STAT 9100 Homework 2

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Problem 1

	BP(train)	BP(test)	nnet(train)	nnet(test)
range=0.005	4.698	16.873	2.742	22.580
range=0.01	4.051	14.044	2.933	24.355
range=0.07	3.007	17.631	2.544	24.767
range=0.1	2.658	13.315	2.524	15.944
range=0.7	2.199	13.240	2.678	22.991

	BP(train)	BP(test)	nnet(train)	nnet(test)
decay=0.001	2.998	17.835	1.827	33.398
decay=0.01	3.181	19.565	2.894	21.481
decay=0.1	2.867	15.174	2.374	18.503
decay=1	4.782	15.594	3.296	14.139
decay=10	12.282	21.337	7.477	17.329

	train	test
nnet	7.572	16.038
gamma=0.1	12.330	21.103
gamma=0.2	14.598	22.158
gamma=0.3	14.368	24.676
gamma=0.4	15.265	27.010
gamma=0.5	20.350	27.030
gamma=0.6	22.553	30.000
gamma=0.7	27.601	37.458
gamma=0.8	34.347	46.889
gamma=0.9	46.583	47.748
gamma=1	86.020	78.867

	BP(train)	BP(test)	nnet(train)	nnet(test)
n_hidden=3	18.220	26.091	10.889	20.088
n_hidden=5	15.217	22.394	10.174	17.952
n_hidden=10	12.384	21.506	7.519	17.115
n_hidden=20	11.632	21.594	7.157	16.719
n_hidden=50	11.844	22.683	7.625	17.490

	train	test
nnet	7.513	16.705
m=100	13.941	23.016

	train	test
m=200	10.799	18.467
m=300	8.703	17.085
m=400	7.788	16.612

Problem 2

	BP(train)	BP(test)	nnet(train)	nnet(test)
range=0.005	0.224	0.224	0.016	0.037
range=0.01	0.179	0.178	0.016	0.038
range=0.07	0.163	0.164	0.016	0.037
range=0.1	0.227	0.226	0.016	0.037
range=0.7	0.158	0.158	0.016	0.041

	BP(train)	BP(test)	nnet(train)	nnet(test)
decay=0.001	0.071	0.081	0.000	0.015
decay=0.01	0.134	0.124	0.002	0.026
decay=0.1	0.844	0.850	0.015	0.038
decay=1	0.231	0.224	0.112	0.121
decay=10	0.987	1.008	0.715	0.726

	train	test
nnet	0.112	0.121
gamma=0.005	0.210	0.199
gamma=0.006	0.155	0.155
gamma=0.007	0.156	0.157
gamma=0.008	0.164	0.165
gamma=0.009	0.183	0.183
gamma=0.01	0.191	0.186

	BP(train)	BP(test)	nnet(train)	nnet(test)
n_hidden=3	0.835	0.863	0.155	0.161
n_hidden=5	0.182	0.186	0.133	0.141
n_hidden=10	0.156	0.157	0.113	0.121
n_hidden=20	0.140	0.141	0.101	0.109
n_hidden=50	0.133	0.130	0.094	0.100

	train	test
nnet	0.094	0.100
m=50	0.123	0.123
m=100	0.073	0.081
m=142	0.056	0.064