ML501

PIYUSH KESHARI
AP24122040004

For $K=3$ and $[(5.4, 3.9, 1.7, 0.4)]$

Sample	Species	Distance Calculation	Distance
5.1, 3.5, 1.4, 0.2	Setosa	$\sqrt{(5.4-5.1)^2+(3.9-3.5)^2+(1.7-1.4)^2+(0.4-0.2)^2}$	0.616
4.9, 3 1.4, 0.2	Setosa	$\sqrt{(5.4-4.9)^2+(3.9-3)^2+(1.7-1.4)^2+(0.4-0.2)}$	1.236
4.7, 3.2 1.3, 0.2	Setosa	$\sqrt{(5.4-4.7)^2+(3.9-3.2)^2+(1.7-1.3)^2+(0.4-0.2)^2}$	1.149
7, 3.2 4.7, 1.4	Versicolor	$\sqrt{(5.4-7)^2+(3.9-3.2)^2+(1.7-4.7)^2+(0.4-1.4)^2}$	4.003
6.4, 3.2 4.5, 1.5	Versicolor	$\sqrt{(5.4-6.4)^2+(3.9-3.2)^2+(1.7-4.5)^2+(0.4-1.5)^2}$	3.151
6.9, 3.1 4.9, 1.5	Versicolor	$\sqrt{(5.4-6.9)^2+(3.9-3.1)^2+(1.7-4.9)^2+(0.4-1.5)^2}$	3.928
6.3, 3.3 6, 2.5	Virginica	$\sqrt{(5.4-6.3)^2+(3.9-3.3)^2+(1.7-6)^2+(0.4-2.5)^2}$	5.156
5.8, 2.7 5.1, 1.9	Virginica	$\sqrt{(5.4-5.8)^2+(3.9-2.7)^2+(1.7-5.1)^2+(0.4-1.9)^2}$	3.983
7.1, 3 5.9, 2.1	Virginica	$\sqrt{(5.4-7.1)^2+(3.9-3)^2+(1.7-5.9)^2+(0.4-2.1)^2}$	4.816

For $K=3$

① 5.4 3.9 1.4 0.2 : Setosa : Distance = 0.616

② (4.7, 3.2, 1.3, 0.2) : Setosa ; Distance = 1.149

③ (4.9, 3, 1.4, 0.2) : Setosa : Distance = 1.236

Predicted Species : Setosa

For K=3, Sample (7.3, 2.9, 6.3, 1.8)

Sample	Species	Distance Calculation.	Distance
5.1 3.5 1.4 0.2	Setosa	$\sqrt{(7.3-5.1)^2+(2.9-3.5)^2+(6.3-1.4)^2+(1.8-0.2)^2}$	5.897
4.9, 3 1.4, 0.2	Setosa	$\sqrt{(7.3-4.9)^2+(2.9-3)^2+(6.3-1.4)^2+(1.8-0.2)^2}$	5.934
4.7, 3.2 1.3, 0.2	Setosa	$\sqrt{(7.3-4.7)^2+(2.9-3.2)^2+(6.3-1.3)^2+(1.8-0.2)^2}$	5.847
7, 3.2 4.7, 1.4	Versicolor	$\sqrt{(7.3-7)^2+(2.9-3.2)^2+(6.3-4.7)^2+(1.8-1.4)^2}$	1.969
6.4, 3.2 4.5, 1.5	Versicolor	$\sqrt{(7.3-6.4)^2+(2.9-3.2)^2+(6.3-4.5)^2+(1.8-1.5)^2}$	2.009
6.9, 3.1 4.9, 1.5	Versicolor	$\sqrt{(7.3-6.9)^2+(2.9-3.1)^2+(6.3-4.9)^2+(1.8-1.5)^2}$	1.526
6.3, 3.3 6, 2.5	Virginica	$\sqrt{(7.3-6.3)^2+(2.9-3.3)^2+(6.3-6)^2+(1.8-2.5)^2}$	1.449
5.8, 2.7 5.1, 1.9	Virginica	$\sqrt{(7.3-5.8)^2+(2.9-2.7)^2+(6.3-5.1)+(1.8-1.9)^2}$	1.984
7.1, 3 5.9, 2.1	Virginica	$\sqrt{(7.3-7.1)^2+(2.9-3)^2+(6.3-5.9)+(1.8-2.1)^2}$	0.608

K=3 ① (7.1, 3, 5.9, 2.1) : Virginica Distance = 0.608

② (6.3, 3.3, 6, 2.5) : Virginica Distance = 1.449

③ (6.9, 3.1, 4.9, 1.5) : Virginica Distance = 1.526

Predicted Species :- **Virginica**