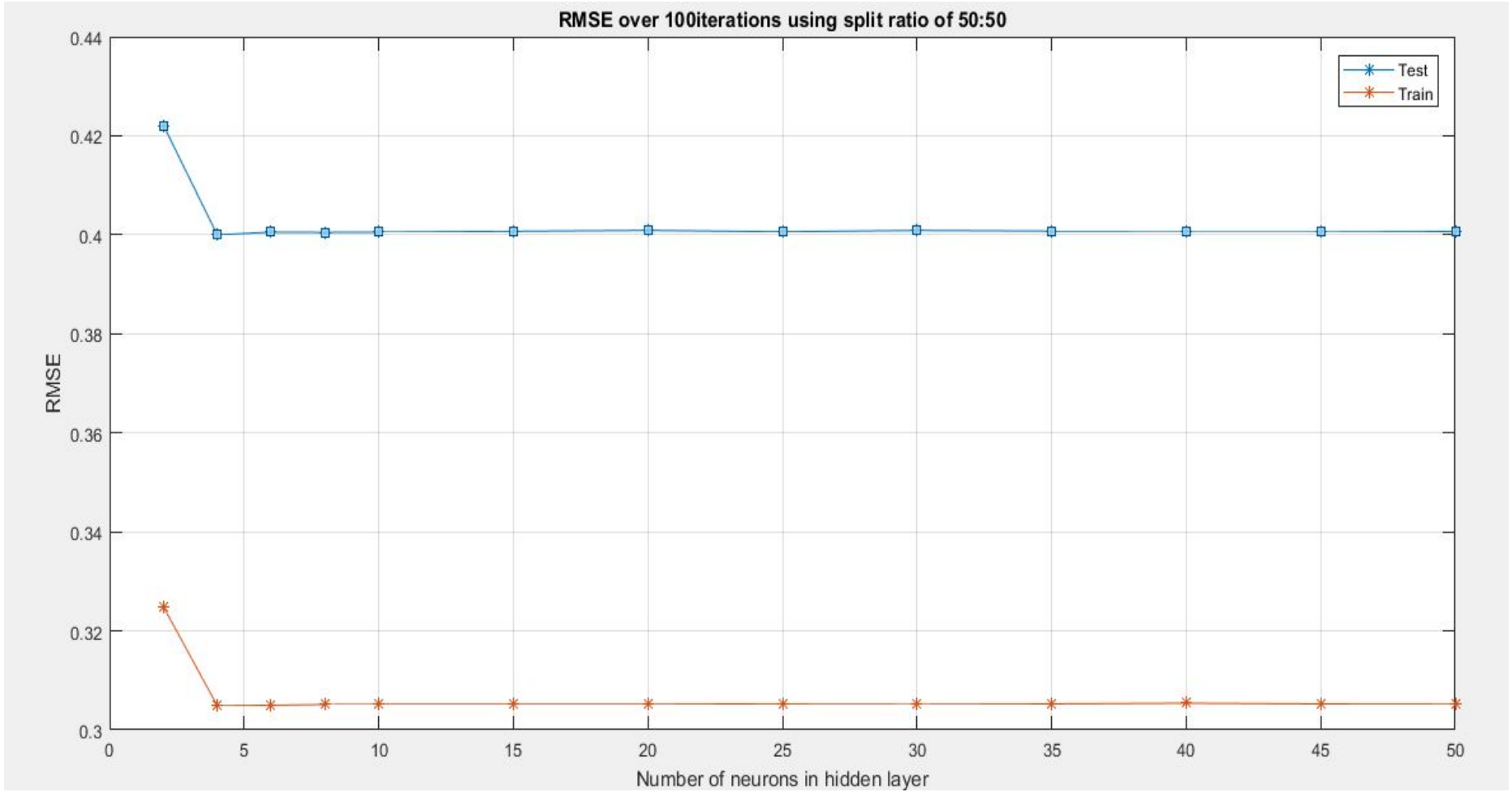
Prediction of pH of milk using ANN

Project summary

- We need to create neural network to predict pH of the milk.
- We divided that data into 2 part training set and testing set
- We made neural network using backpropagation
- We splitted the given data into ratio of 50:50 and 80:20, then found out the RMSE for both training and test samples to get accuracy.

