

EXPT NO: 6 A python program to implement face recognition
DATE: 24/10/2024 using Support Vector Machine.

AIM:

To write a python program to implement face recognition using SVM.

PROCEDURE:

Implementing face recognition using svm involves the following steps:

Step 1: Import Necessary Libraries

First, import the libraries that are essential for data manipulation, visualization, and model building.

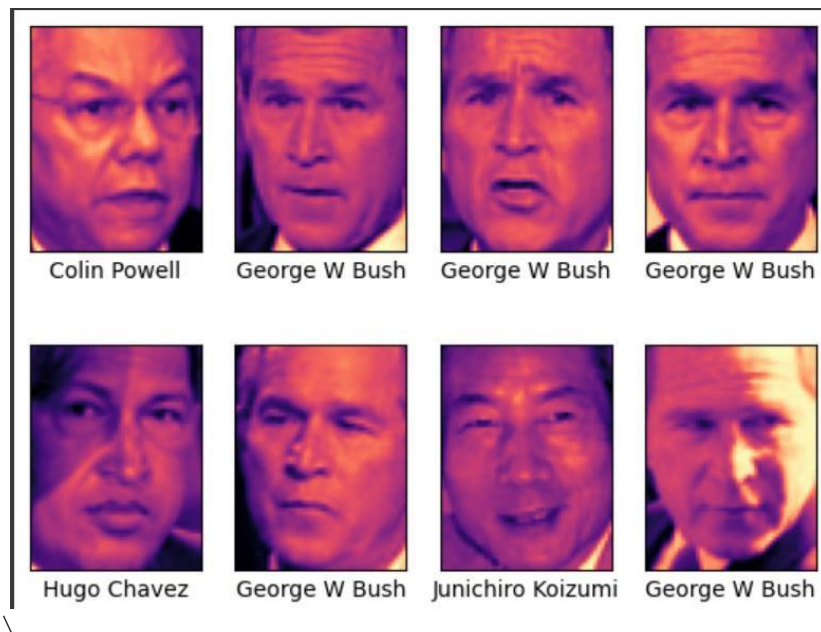
```
from sklearn.datasets import fetch_lfw_people import
matplotlib.pyplot as plt from sklearn.model_selection
import train_test_split from sklearn.svm import SVC from
sklearn.pipeline import make_pipeline from
sklearn.decomposition import PCA as RandomizedPCA from
sklearn.metrics import accuracy_score
```

Step 2: Load the Dataset

The dataset can be loaded and display the first few faces of the dataset.

```
faces = fetch_lfw_people(min_faces_per_person=60) fig,
splts = plt.subplots(2, 4)
for i, splts in enumerate(splts.flat):
    splts.imshow(faces.images[i], cmap='magma')
    splts.set(xticks=[], yticks=[],
              xlabel=faces.target_names[faces.target[i]])
```

OUTPUT:



Step 4: Split the Data

Split the data into training and testing sets.

Fit the dataset to the model.

```
X = faces.data y
= faces.target
```

```
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.4,
random_state=42)
```

Step 5:

Dimensionality Reduction

Reduce the dimension using Principal Component Analysis (PCA) Fit the model with SVC.

```
pca = RandomizedPCA(n_components=150, whiten=True, random_state=42)
svc = SVC(kernel='rbf', class_weight='balanced') model =
make_pipeline(pca, svc) model.fit(X_train, y_train)
```

Step 6: Make Predictions

Use the model to make predictions on the test data.

```
predictions = model.predict(X_test)
```

Step 7: Evaluate the Model

Evaluate the model performance using metrics like Accuracy Score and confusion_matrix

OUTPUT :

```
predictions = model.predict(X_test) accuracy =  
accuracy_score(predictions, y_test)  
print(accuracy) matrix =  
confusion_matrix(predictions, y_test)  
print(matrix)
```

0.8074074074074075

```
[[ 15   1   1   0   0   0   0   0]  
 [  4 101   4  20   3   8   1   9]  
 [  2   0  39   1   0   0   0   0]  
 [  2   4   5 183   5   7   4  10]  
 [  0   0   0   1  28   5   0   0]  
 [  0   0   0   0   0  13   0   0]  
 [  0   0   0   0   0   0  16   0]  
 [  0   2   1   0   3   1   0  41]]
```

RESULT:

This step-by-step process will help us to implement face recognition using SVM and analyzed their performance.