

EXPERIMENT-25

25.Question 2: Decision Tree for Iris Flower Classification

You are analyzing the famous Iris flower dataset to classify iris flowers into three species based on their sepal and petal dimensions. You want to use a Decision Tree classifier to accomplish this task.

Write a Python program that loads the Iris dataset from scikit-learn, and allows the user to input the sepal length, sepal width, petal length, and petal width of a new flower. The program should then use the Decision Tree classifier to predict the species of the new flower.

Code:

```
import pandas as pd
from sklearn.tree import DecisionTreeClassifier
from sklearn.model_selection import train_test_split
data = pd.read_csv("iris_custom.csv")
X = data[["sepal_length", "sepal_width", "petal_length", "petal_width"]]
y = data["species"]
X_train, X_test, y_train, y_test = train_test_split(
    X, y, test_size=0.2, random_state=0
)
model = DecisionTreeClassifier(random_state=0)
model.fit(X_train, y_train)
sl = float(input("Enter sepal length: "))
sw = float(input("Enter sepal width: "))
pl = float(input("Enter petal length: "))
pw = float(input("Enter petal width: "))
new_flower = pd.DataFrame([
    "sepal_length": sl,
    "sepal_width": sw,
    "petal_length": pl,
    "petal_width": pw
])
prediction = model.predict(new_flower)[0]
print("Predicted species:", prediction)
```

Output:

```
PS C:\Users\karan\OneDrive\Desktop\New folder (2)> python 25.py
Enter sepal length: 5.2
Enter sepal width: 3.1
Enter petal length: 4.0
Enter petal width: 1.3
Predicted species: virginica
```