

ASSIGNMENT 3

AIM:

Implement a Neuro-Fuzzy Inference system using Python, execute the code and get the output.

PROGRAM:

```
import anfis
import membership.mfDerivs
import membership.membershipfunction
import numpy
#
numpy.loadtxt('c:\\Python_fiddling\\myProject\\MF\\trainingSet.txt',usecols=[1,2,3
])
ts = numpy.loadtxt("trainingSet.txt", usecols=[1, 2, 3])
X = ts[:, 0:2]
Y = ts[:, 2]
mf = [[['gaussmf', {'mean': 0., 'sigma': 1.}], ['gaussmf', {'mean': -1., 'sigma': 2.}],
['gaussmf', {'mean': -4.,
'sigma': 10.}], ['gaussmf', {'mean': -7., 'sigma': 7.}]], [['gaussmf', {'mean': 1.,
'sigma': 2.}], ['gaussmf',
{'mean': 2., 'sigma': 3.}], ['gaussmf', {'mean': -2., 'sigma': 10.}], ['gaussmf', {'mean':
-10.5, 'sigma': 5.}]]]
mfc = membership.membershipfunction.MemFuncs(mf)
anf = anfis.ANFIS(X, Y, mfc)
anf.trainHybridJangOffLine(epochs=20)
print(round(anf.consequents[-1][0], 7))
print(round(anf.consequents[-2][0], 7))
print(round(anf.fittedValues[9][0], 7))
if round(anf.consequents[-1][0], 7) == -5.275538 and
round(anf.consequents[-2][0], 6) == - 1.990703 and
round(anf.fittedValues[9][0], 6) == 0.002249:
print('Test is good') print("Error Plot")
```

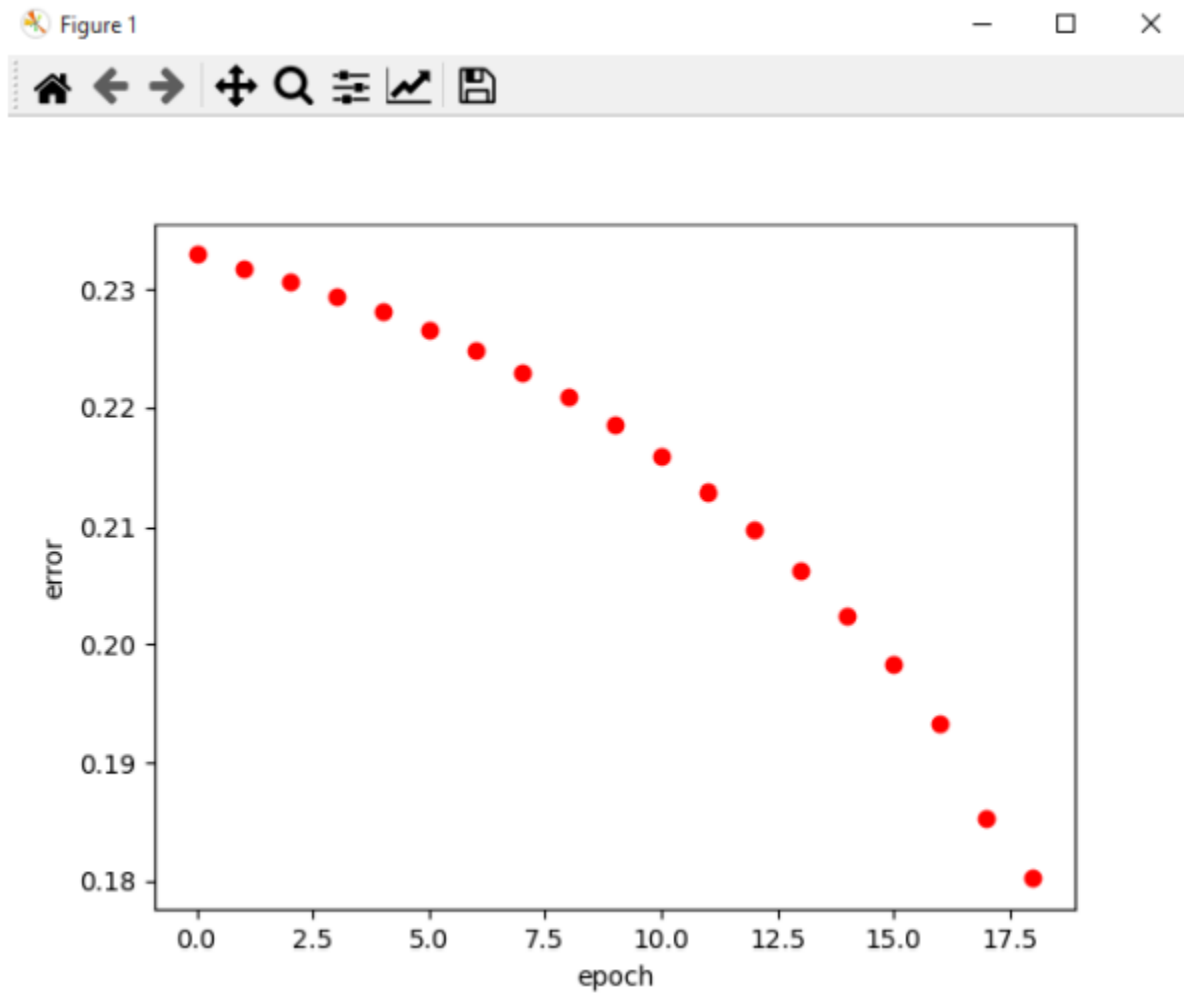
```
anf.plotErrors()  
print("Results Plot")  
anf.plotResults()
```

OUTPUT:

ERROR PLOT:

```
(base) C:\Users\hp\Desktop\Neuro-Fuzzy-main>python tests.py  
current error: 0.23296034910053703  
current error: 0.23183046381197941  
current error: 0.23066704916256525  
current error: 0.22947300226788322  
current error: 0.22812866070173965  
current error: 0.22661650417951065  
current error: 0.22491793575823224  
current error: 0.22301366839982864  
current error: 0.22088433038067096  
current error: 0.21851132183461777  
current error: 0.2158778854343336  
current error: 0.21297015637005143  
current error: 0.2097774334577251  
current error: 0.20628948581662387  
current error: 0.20248430602942938  
current error: 0.19828262288602072  
current error: 0.19334729778344675  
current error: 0.18530024116521293  
current error: 0.1802272777542335  
-0.0310883  
0.0152347  
-0.0088179  
Error Plot  
Results Plot
```

RESULTS PLOT:



RESULT:

Thus, implementation of a Neuro-Fuzzy Inference system using Python is executed and the code is verified.