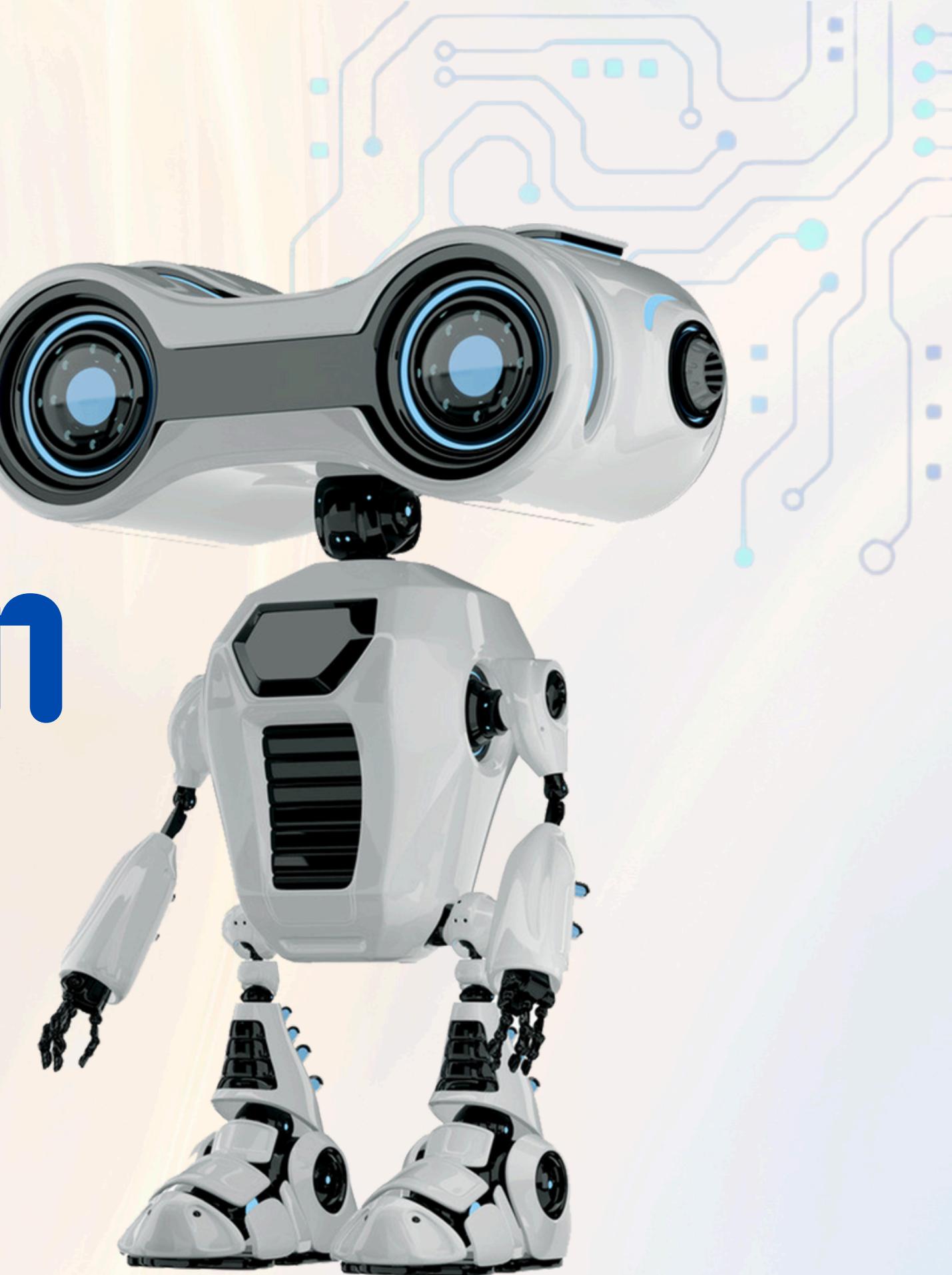


Machine LEARNING in Real Life



This Presentation is Presented

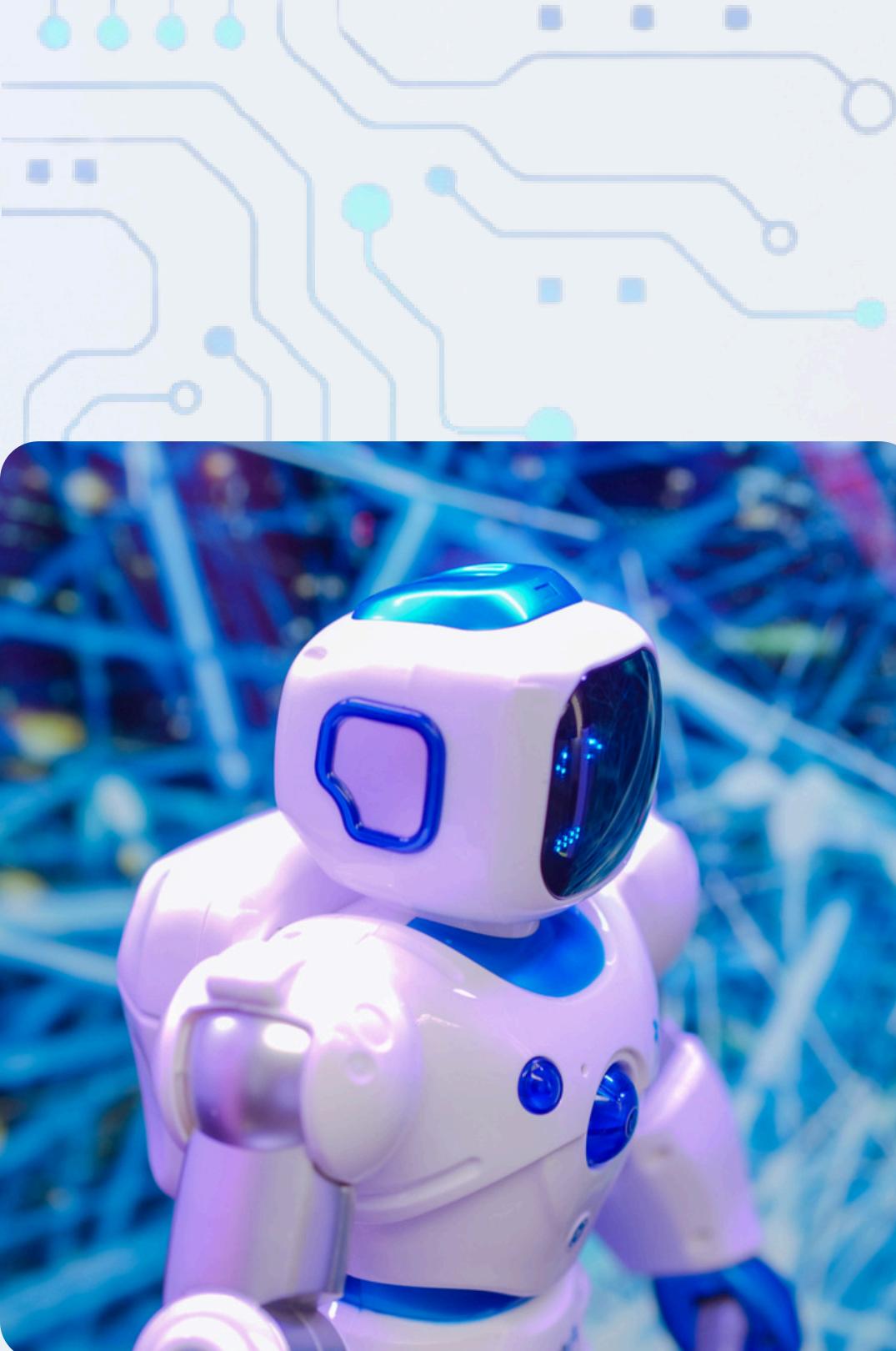
By



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Problem :

Mr.Rufsan and Mr.Razin run their travel agency with keen insight into travelers' preferences. One day, their friend Mr.Bashar walks into their office, eager for a vacation with family but unsure whether to visit the serene Swiss Alps or the sunny beaches of Thailand. To help him decide, Mr.Rufsan and Mr.Razin decide to use their predictive model based on past data by using KNN algorithm in machine learning.

