

م	م	م
0	0	0
1	1	1
2	2	2
3	3	3
4	4	4
5	5	5
6	6	6
7	7	7
8	8	8
9	9	9
10	10	10
11	11	11
12	12	12
13	13	13
14	14	14
15	15	15
16	16	16
17	17	17
18	18	18
19	19	19
20	20	20
21	21	21
22	22	22
23	23	23
24	24	24
25	25	25
26	26	26
27	27	27
28	28	28
29	29	29
30	30	30
31	31	31
32	32	32
33	33	33
34	34	34
35	35	35
36	36	36
37	37	37
38	38	38
39	39	39
40	40	40
41	41	41
42	42	42
43	43	43
44	44	44
45	45	45
46	46	46
47	47	47
48	48	48
49	49	49
50	50	50
51	51	51
52	52	52
53	53	53
54	54	54
55	55	55
56	56	56
57	57	57
58	58	58
59	59	59
60	60	60
61	61	61
62	62	62
63	63	63
64	64	64
65	65	65
66	66	66
67	67	67
68	68	68
69	69	69
70	70	70
71	71	71
72	72	72
73	73	73
74	74	74
75	75	75
76	76	76
77	77	77
78	78	78
79	79	79
80	80	80
81	81	81
82	82	82
83	83	83
84	84	84
85	85	85
86	86	86
87	87	87
88	88	88
89	89	89
90	90	90
91	91	91
92	92	92
93	93	93
94	94	94
95	95	95
96	96	96
97	97	97
98	98	98
99	99	99
100	100	100

$$\rightarrow P(\text{yes} | \text{ok}, \text{L}, \text{no}) = \frac{4}{6} \cdot \frac{2}{4} \cdot \frac{3}{4} \cdot \frac{1}{4} = \frac{1}{16}$$

$$P(\text{no} | \text{ok}, \text{M}, \text{no}) = \frac{2}{6} \cdot 0 \cdot 0 \cdot 1 = 0$$

$$\left. \begin{aligned} P(\text{No} | \text{red}) &= \frac{0-1}{3-1+2} = \frac{1}{5} \\ P(\text{No} | \text{yellow}) &= \frac{0-1}{4-1+3} = \frac{1}{7} \\ P(\text{No} | \text{green}) &= \frac{2-1}{2-1+2} = \frac{3}{4} \end{aligned} \right\} \rightarrow \text{Laplace smoothing}$$

$$\begin{array}{c|cc} 7/dx & + & - \\ \hline 1 & \frac{5}{5} & \frac{2}{3} \\ 0 & -\frac{1}{5} & \frac{3}{3} \end{array}$$

2. الف

$$\rightarrow P(A=0, B=0, C=0),$$

$$P(A=0, B=0, C=0),$$

$$P(A=1, \dots), P(A=1, \dots, \frac{1}{2} \times \frac{2}{3} \times \frac{1}{5} = \frac{1}{5} = \frac{1}{125}$$

$$P(-1, \dots, 0) \xrightarrow{P(A)} P(A=0, B=1, C=0), \frac{1}{125}$$

$$\{((2,4),B), ((4,6),B), ((4,4),R), ((4,2),B), ((6,4),B), ((6,2),R)\}, 3$$

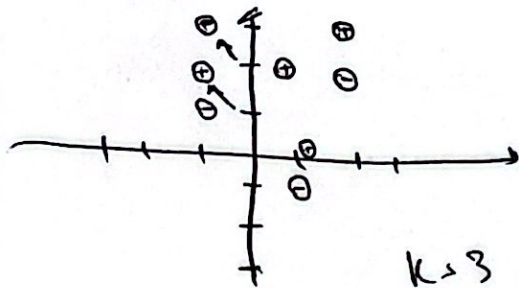
$$D_s = \begin{bmatrix} 0 & 2\sqrt{2} & 2 & 2\sqrt{2} & 4 & 2\sqrt{5} \\ 2\sqrt{2} & 0 & 2 & 4 & 2\sqrt{2} & 2\sqrt{5} \\ 2 & 2 & 0 & 2 & 2 & 2\sqrt{2} \\ 2\sqrt{2} & 4 & 2 & 0 & 2\sqrt{2} & 2 \\ 4 & 2\sqrt{2} & 2 & 2\sqrt{2} & 0 & 2 \\ 2\sqrt{5} & 2\sqrt{5} & 2\sqrt{2} & 2 & 2 & 0 \end{bmatrix}$$

For each Point identify the value of min distance

min distance  
 $\Rightarrow$  A line separating blue & red region can be drawn between points  $(4, 4)$ ,  $(6, 2)$

ج. خ

جے، بلکہ جسے ملی پنڈاؤں کی بجائے جم غامضیات زیاد



$$(1,1) \rightarrow \text{Distance} \begin{cases} (-1,1), 2 \\ (0,1), 1 \\ (0,2), \sqrt{2} \\ (1,-1), 2 \\ (1,0), 1 \\ (1,2), 1 \\ (2,2), \sqrt{2} \\ (2,3), 5 \end{cases}$$

4

$$k=3, \begin{cases} (0,1), + \\ (1,0), + \\ (1,2), + \end{cases} \rightarrow (+)$$

$$k=7, \begin{cases} (-1,1), - \\ (0,1), + \\ (0,2), - \\ (1,-1), - \\ (1,0), + \\ (1,2), + \\ (2,2), + \end{cases} \rightarrow (-)$$

$$\rightarrow, k=3, \frac{1}{1} + \frac{1}{1} + \frac{1}{1} \rightarrow (+)$$

$$k=7, - \frac{1}{2} + \frac{1}{\sqrt{2}} + \frac{1}{1} - \frac{1}{\sqrt{2}} \rightarrow (+)$$

$$+ \frac{1}{1} + \frac{1}{1} + \frac{1}{1} = 3$$

5.  $\therefore$  در این حالت هم miss classification وجود ندارد