ex7

August 9, 2024

[ ]:

[ ]:
```
import numpy as np
import matplotlib.pyplot as plt
from sklearn import datasets
from sklearn.preprocessing import StandardScaler
from sklearn.decomposition import PCA
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LogisticRegression
from sklearn.metrics import accuracy_score, classification_report
```

[ ]:
```
iris = datasets.load_iris()
X = iris.data
y = iris.target
```

[ ]:
```
scaler = StandardScaler()
X_scaled = scaler.fit_transform(X)
```

[ ]:
```
pca = PCA(n_components=2)
X_pca = pca.fit_transform(X_scaled)
```

[ ]:
```
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```

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```

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```

```
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```
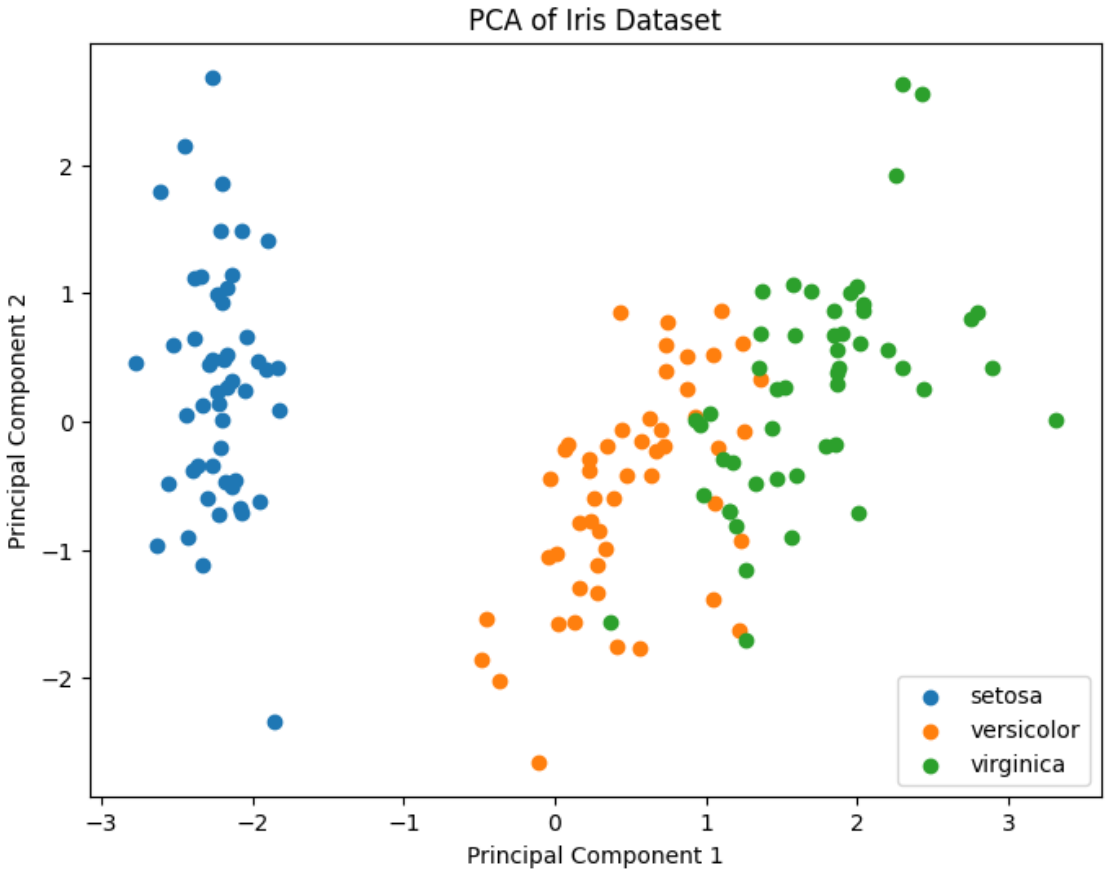

[ ]:
```
plt.figure(figsize=(8, 6))
for target in np.unique(y):
    subset = X_pca[y == target]
    plt.scatter(subset[:, 0], subset[:, 1], label=iris.target_names[target])
plt.title("PCA of Iris Dataset")
plt.xlabel("Principal Component 1")
plt.ylabel("Principal Component 2")
```

```
plt.legend()
plt.show()
```



[ ]:
```
X_train, X_test, y_train, y_test = train_test_split(X_pca, y, test_size=0.3,␣
↪random_state=42)
```

[ ]:
```
classifier = LogisticRegression(random_state=42)
classifier.fit(X_train, y_train)
```

[ ]:
```
LogisticRegression(random_state=42)
```

[ ]:
```
y_pred = classifier.predict(X_test)

accuracy = accuracy_score(y_test, y_pred)
classification_report_str = classification_report(y_test, y_pred,␣
↪target_names=iris.target_names)

print("Accuracy : ",accuracy,"\n\n", classification_report_str)
```

```
Accuracy :  0.9111111111111111
```

	precision	recall	f1-score	support
setosa	1.00	1.00	1.00	19
versicolor	0.91	0.77	0.83	13
virginica	0.80	0.92	0.86	13
accuracy			0.91	45
macro avg	0.90	0.90	0.90	45
weighted avg	0.92	0.91	0.91	45