Unit-3 Assignment
Computational Intelligence

AIM :

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

PROGRAM CODE :

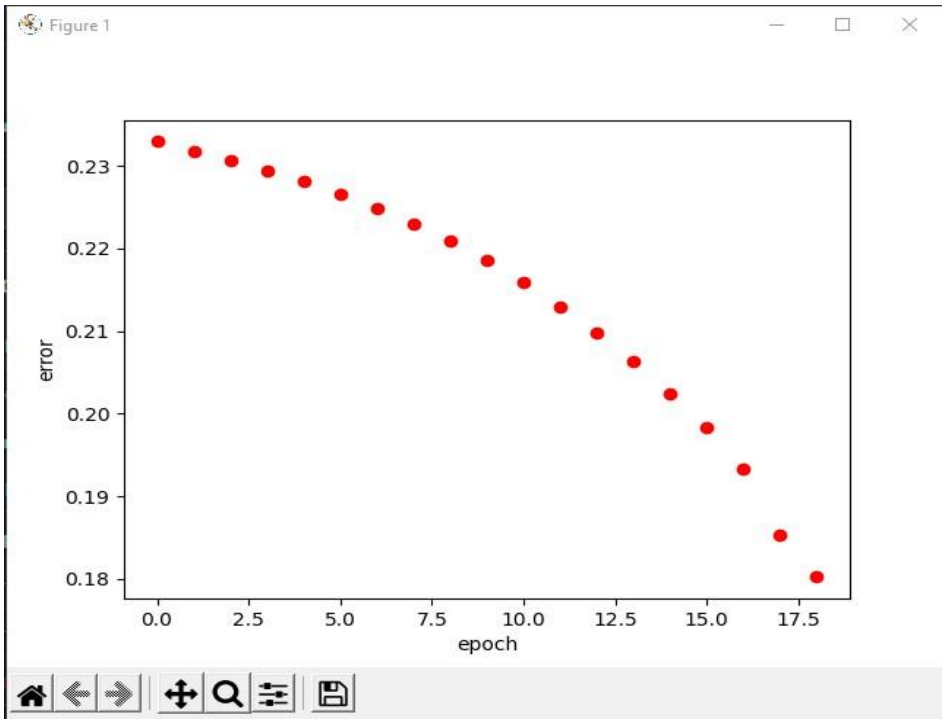
```
import anfis import
membership.mfDerivs import
membership.membershipfunction import
numpy
 #
numpy.loadtxt('c:\\Python_fiddling\\myProject\\MF\\trainingSet.txt',usecols=[1,2,
3])
ts = numpy.loadtxt("trainingSet.txt", usecols=[1, 2, 3])
X = ts[:, 0:2]
Y = ts[:, 2]
 mf = [[['gaussmf', {'mean': 0., '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()
```

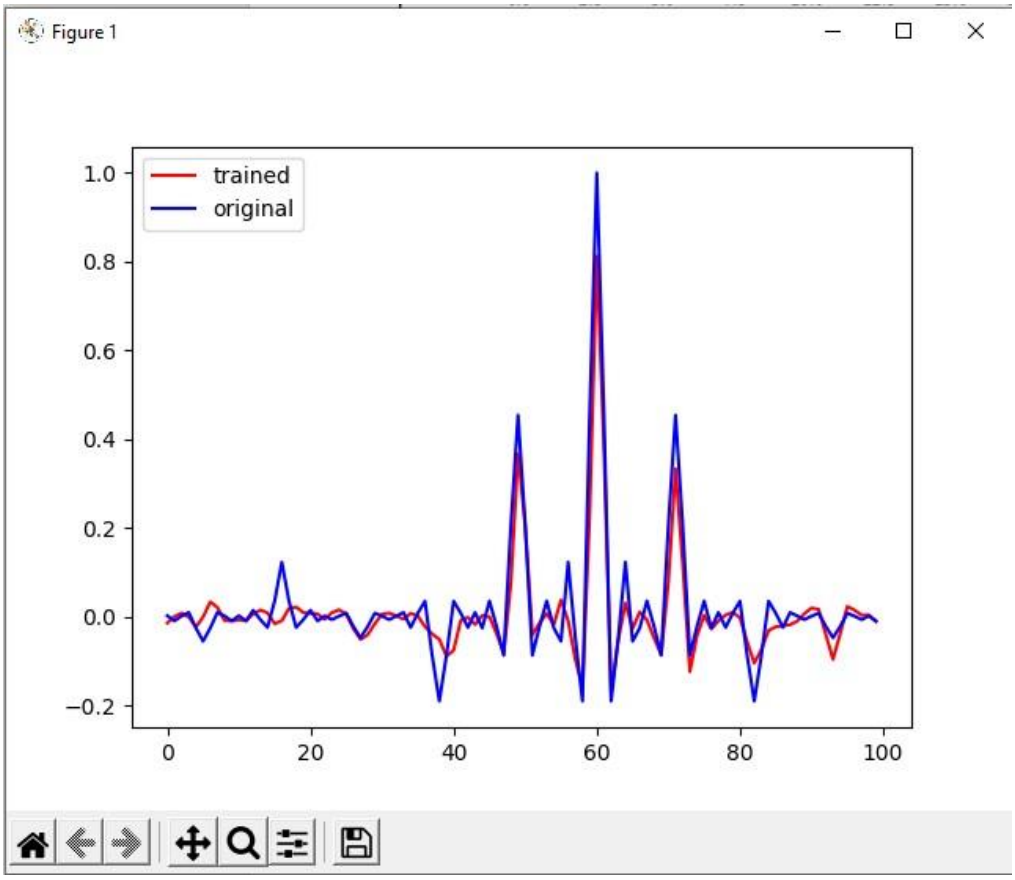
OUTPUT :

```
rajar/Documents/BDA/Neuro-Fuzzy-Inference-System/tests.py
current error: 0.2329603491004393
current error: 0.2318304638117820 7
current error: 0.2306670491624476 8
current error: 0.2294730022678345 4
current error: 0.2281286607018720 2
current error: 0.2266165041795940 3
current error: 0.2249179357582494 2
current error: 0.2230136683999620 3
current error: 0.2208843303807456 7
current error: 0.2158778854344701 7
current error: 0.2129701563700907 3
current error: 0.209777433457651 3
current error: 0.2062894858165561 8
current error: 0.2024843060294018 2
current error: 0.1982826228858233 8
current error: 0.193347297783514 1
current error: 0.1853002411650163 7
current error: 0.1802272777513301 6
-0.0310883
0.0152347
-0.0088179
Error Plot
Results Plot
```

Error Plotted Graph :



Result Plotted Graph :



RESULT :

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

GITHUB LINK:

https://github.com/princy-Joshna-mary/Neuro-Fuzzy-Inference-system