COMPUTATIONAL INTELLIGENCE - ASSIGNMENT 3

IMPLEMENTATION OF NEURO FUZZY INFERENCE SYSTEM

AIM:

To Implement Neuro Fuzzy Inference system using Python.

PROGRAM:

```python
import anfis

import membership.mfDerivs

import membership.membershipfunction

import numpy

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],6))

print(round(anf.consequents[-2][0],6))

print(round(anf.fittedValues[9][0],6))

if round(anf.consequents[-1][0],6) == -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("Plotting errors")

anf.plotErrors()

print("Plotting results")
```

anf.plotResults()

OUTPUT:

CONSOLE OUTPUT:

```
PS C:\neurofuzzy> python tests.py
current error: 0.3025491368473142
current error: 0.30122896217525696
current error: 0.2998935510622827
current error: 0.29854387789227765
current error: 0.2970452589952492
current error: 0.2953815091633685
current error: 0.2935352905153676
current error: 0.2914884663697517
current error: 0.2892227919920881
current error: 0.28672114786431435
current error: 0.28396961897408857
current error: 0.2809608286202762
current error: 0.2776989743902896
current error: 0.2742067934658463
current error: 0.27053383262417446
current error: 0.26676352283455057
current error: 0.26301408048811864
current error: 0.25942791094607337
current error: 0.256150421294487
0.089087
0.013432
0.001218
Plotting errors
```

