

EXNO.12

Implementation of Artificial Neural Networks for an Application using Python - Classification

Aim

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

SOURCE CODE:

```
from sklearn.neural_network import MLPClassifier
from sklearn.model_selection import train_test_split
from sklearn.datasets import make_circles
from numpy as np
import matplotlib.pyplot as plt
from 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_train[:, 0], X_train[:, 1], hue=y_train)
plt.title("Train Data")
plt.show()

clf = MLPClassifier(max_iter=1000)
clf.fit(X_train, y_train)
```

```
print(f"R2 score for Training data =  
      {clf.score(X_train, y_train)}")
```

```
y_pred = clf.predict(X_test)
```

```
fig, ax = plt.subplots(1, 2)
```

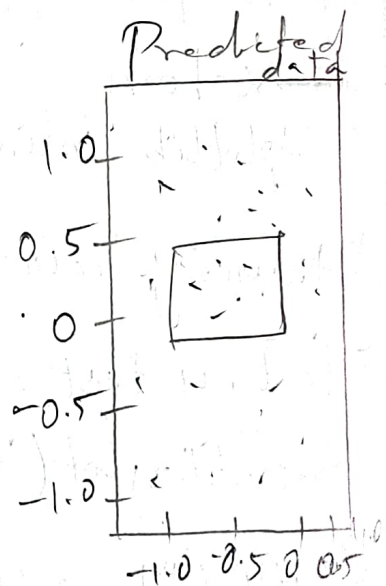
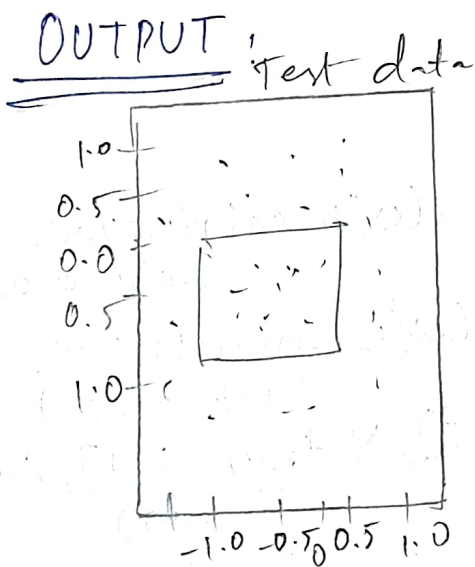
```
sns.scatterplot(X_test[:, 0], X_test[:, 1], hue  
                = y_pred, ax=ax[0])
```

```
ax[1].title.set_text("Predicted Data")
```

```
sns.scatterplot(X_test[:, 0], X_test[:, 1], hue  
                = y_test, ax=ax[1])
```

```
ax[0].title.set_text("Test Data")
```

```
plt.show
```



RESULT:

Thus the program is successfully executed & output is verified.