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YEAR AND BRANCH : IV Year CSE Data Science

Project Title : Using the Support Vector Mechanism algorithm of supervised machine learning , predict iris.csv dataset to find out whether the species is different or same

Problem Statement :

An American based botanical garden grow iris flower in their labs but using biotechnology in a single tree where different types of variety flowers in grown , as a data science engineer how much accuracy is there in all categories which contain same species.

Task 1 : Pre process the data in **skit.learn** library.

Task 2 : Load the data using **sklearn** model selection default argument.

Task 3 : On the basis of the data train test and split the svm model.

Task 4 : Implement support vector mechanism_classifier. The svm must be **"Linear"**.

Task 5 : Train the classifier on the training data

Task 6 : Find out the prediction value on the test data.

Task 7 : Test the model with the help of accuracy , accuracy should lie in the range of 0 to 1

Task 1 : Pre process the data in **skit.learn** library.

```
from sklearn.datasets import load_iris
from sklearn.model_selection import train_test_split
from sklearn.svm import SVC
from sklearn.metrics import accuracy_score
```

Task 2 : Load the data using **sklearn** model selection default argument.

```
# Load the Iris dataset
iris = load_iris()
X = iris.data
y = iris.target

# Consider only two classes for simplicity
X = X[y != 2]
y = y[y != 2]
```

Task 3 : On the basis of the data train test and split the svm model.

```
# Split the dataset into training and testing sets
X_train, X_test, y_train, y_test = train_test_split(X, y,
test_size=0.2, random_state=42)
```

Task 4 : Implement support vector mechanism_classifier. The svm must be **"Linear"**.

```
# Create an SVM classifier
svm_classifier = SVC(kernel='linear')
```

Task 5 : Train the classifier on the training data

```
# Train the classifier on the training data
svm_classifier.fit(X_train, y_train)

SVC(kernel='linear')
```

Task 6 : Find out the prediction value on the test data.

```
# Make predictions on the test data
y_pred = svm_classifier.predict(X_test)
y_pred
```

```
array([1, 1, 1, 0, 0, 0, 0, 1, 0, 0, 0, 0, 1, 0, 1, 0, 1, 1, 0, 0])
```

Task 7 : Test the model with the help of accuracy , accuracy should lie in the range of 0 to 1

```
# Calculate accuracy
accuracy = accuracy_score(y_test, y_pred)
print(f"Accuracy: {accuracy:.2f}")
```

```
Accuracy: 1.00
```

Conclusion : According to my support vector mechanism model the speices are linear with the accuracy of 1.00.

Hence the model is successfully implemented.