Experiment - 7

Implementing Artificial Neural Networks for an Application using Python - Classification

AIM

To implement artificial neural networks for an application in classification using python.

PROGRAM

```
from sklearn.model_selection import train_test_split
from sklearn.datasets import make_circles
from sklearn.neural_network import MLPClassifier
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
%matplotlib inline

X_train, y_train = make_circles(n_samples=700, noise=0.05)
X_test, y_test = make_circles(n_samples=300, noise=0.05)

sns.scatterplot(x=X_train[:,0], y=X_train[:,1], hue=y_train)
plt.title("Train data")
plt.show()

clf = MLPClassifier(max_iter=1000)
clf.fit(X_train, y_train)
print("R2 score for training data =", clf.score(X_train, y_train))
```

```
print("R2 score for training data= {clf.score
                    (x_train, y_train)}")
y_pred = clf.predict(x_test)

fig, axs = plt.subplots(1,2, figsize=(12,5))
sns.scatterplot(x=x_test[:,0], y=x_test[:,1],
                hue=y_pred, ax=axs[0])
axs[0].set_title("Predicted Data")
sns.scatterplot(x=x_test[:,0], y=x_test[:,1],
                hue=y_test, ax=axs[1])
axs[1].set_title("Test Data")
plt.show()
```

RESULT

Thus, the program for artificial neural networks (classification) is successfully executed and the output is verified.

OUTPUT