

ML Testing Results

MLP on MNIST

Number of Epochs (for 50 neurons)	1	2	3	5	10	15	20	50
Av. Error Rates	13.25	10.5	9.21	7.51	7.15	6.55	6.83	6.71
Number of Epochs (for 20 neurons)	1	2	3	5	10	15	20	50
Av. Error Rates	13.28	11.11	10.47	9.72	8.53	7.96	8.59	8.48
Number of Epochs (for 15 neurons)	1	2	3	5	10	15	20	50
Av. Error Rates	13.83	12.96	11.73	10.73	9.65	9.97	9.7	9.22
Number of Epochs (for 10 neurons)	1	2	3	5	10	15	20	50
Av. Error Rates	18.88	14.82	14.35	12.48	10.45	10.57	10.71	9.59

Number of Epochs (for 50 Neurons)	1	2	3	5	10	20	50
Time Taken (min)	0.5	~1	1.5	2.4	4.5	9.3	75
Number of Epochs (with 20 Neurons)	1	2	3	5	10	20	50
Time Taken (min)	~0.5	0.75	~1	1.8	3.7	7.8	19.7
Number of Epochs (for 15 Neurons)	1	2	3	5	10	20	50
Time Taken (min)	0.4	0.85	1.2	2.1	4	8.25	21.5
Number of Epochs (for 10 Neurons)	1	2	3	5	10	20	50
Time Taken (min)	0.3	0.55	~0.8	1.25	2.65	5.6	14.4

Learning Rates η	0.00001	0.0001	0.001	0.005	0.01	0.02	0.03	0.05	0.08
Error Rates	86.68	92.58	64.82	31.22	27.02	13.23	11.01	17.215	19.74
Learning Rates η	0.1	0.15	0.2	0.3	0.5	0.8	1	1.5	2
Error Rates	17.77	7.29	7.32	7.47	6.39	6.79	7.10	10.68	10.87
Learning Rates η	3	5	10	50					
Error Rates	28.36	60.69	91.08	89.72					

Learning Rates η	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
Average Error Rates (5 runs for each η)	12.3	9.0	6.4	6.7	6.7	6.85	6.5	7.2	7.1

Number of Neurons (for 10 Epochs)	1	2	3	5	10	15	20	30	50
Av. Error Rates	90.8	77.43	55.65	18.39	10.69	8.73	8.34	7.94	7.15
Number of Neurons (for 10 Epochs)	60	75	85	100	150	300			
Av. Error Rates	7.84	6.55	6.28	7.51	15.22	26.8			

Number of Neurons (for 10 Epochs)	1	5	10	20	50	60	75	85	100	150	300
Time Taken (min)	0.6	2.5	2.7	3.9	4.5	5.4	6.6	424	8	10.8	39!!