decision-tree-algorithm-1

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```python
[2]: import pandas as pd
     from sklearn.tree import DecisionTreeClassifier
     from sklearn.model_selection import train_test_split
     from sklearn.metrics import accuracy_score, mean_squared_error
     df=pd.read_csv("/content/iris_data (1).csv")
     df
```

```
[2]:      sepal_length  sepal_width  petal_length  petal_width    species
     0             5.1          3.5           1.4          0.2     setosa
     1             4.9          3.0           1.4          0.2     setosa
     2             4.7          3.2           1.3          0.2     setosa
     3             4.6          3.1           1.5          0.2     setosa
     4             5.0          3.6           1.4          0.2     setosa
     ..            ...          ...           ...          ...        ...
     145           6.7          3.0           5.2          2.3  virginica
     146           6.3          2.5           5.0          1.9  virginica
     147           6.5          3.0           5.2          2.0  virginica
     148           6.2          3.4           5.4          2.3  virginica
     149           5.9          3.0           5.1          1.8  virginica

     [150 rows x 5 columns]
```

```python
[17]: X = df[['sepal_length','sepal_width','petal_length',        'petal_width']]  #␣
      ↪List of columns

      Y = df['species']
```

```python
[18]: from sklearn.model_selection import train_test_split
      X_train, X_test, Y_train, Y_test = train_test_split(X, Y, test_size=0.2,␣
      ↪random_state=42)
```

```python
[19]: from sklearn.tree import DecisionTreeClassifier
      dtree=DecisionTreeClassifier(criterion='gini',max_depth=3, random_state=42)
      dtree.fit(X_train,Y_train)
```

```
[19]: DecisionTreeClassifier(max_depth=3, random_state=42)
```

```
[20]: Y_pred = dtree.predict(X_test)
```

```
[22]: from sklearn.metrics import confusion_matrix
      print("Accuracy:",accuracy_score(Y_test, Y_pred))
      print("\nConfusion Matrix:\n",confusion_matrix(Y_test,Y_pred))
```

```
Accuracy: 1.0

Confusion Matrix:
 [[10  0  0]
 [ 0  9  0]
 [ 0  0 11]]
```