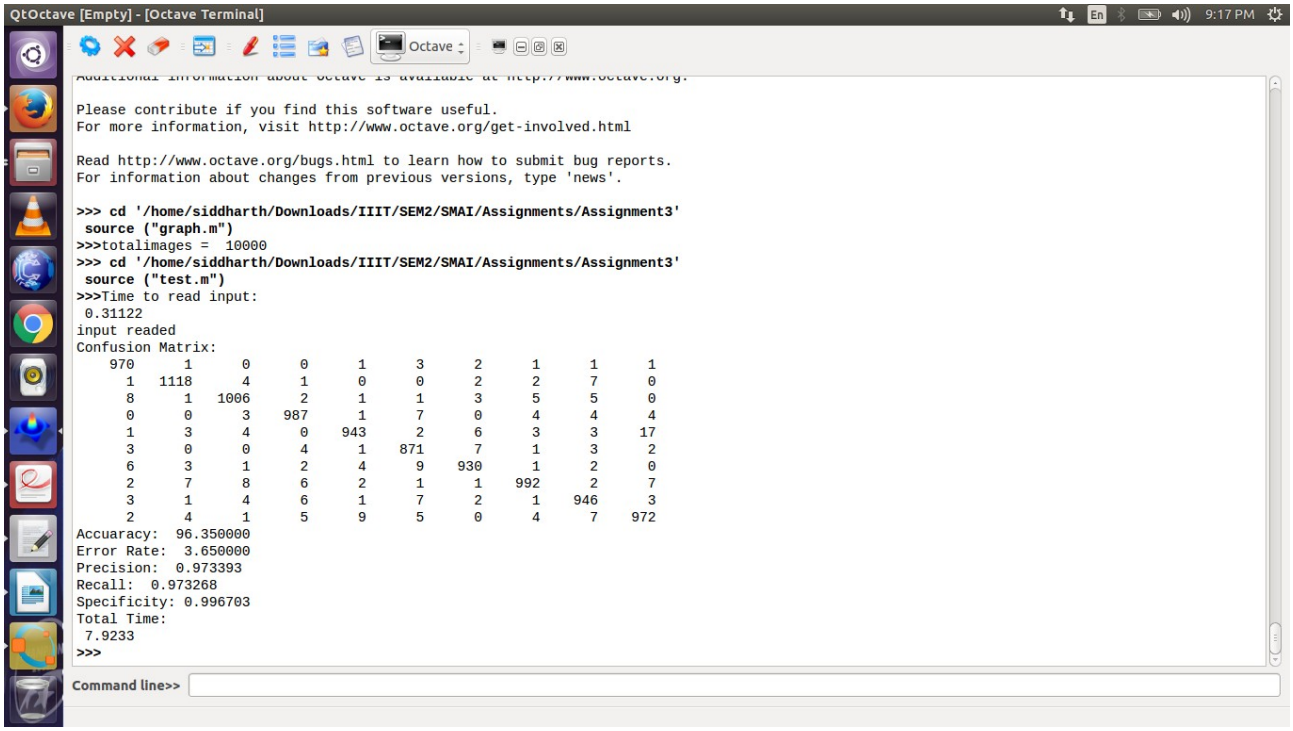
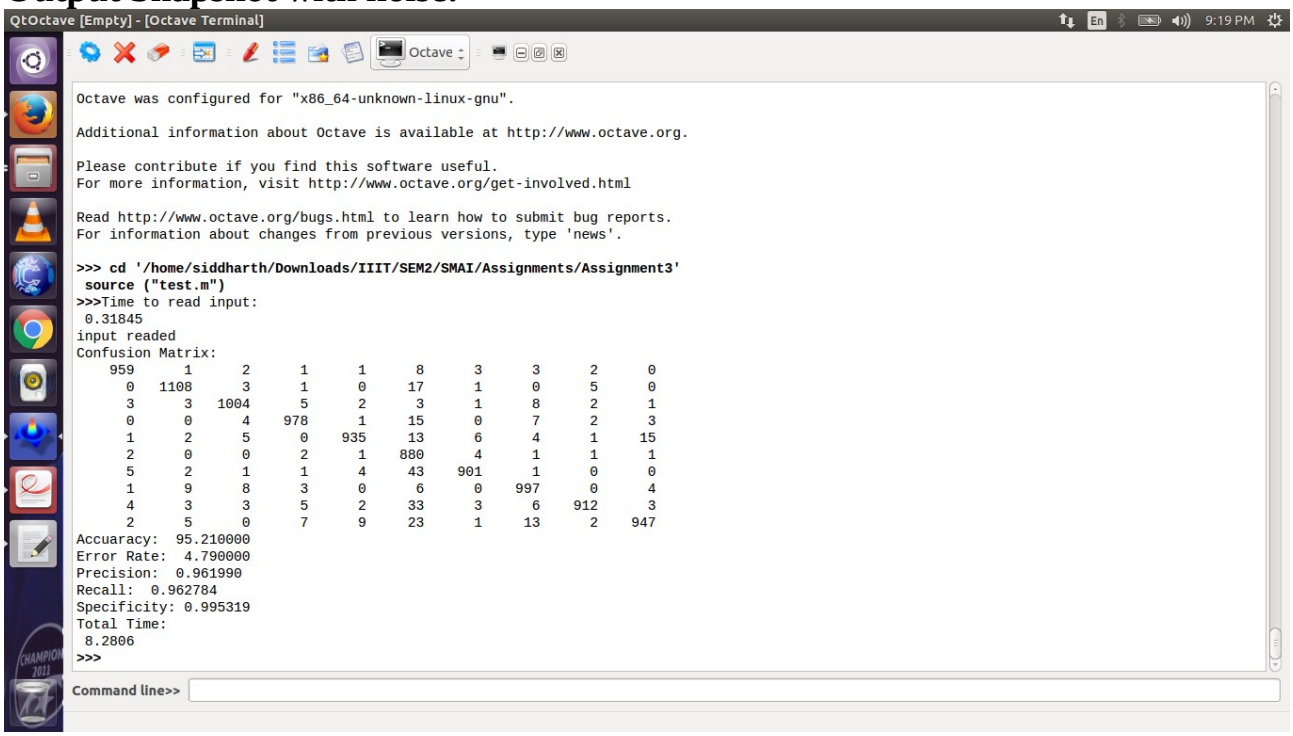
Hand Digit Recognizer
Siddharth Saklecha
201505570