ERRORS PLOTTED GRAPH:
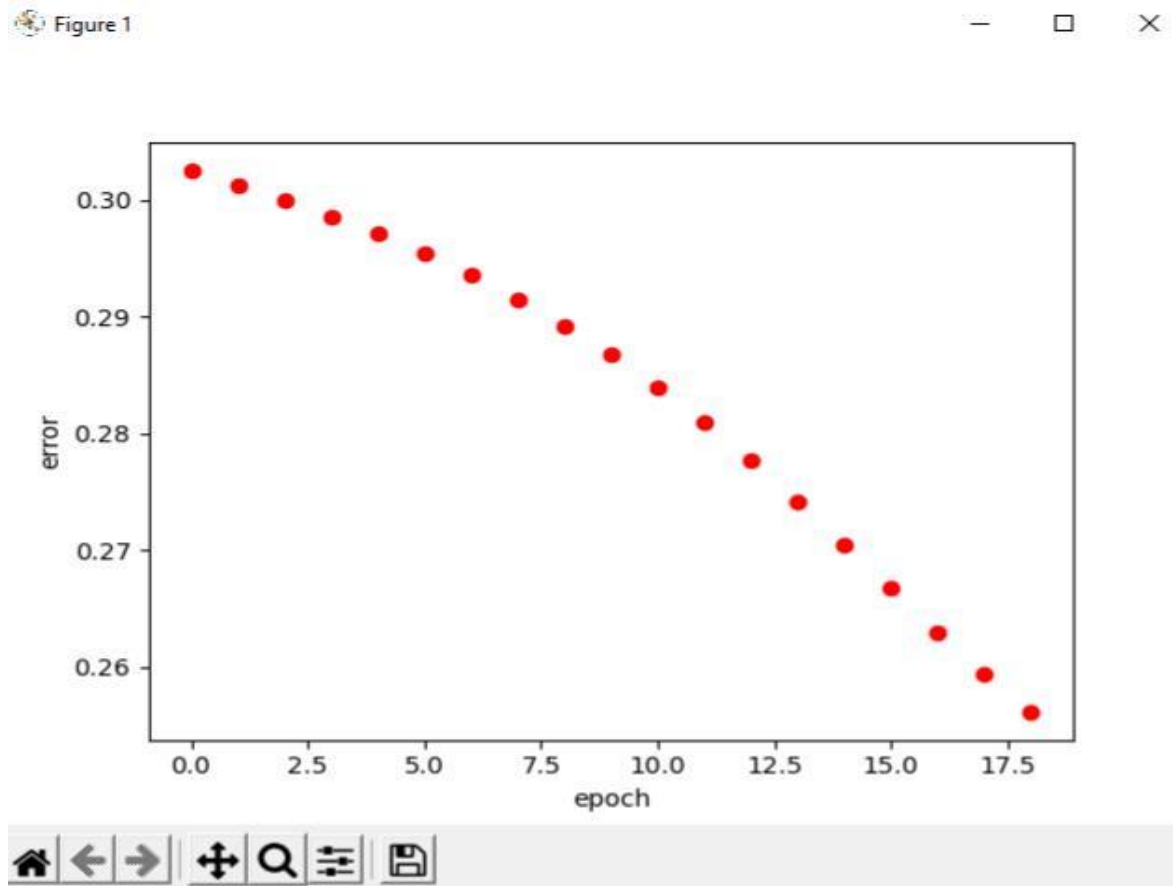
RESULT GRAPH:
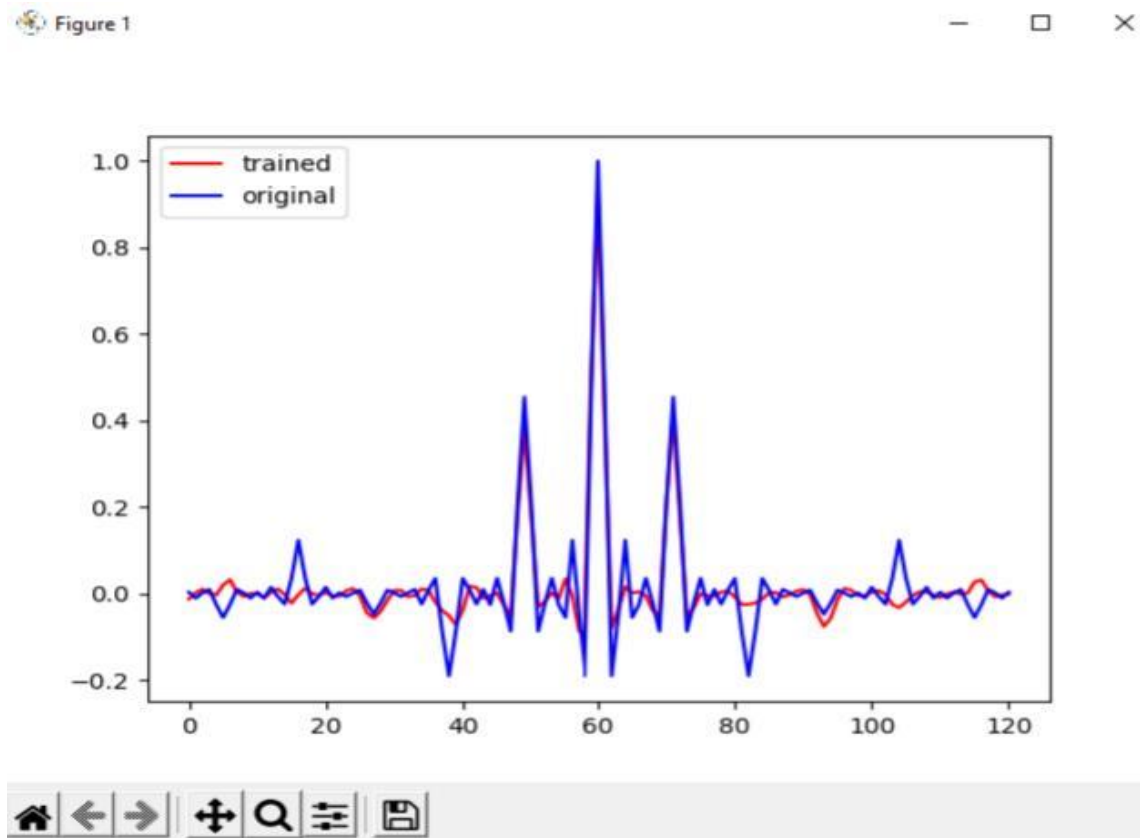
RESULT:

Thus the Implementation of neuro fuzzy inference system is executed and the output is obtained.

Github link:

https://github.com/Snehadurairaj30/neurofuzzy.git