Exp no: 6
Date:

Implementation of Artificial Neural Network for an application classification using Python

Aim:

Implement artificial neural networks for an application classification using python.

About:

- contains artificial neurons.
- The neurons are connected to each other
- They are arranged in layers to constitute a neural network
- The data passes through these Multiple layers and get processed
- The output layer provides output for the network.

Algorithm:

1. Start by importing necessary libraries
2. Load the iris dataset
3. Split data set into training and testing
4. Create simple forward neural network.
5. Fit model to training data
6. Check Models performance on data

Program:

```
~~import~~ numpy as np
~~Import~~ Mathlib. pyplot as plt
import seaborn or sns
from sklearn.datasets import make_circles
from sklearn.neural_network import
                          MLP classifier
from sklearn.metrics import r2_score
```

```
x-train , y-train - Make_circles (n-samples=
        100, noise = 0.05 factor = 0.5)

x. test , y-test - Make. circles (n-samples=
        300, noise = 0.05, factor = 0.5)

Sns . Scatter plot (x = x-train [ : , 0] y = x-train[
                 : , 1], noise=0]
  train, palette = "viridis", Style = y-train)
  Plt. title ( " Train Data")
  Plt. Show ()
  Clf = MLP classifier (Max_Iter = 1000)
  Clf . fit ( x-train , y-train)

Print ( f" R2 Score for Training Data =
    {Clf. Score (x-train y-train): .2f}")

Print (f" R2 Score for Test Data = { clf
    - score( x. test , y-test) : .2f}")

y - pred = clf. predict ( x. test)
fig, ax = plt. subplots (1, 2, figsize =
                                (12, 6))
Sns . Scatterplot (x = x- test [ : ; 0] y = x. test [
                                          : , 1]
hue = y - pred , palette = "viridis",
          style = y_pred ax = ax [0] )
ax [0]. set . title ("Predicted Data")

Sns . Scatter plot (x = x. test [ : , 0],
          y = x - test [:, 1],
hue = y- pred test, palette = "viridis"
        Style = y_ test, ax = ax[1])
ax [1] . set _ title ("Actual Test Data")
```

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```
Plt. tight_layout()
Plt. Show()
```

Result.

Thus we implement artifical neural network for an application classitication using python.