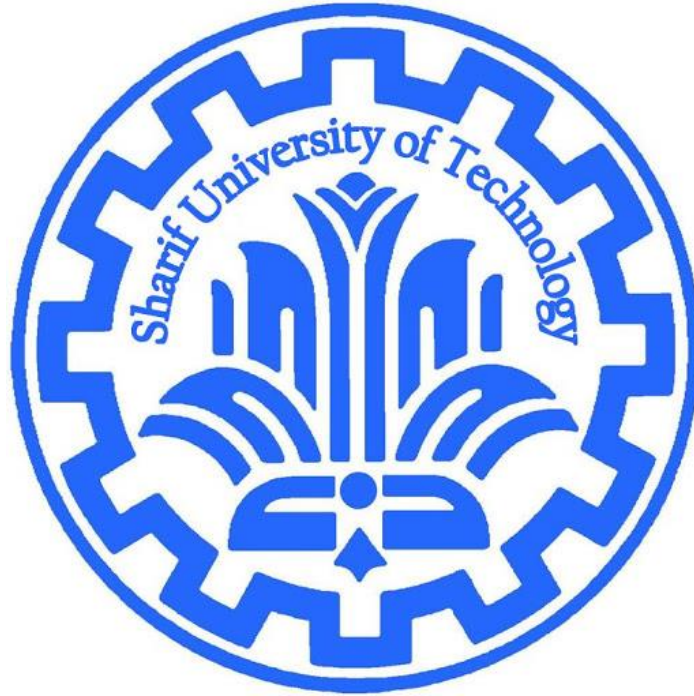


In the name of God



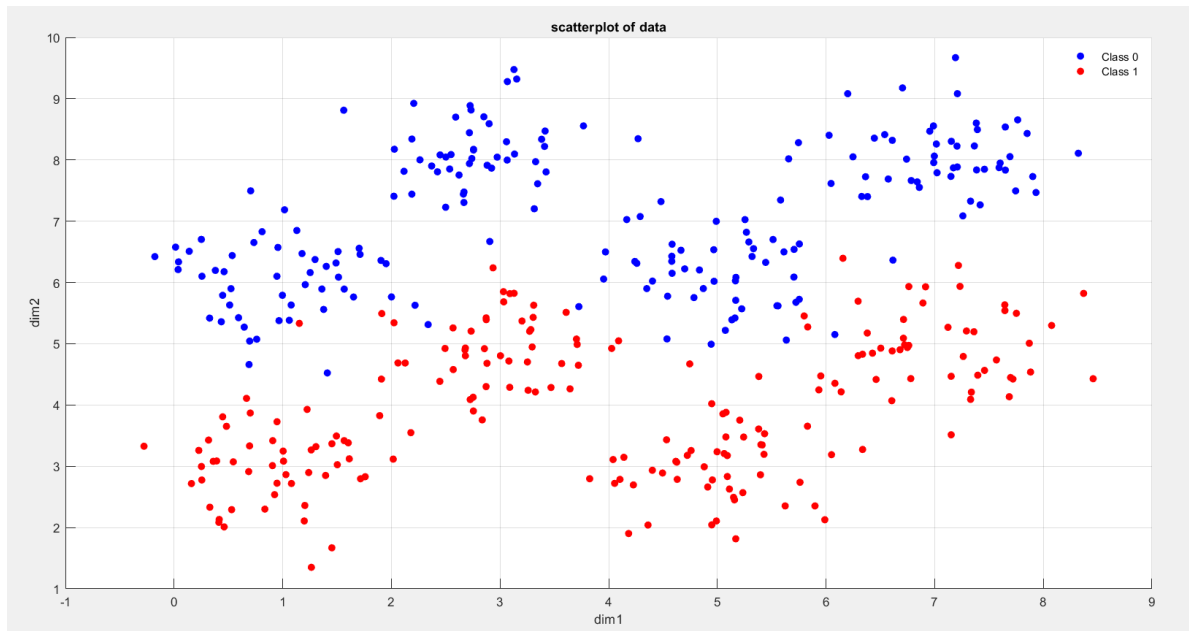
Computational Intelligence Computer HW2 Ex1