After taking Bashar's details, they enter his data into their system:

Age: 42

Salary (in Taka): 100,000

Number of Members: 3

Number of Vacation Days: 14

Number of Target Spots: 3

Previous Dataset

Age	Salary (in Taka)	Number of Members	Number of Vacation Days	Number of Target Spots	Decision
28	45000	2	10	3	Thailand
34	78000	4	15	5	Switzerland
45	120000	3	20	7	Switzerland
30	50000	2	12	4	Thailand
41	95000	5	18	6	Thailand
27	42000	1	9	2	Switzerland
38	85000	3	16	5	Switzerland
50	150000	2	25	8	Thailand
32	60000	2	12	3	Switzerland
29	48000	3	10	3	Thailand



Objectives

- Utilize Data Analysis for Decision Support
- Implement KNN Algorithm for Prediction
- Compare Mr. Bashar's Data with Existing Traveler Profiles
- Ensure Accurate and Reliable Output
- Enhance User Experience
- Support Informed Decision-Making
- Promote Data-Driven Business Solutions
- Optimize Predictive Model Performance

Problem Solving by Knn Algorithm

Let K=5,

$$\text{Euclidean Distance(ED)} = \sqrt{\sum_{i=1}^n (x_i - y_i)^2}$$

$$ED_1 = \text{sqrt} \left[(28 - 42)^2 + (45000 - 100000)^2 + (2 - 3)^2 + (10 - 14)^2 + (3 - 3)^2 \right] = 55000.002$$

$$ED_2 = \text{sqrt} \left[(34 - 42)^2 + (78000 - 100000)^2 + (4 - 3)^2 + (15 - 14)^2 + (5 - 3)^2 \right] = 22000.002$$

$$ED_3 = \text{sqrt} \left[(45 - 42)^2 + (120000 - 100000)^2 + (3 - 3)^2 + (20 - 14)^2 + (7 - 3)^2 \right] = 20000.002$$

$$ED_4 = \text{sqrt} \left[(30 - 42)^2 + (50000 - 100000)^2 + (2 - 3)^2 + (12 - 14)^2 + (4 - 3)^2 \right] = 50000.002$$

$$ED_5 = \text{sqrt} \left[(41 - 42)^2 + (95000 - 100000)^2 + (5 - 3)^2 + (18 - 14)^2 + (6 - 3)^2 \right] = 5000.003$$

$$ED_6 = \text{sqrt} \left[(27 - 42)^2 + (42000 - 100000)^2 + (1 - 3)^2 + (9 - 14)^2 + (2 - 3)^2 \right] = 58000.002$$

$$ED_7 = \text{sqrt} \left[(38 - 42)^2 + (85000 - 100000)^2 + (3 - 3)^2 + (16 - 14)^2 + (5 - 3)^2 \right] = 15000.001$$

$$ED_8 = \text{sqrt} \left[(50 - 42)^2 + (150000 - 100000)^2 + (2 - 3)^2 + (25 - 14)^2 + (8 - 3)^2 \right] = 50000.002$$

$$ED_9 = \text{sqrt} \left[(32 - 42)^2 + (60000 - 100000)^2 + (2 - 3)^2 + (12 - 14)^2 + (3 - 3)^2 \right] = 4000.001$$

$$ED_{10} = \text{sqrt} \left[(29 - 42)^2 + (48000 - 100000)^2 + (3 - 3)^2 + (10 - 14)^2 + (3 - 3)^2 \right] = 52000.001$$

