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Date
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EXP NO: 10 - IMPLEMENTING ARTIFICIAL NEURAL NETWORKS FOR AN APPLICATION USING PYTHON - REGRESSION

AIM:

To implement artificial neural network for an application in Regression using python.

ALGORITHM:

1) import necessary libraries for model training and data generation.

2) create synthetic regression data with 1000 samples and 100 features

3) Divide data into training and test sets with 20% allocated to testing

4) Initialize and train the MLPRegressor with a maximum of 1000 iterations

5) Print the R^2 score for both training and test data to assess performance.

CODE:

```
from sklearn.neural_network import MLPRegressor
from sklearn.model_selection import train_test_split
from sklearn.datasets import make_regression
import numpy as np

X, y = make_regression(n_samples = 1000, noise = 0.05, n_features = 100)
print("Data shapes:", X.shape, y.shape
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size = 0
                                   shuffle = True, random_state = 42)
```

clf = MLPRegressor(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 Testing data = ", clf.score(x_test, y_test))

OUTPUT:

R2 score for Test Data = 0.9688558466621529

RESULT:

Thus implementation of Artificial Neural Network for application integration is successfully executed.