes	No	
610,000	G19 G19	Ma 315	
Sthong	619	2/5	

Page No. : <u>03</u>
Date :
P(c:1x) = P(x11c:) + P(+2 c:) + x P(xn/c:) + P(c:)
> P(yes x') = [P(summy yes) * P(cool yes)  * P(High  yes) * P(st.nong yes)]
* P(pky = yes)
= [2 9 * 3 9 * 3 9 * 3 9] * 9 14
= 0,0053
-> P(NO1x') = [P(Gunny   NO)* P(COO)   NO) *  P(High   NO)* P(Stenong   NO)]  * P(Play = NO)
= [3/5 * 1/5 * 4/5 * 3/5] * 5/14
z 0,0206 V
→ we label x' to be "No".
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210	0.0	)				
zamp1C	1	y Crimi	Index fo	of the g	iven Octase	t,
	RIO	Age	income	Student	coalit sating	class: buyes_com
	1	youth	high	no	Fai h	70
	2	youth	high	no	excellent	no
	3	middle	high	mo	Fair	yes
	4	senios	medium	no	Fafth	yes
	5	3 enios	low	yes	Fais	yes
	6	senios	100	yes	excellent	no
	7	middle	100	yes	excellent	yes
	8	youth	medium	no	Fat &	m0
	q	youth	100	yes	Pass	yes
	10	senios	medium	yes	Fai 9	yes
	11	youth	medium	yes	excellent	yes
	12	middle	medium	no	excellent	yes
	13	middle	high	yes	faig	yes
	14	Senios	medium	mo	excellent	no
oom	con	sides 1	one pata			
	-> hu	us com 6	outes = yo	es = 9	tuple	
	-s bu	ys comp	utes = No	0 = 5	tuple	
*	Cini	index	Of Oat			
	Cron	; (p) =	J - ( 9	4)2-(	5/2	
			- 0.4992	2		
		-	Darshan			

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				Page No. : <u>05</u>
*	Consider Splitte	ng Subset	of inco	me
	income	yes	No	Total
	Low medium High	3 4	1 2	4
()	Gini income	- Ehigh Low	3(0)	4
		$-\left(\frac{5}{8}\right)^2$		
	1 6 1	$-\left(\frac{4}{6}\right)^2$	$\left(\begin{array}{c}2\\6\end{array}\right)^2$	
	= 0.4583			
00)	Cini income C	- { high, n	nedium 3	(0)
	= 10 1	$-\frac{(6)^2}{(10)}$	$\left(\frac{4}{10}\right)^2$	
	14	$1 - \left(\frac{3}{4}\right)^2$	- ( <u>1</u> ) <sup>2</sup>	
	- 0.4500			
		rshan UNIVE	RSITY	

Page No. : 06 Date:\_ Cimi income e & low medium 3 000)  $\frac{1-(\frac{1}{10})^2-(\frac{3}{10})^2}{(\frac{10}{10})^2}$ = 0,4429 consider splitting subset For Age Total yes Age youth middle Scaro S Gini Age & & youth, middle & (D) 9)  $\frac{q}{-}$   $\frac{1}{(q)^2}$   $\frac{-(3)^2}{(q)^2}$  $5 \left( \frac{1-(3)^2-(2)^2}{5} \right)$ 0, 4571 Darshan UNIVERSITY

		Page No. : 07
(1)	Gini Age c- & youth senion 3	
	$\frac{10}{14} \left( \frac{5}{10} \right)^2 - \left( \frac{5}{10} \right)^2$	2
	14 [1-(4)2-10	)2]
	= 0,3577	
650	Crimi Age c- { middle, genios	3
	$\frac{9}{14}\left[\frac{1}{9}\left(\frac{7}{9}\right)^2-\left(\frac{2}{9}\right)^2\right]$	
	$+\frac{5}{14}\left[\frac{1-(2)^2-(3)}{5}\right]$	2 ]
	- 0,3937	
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Q

				Date :				
*	consides spl	itting Sub	set ofos	Student				
	Student	yes	20	Total				
	yes	6	1	7				
	20	3	4	1				
6)	Gini Stude	nt (p)						
	$= \frac{7}{14} \left[ \frac{1}{7} - \left( \frac{6}{7} \right)^2 - \left( \frac{1}{7} \right)^2 \right]$							
	14	$1 - \left(\frac{3}{7}\right)$	$\frac{2-\left(\frac{4}{7}\right)^2}{2}$					
	= 0,3673							
*	consides pos gredit hating							
	conedit hating	yes	No	Total				
	faig	6	2	8				
	excellent 3 6							
->	Geni chedit huling (p)							
	= 8 1-	$\left(\frac{6}{8}\right)^2 - \left(\frac{2}{8}\right)^2$	)2]+6[	$1 - \left(\frac{3}{6}\right)^2 - \left(\frac{3}{6}\right)^2$				
	= 0,4286							

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Date : \_\_

attenibute.	Gini-index	Agimi
încome	0,4429	0, 4592 - 0, 4429 =
Age	0,3571	0.4592-0,3571=
Student	0.3673	0.4592~0.8673=
Chedit hating	0.4286	0,4992-0,4286=

	Age										
	youth senios middle age										
	Income	student	CR		elass						
							-				
	high	no	Fais	4	700		1				
	high	mo	0.1001	lem'	no						
	medium	no	fai	9	mo		1				
_	10ω	yes	Fais	h	ye5						
	medium	462 C+6016		ien-	yes						
	medium	no	Fair	3_	yes		1				
-	1000	yes	Fai	9	yes						
		yes	C+CCI	ien t	no						
	m edium	yes	Fas	5_	yes						
-	medium	no	C+cc)	10nt	no	1	,				
-	measuass	inco	mc	93	tudent	CR	_	class	-		
-		high		no		Fais	+	yes			
	Low			yes		excellent	+	yes			
	medium		_	20	excellent		yes				
					UNIVER	SITY Falgr		yes			
		hig	h		AG 2	raisi					