

## Unit 3 Assignment

### Computational Intelligence

#### Implement Neuro Fuzzy Inference system using Python

##### AIM

Implement a 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

ts = numpy.loadtxt("trainingSet.txt",
usecols=[1,2,3])#numpy.loadtxt('c:\\Python_fiddling\\myProject\\MF\\tra
iningSet.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

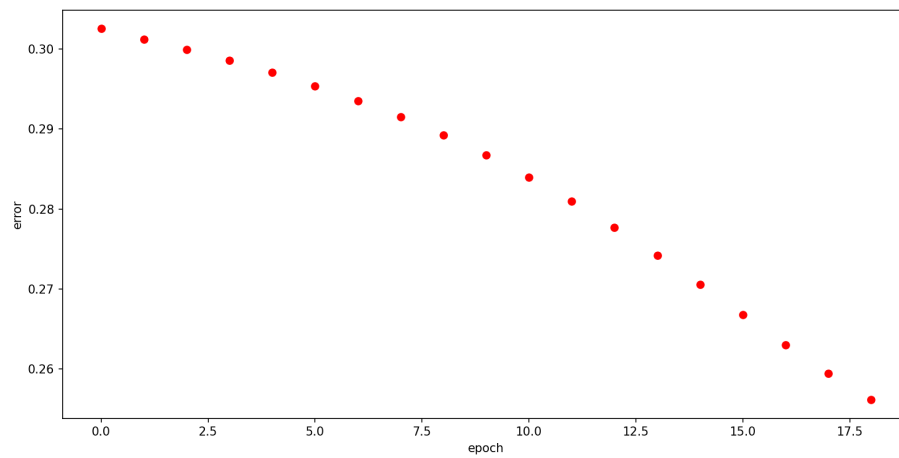
```

PS C:\Users\Admin\Documents\SEM VI\CI\neuro-fuzzy-inference-system-implementation> python tests.py
current error: 0.3025491368472857
current error: 0.30122896217525397
current error: 0.2998935510620827
current error: 0.29854387789166364
current error: 0.2970452589946006
current error: 0.29538150916332434
current error: 0.29353529051544697
current error: 0.29148846636977105
current error: 0.2892227919920223
current error: 0.28672114786421776
current error: 0.2839696189742461
current error: 0.28096082862049954
current error: 0.27769897439025615
current error: 0.2742067934659472
current error: 0.27053383262419245
current error: 0.26676352283482874
current error: 0.26301408048770547
current error: 0.25942791094539747
current error: 0.25615042129351123
0.089087
0.013432
0.001218
Plotting errors
Plotting results

```

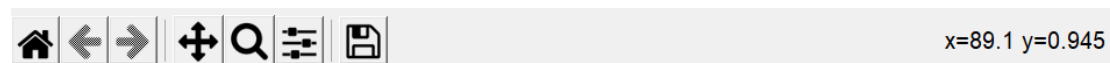
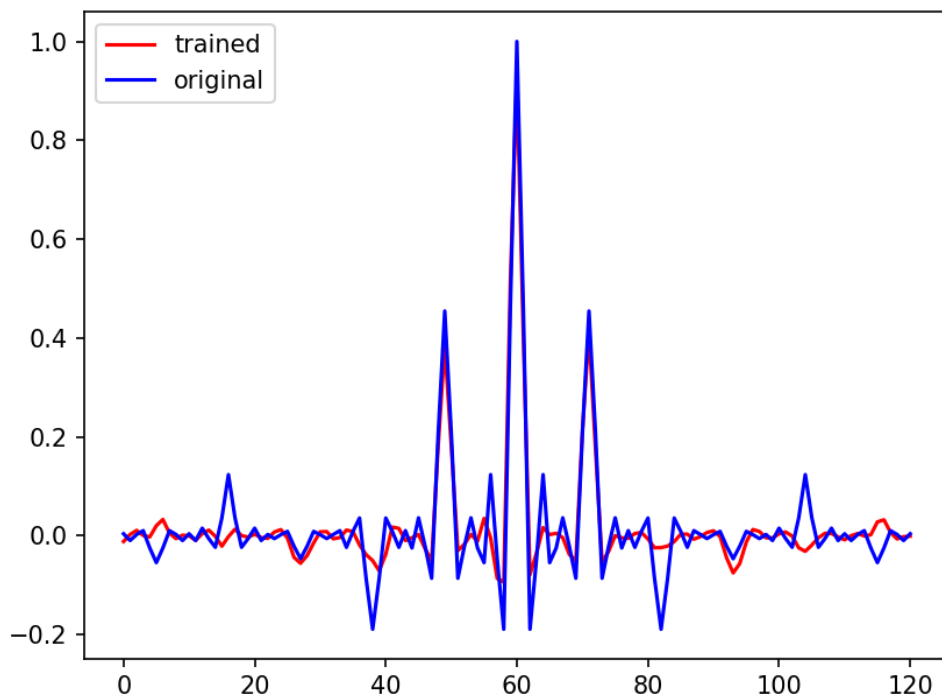
## ERROR PLOTTED GRAPH

Figure 1



## RESULT PLOTTED GRAPH

Figure 1



## RESULT

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

## GITHUB LINK

[Subhiksha18vic/neuro-fuzzy-inference-system-implementation](https://github.com/Subhiksha18vic/neuro-fuzzy-inference-system-implementation)  
[\(github.com\)](https://github.com)