Computational Intelligence – Assignment 3

Aim:

Implementation of neuro-fuzzy inference system using python, execute the code and upload the output snapshot in the moodle with the code

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:

Help tests.py - neuro_fuzzy - Visual Studio Code

tests.py membershipfunction.py mfDerivs.py anfis.py README.md

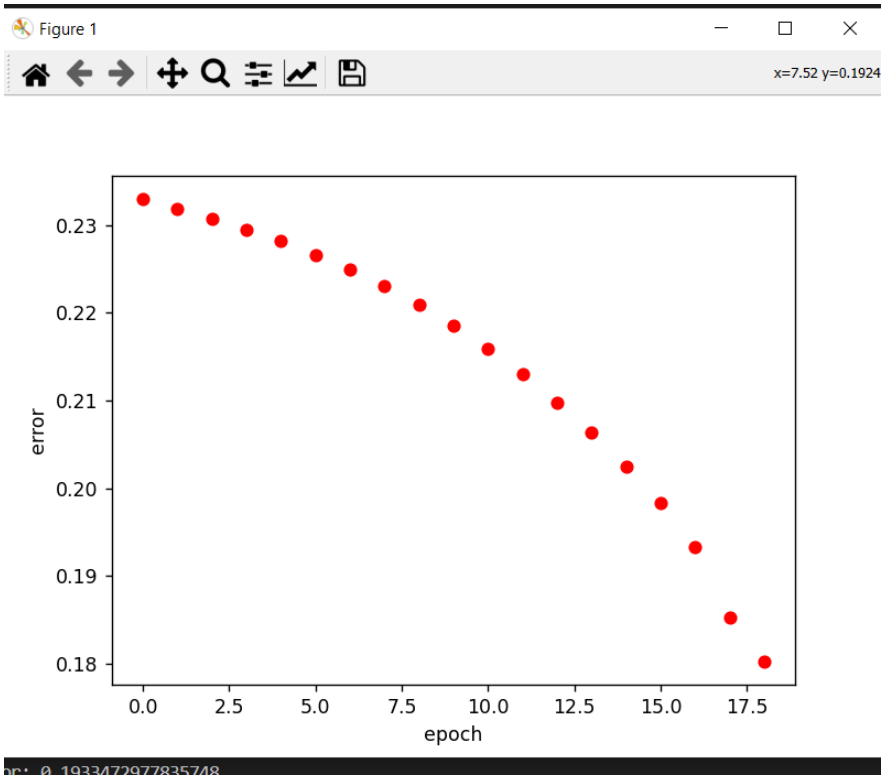
tests.py > ...

```
8   X = ts[:, 0:2]
```

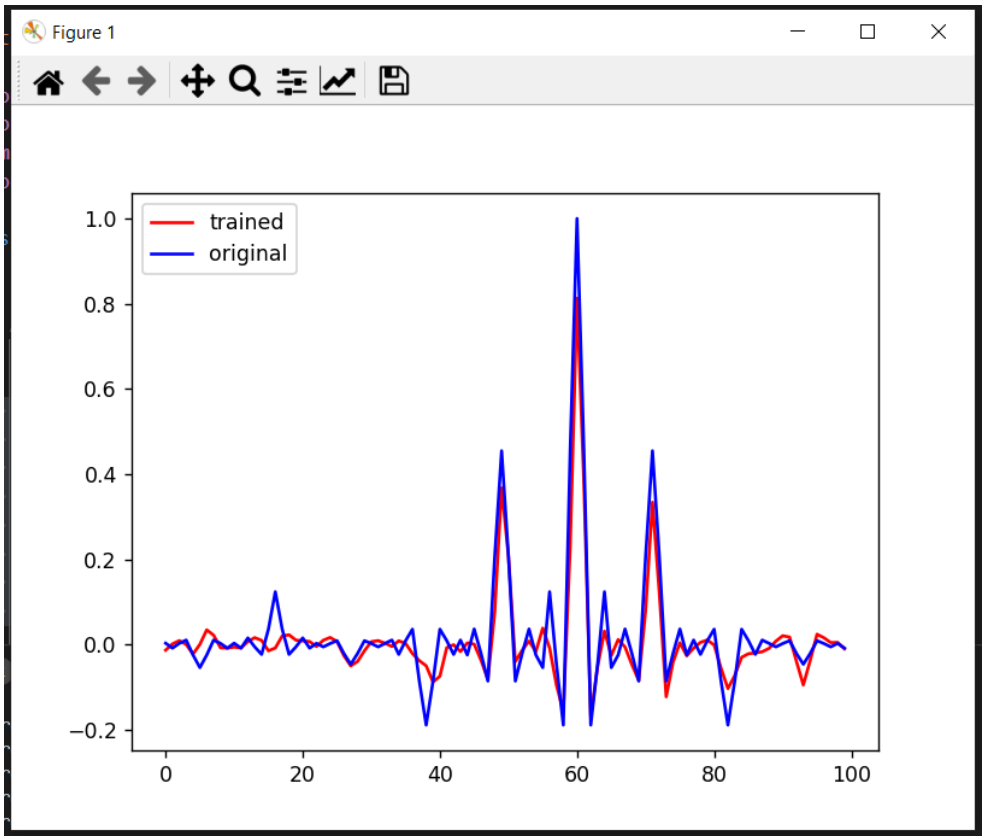
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

```
PS C:\Users\ILAYANILA\Desktop\neuro_fuzzy> python -u "c:\Users\ILAYANILA\Desktop\neuro_fuzzy\tests.py"
current error: 0.23296034910052635
current error: 0.231830463811818
current error: 0.23066704916231817
current error: 0.22947300226768125
current error: 0.22812866070176968
current error: 0.22661650417942178
current error: 0.22491793575814126
current error: 0.22301366839971112
current error: 0.22088433038073052
current error: 0.21851132183471828
current error: 0.2158778854344372
current error: 0.2129701563699756
current error: 0.20977743345759287
current error: 0.20628948581660947
current error: 0.2024843060295762 6
current error: 0.1982826228858566
current error: 0.1933472977835748
current error: 0.18530024116495003
current error: 0.18022727775340094
-0.0310883
0.0152347
-0.0088179
Error Plot
Results Plot
PS C:\Users\ILAYANILA\Desktop\neuro_fuzzy>
```

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:

nila30/neuro_fuzzy (github.com)