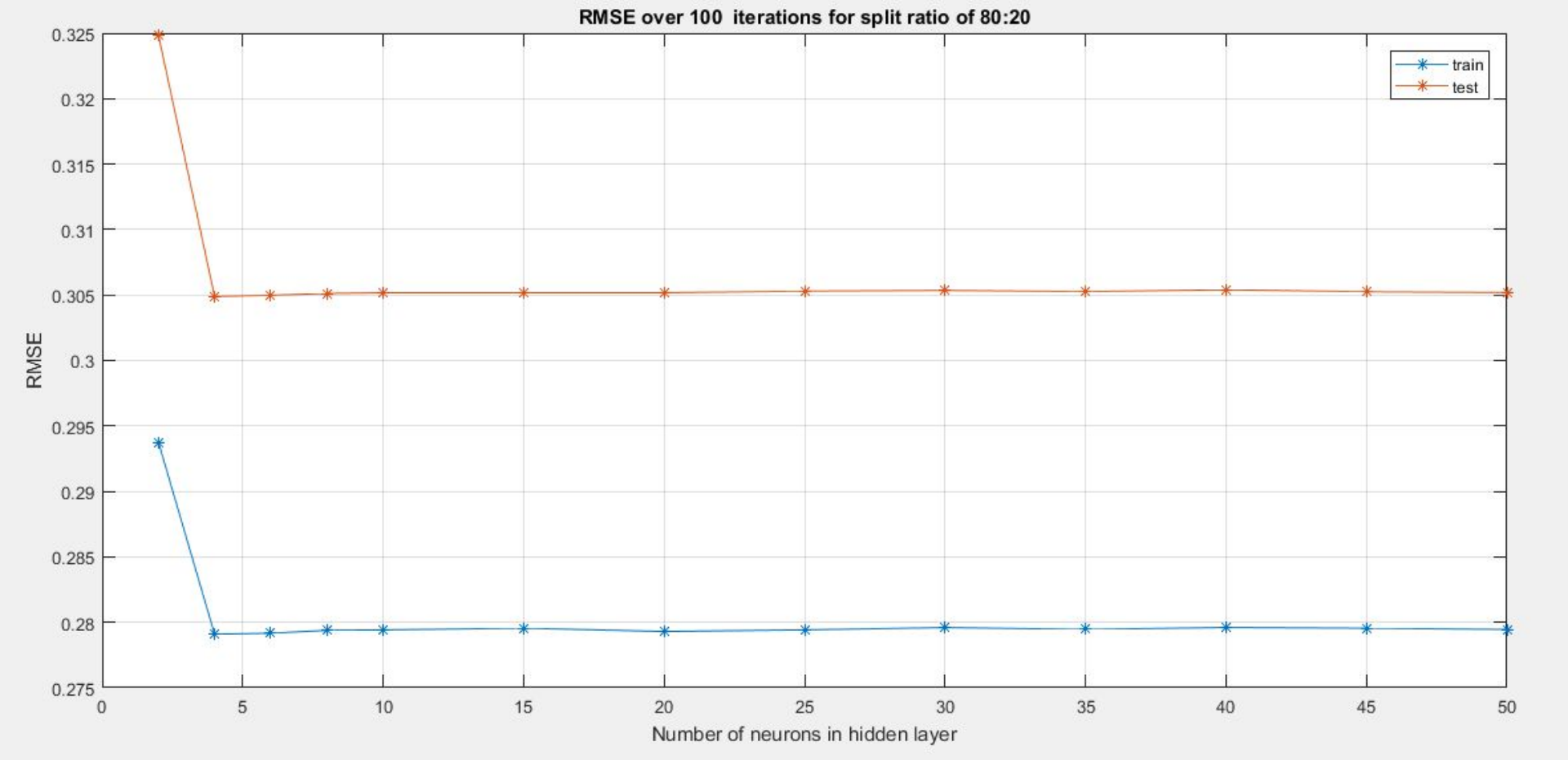
Results for split ratio of 50:50

Number of neurons		2	4	10	20	35	50
Train	minimum	0.0038	4.5*10^-4	7.16*10^-4	6.63*10^-4	6.9*10^-4	5.85*10^-4
	maximum	1.1636	1.1651	1.1655	1.1661	1.1660	1.1661
	RMSE	0.3249	0.3049	0.3052	0.3052	0.3053	0.3052
Test	minimum	0.0033	6.338*10^-4	6.68*10^-4	6.93*10^-4	7.054*10^-4	5.82*10^-4
	maximum	1.1636	1.1652	1.1657	1.1662	1.1661	1.1662
	RMSE	0.4221	0.4000	0.4005	0.4009	0.4007	0.4007


RMSE over 100iterations using split ratio of 50:50
Test
Train
RMSE
Number of neurons in hidden layer
0.44
0.42
0.4
0.38
0.36
0.34
0.32
0.3
0
5
10
15
20
25
30
35
40
45
50

Results for split ratio of 80:20

Total no of neurons		2	4	10	20	35	50
Train	Minimum	0.0041	3.66*10^-4	3.53*10^-4	3.35*10^-4	2.88*10^-4	4.12*10^-4
	Maximum	1.1549	1.1561	1.1564	1.1567	1.1569	1.1572
	RMSE	0.2938	0.2791	0.2794	0.2793	0.2795	0.2795
Test	Minimum	0.0070	0.0022	0.0020	0.0018	0.0019	0.0018
	Maximum	1.1592	1.1559	1.1561	1.1564	1.1565	1.1567
	RMSE	0.3249	0.3049	0.3052	0.3052	0.3053	0.3052


RMSE over 100 iterations for split ratio of 80:20
train
test
RMSE
Number of neurons in hidden layer
0.325
0.32
0.315
0.31
0.305
0.3
0.295
0.29
0.285
0.28
0.275
0
5
10
15
20
25
30
35
40
45
50