Age: 42

Salary (in Taka): 100,000

Number of Members: 3

Number of Vacation Days: 14

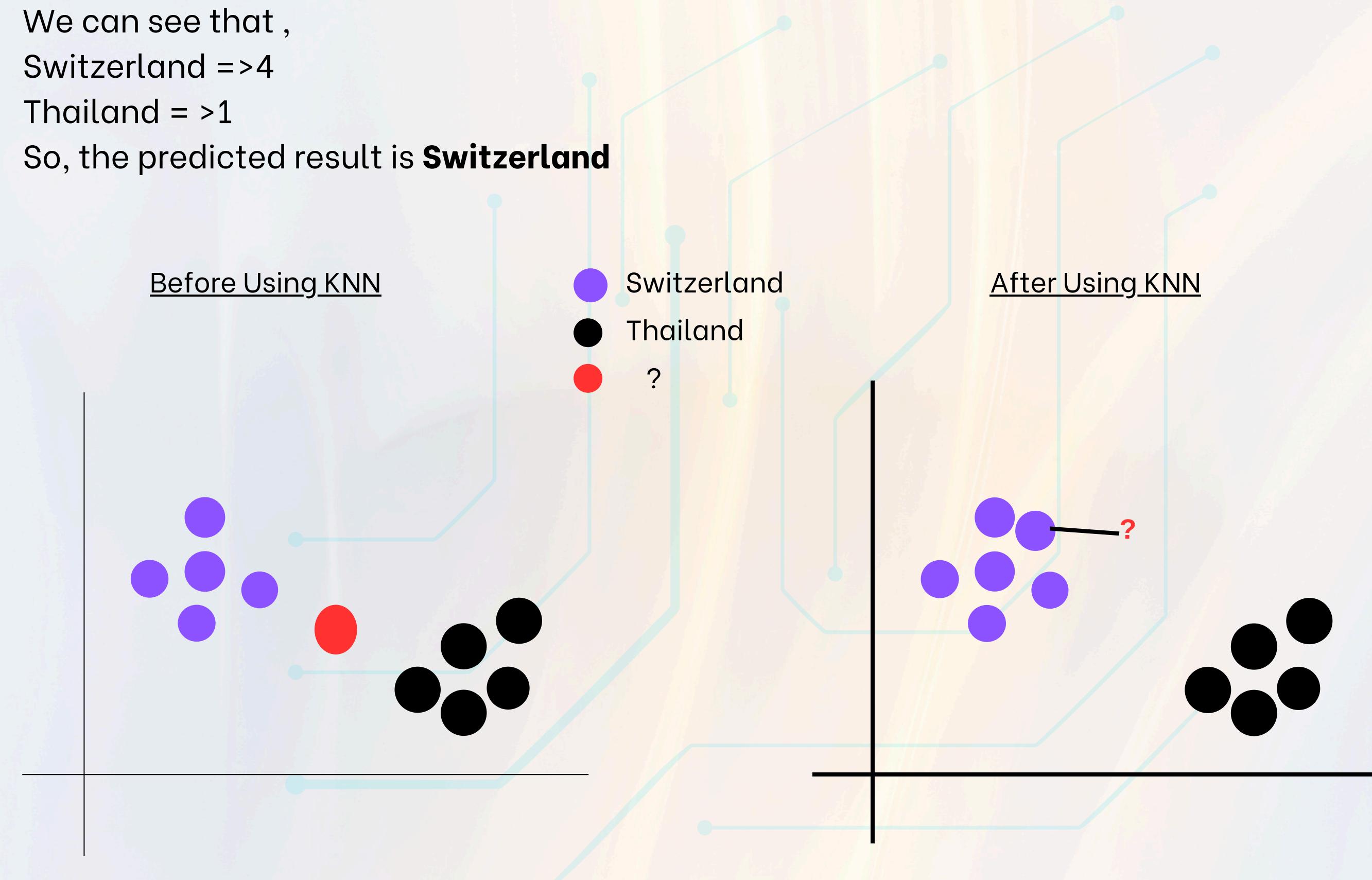
Number of Target Spots: 3



Age	Salary (in Taka)	Number of Members	Number of Vacation Days	Number of Target Spots	Decision	ED	Target
28	45000	2	10	3	Thailand	55000.002	Thailand
34	78000	4	15	5	Switzerland	22000.002	Switzerland 
45	120000	3	20	7	Switzerland	20000.002	Switzerland 
30	50000	2	12	4	Thailand	50000.002	Thailand
41	95000	5	18	6	Thailand	5000.003	Thailand 
27	42000	1	9	2	Switzerland	58000.002	Switzerland
38	85000	3	16	5	Switzerland	15000.001	Switzerland 
50	150000	2	25	8	Thailand	50000.002	Thailand
32	60000	2	12	3	Switzerland	4000.001	Switzerland 
29	48000	3	10	3	Thailand	52000.001	Thailand



We can see that ,
Switzerland =>4
Thailand = >1
So, the predicted result is **Switzerland**



Thank You!

