IT8601 – COMPUTATIONAL INTELLIGENCE ASSIGNMENT – 3

NEURO FUZZY INFERENCE SYSTEM

AIM:

To implement Neuro Fuzzy Inference System using Python

PROGRAM:

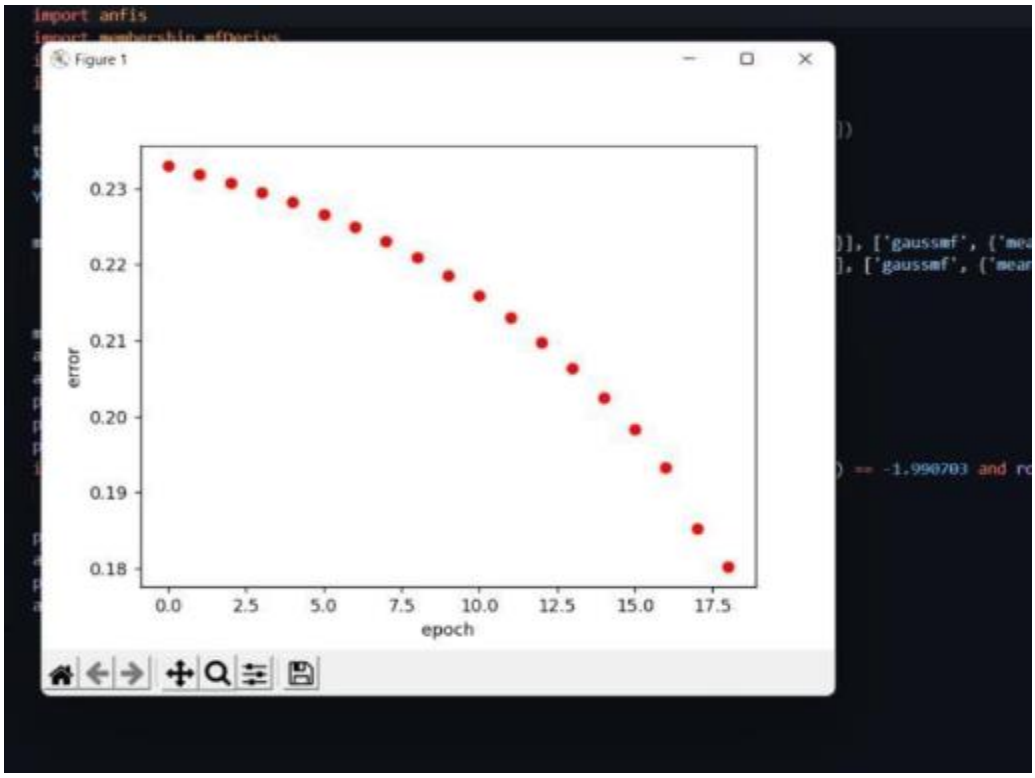
```
Import anfis

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()
```

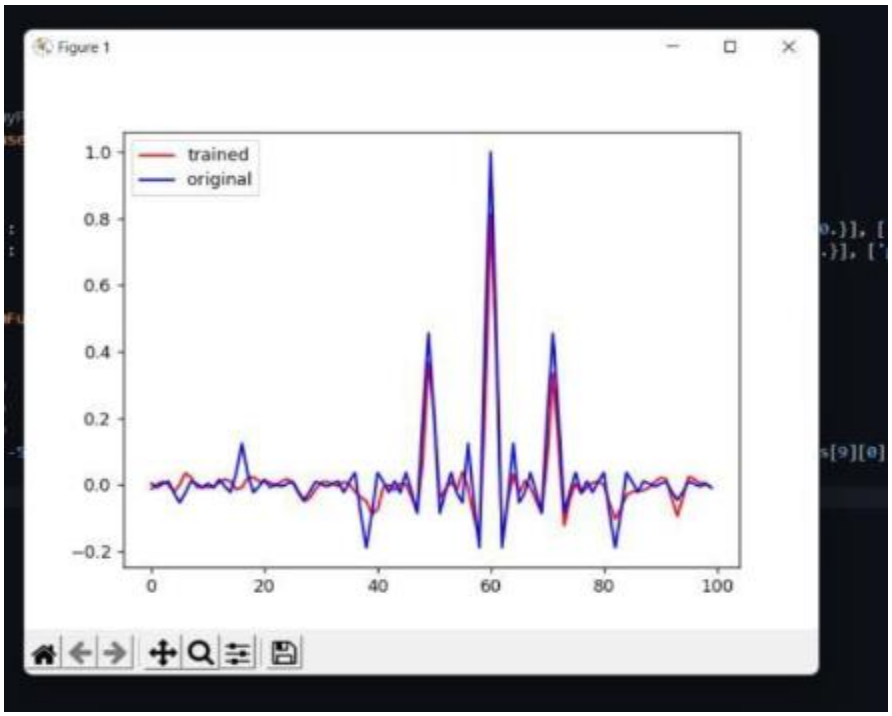
OUTPUT:

ERROR PLOTTED GRAPH:

```
current error: 0.23296034910052635
current error: 0.2318304638118 18
current error: 0.23066704916231817
current error: 0.229473002267681 25
current error: 0.228128660701769 68
current error: 0.226616504179421 78
current error: 0.224917935758141 26
current error: 0.223013668399711 12
current error: 0.220884330380730 52
current error: 0.218511321834718 28
current error: 0.2158778854344372
current error: 0.2129701563699756
current error: 0.209777433457592 87
current error: 0.206289485816609 47
current error: 0.202484306029576 26
current error: 0.1982826228858566
current error: 0.1933472977835748
current error: 0.185300241164950 03
current error: 0.180227277753400 94
-0.0310883
0.0152347
-0.0088179
Error Plot
Results Plot
```



RESULT PLOTTED GRAPH:



RESULT:

Thus the implementation of Neuro Fuzzy Inference System is done successfully.