Ahmadreza Tavana: 98104852

Professor: Dr. Hajipour

# Question 1

## Part a



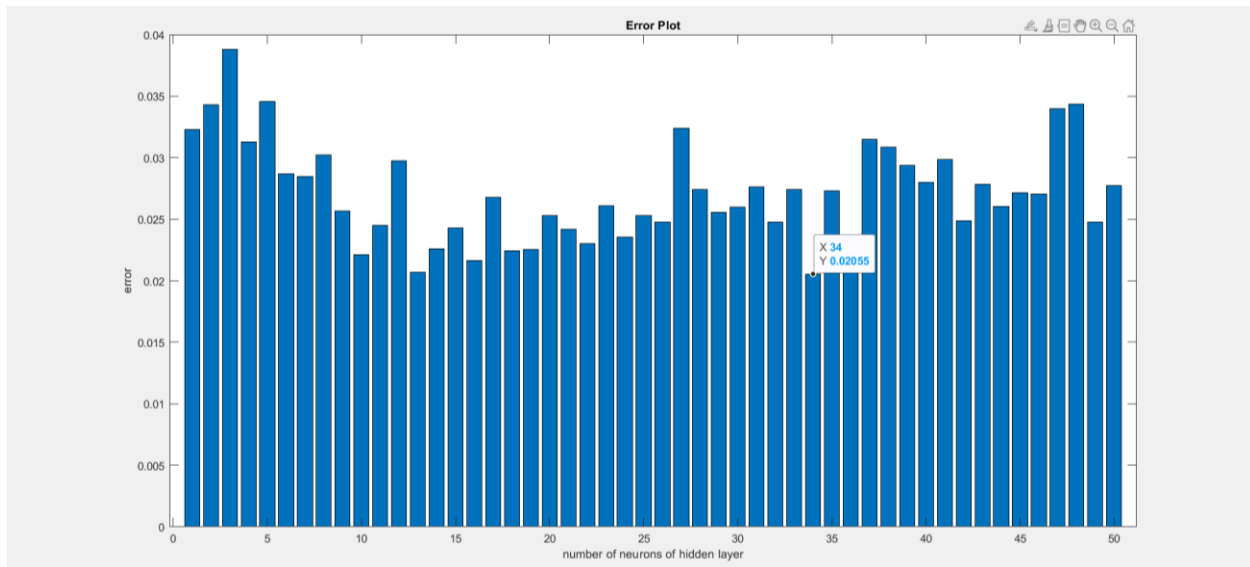
## Part b

In this part, as I wrote in my code as comment, I chose the first 70% of my data as the training data and 30% of the end of the data as the validation data.

## Part c

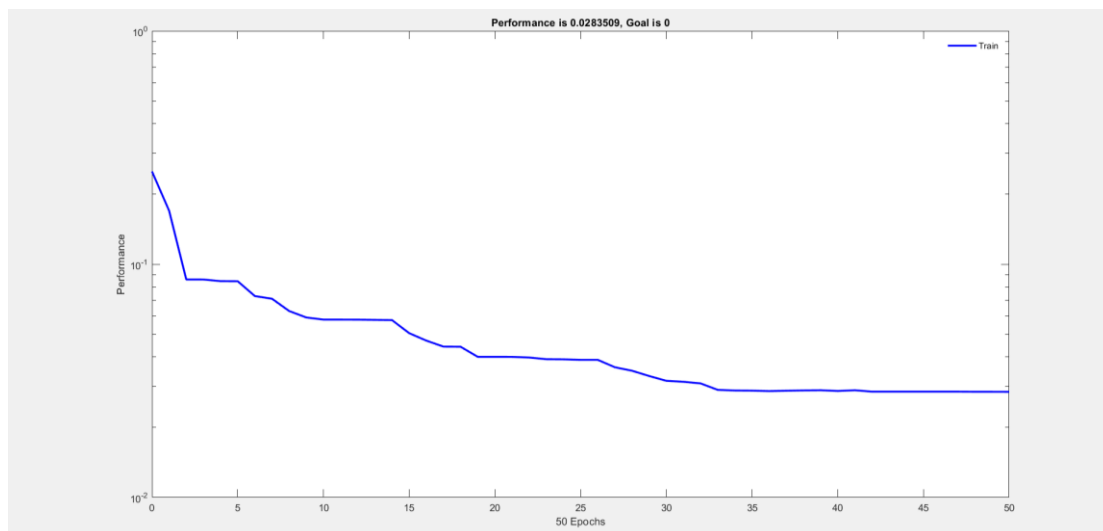
In this part I trained 50 different neural networks with different number of neurons in their hidden layer from 1 to 50 and I trained each NN 3 times and then calculate the error of each NN and at last I plot the error of each NN with different number of neurons on hidden layer of them. As I put in the below plot, the best result is NN with 34 neurons. (Be careful that we get different conclusions in each run and I just put result of one of my runs in below.)

Best number of neurons of hidden layer = 34



## Part d

In this part I did the same as the previous part and try my NN in different number of neurons in hidden layer and different size of radius for distance function and then calculate the error of each NN and print the minimum as the final answer. (Be careful that we get different conclusions in each run and I just put result of one of my runs in below.) For comparing these two algorithms, the RBF neural network worked better because as we can see in the part 1, the data are distributed circularly in some groups and RBF NN can separate them perfectly.



Best number of neurons of hidden layer: 39

Best radius for our RBF NN: 2