1.

Output Snapshot:



Output Snapshot with noise:



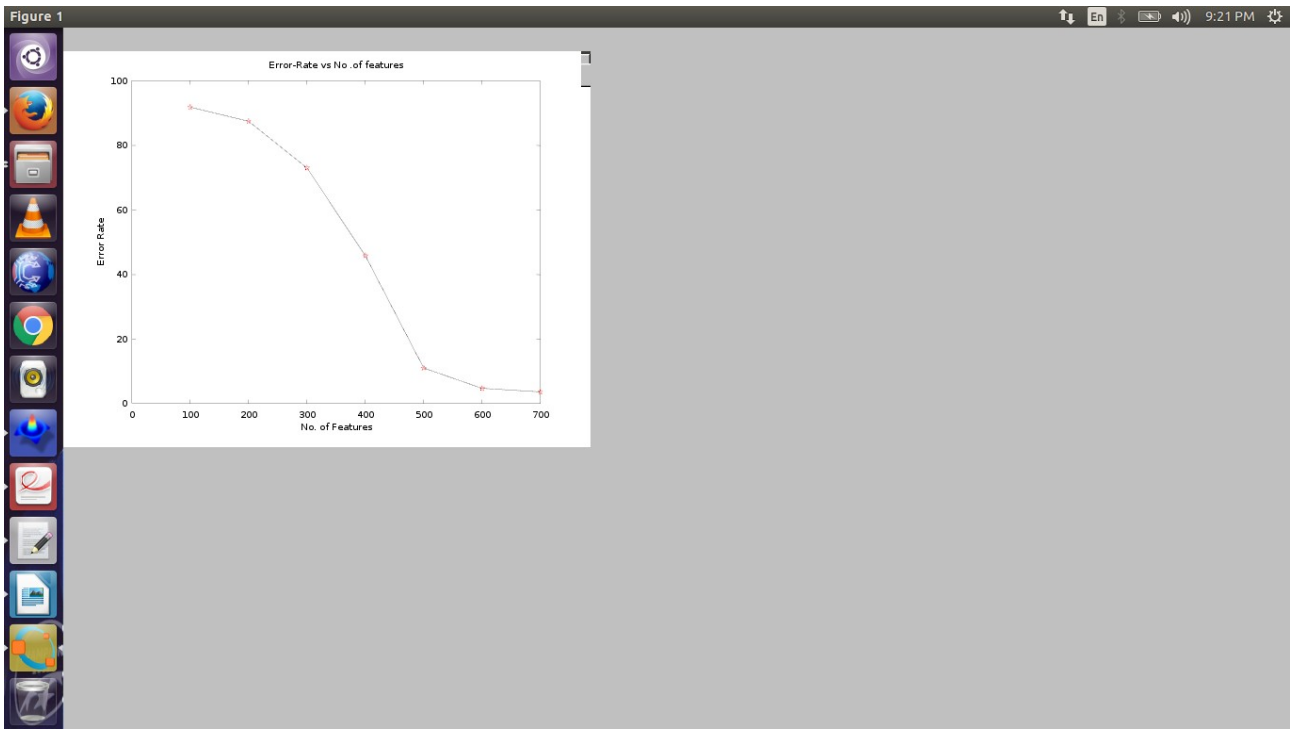


Figure3:Graph For Error Rate vs No. Of Features

1.No. Of features vs Error Rate

Number Of Features	Error Rate
100	91.86
200	87.49
300	73.04
400	45.84
500	11.02
600	4.73
700	3.62

Q2.

1-NN gives better accuracy than BPNN on this dataset. This is because dataset is well formulated with no noise and missing values. On dataset with more noise BPNN will give more accuracy.

Time to train BPNN is less than 1-NN.

classifier	preprocessing	accuracy	Error rate	precision	recall	specificity
Neural NW	none	95.35	2.65	0.9734	0.9732	0.9967
1NN	none	96.33	4.67	0.9534	0.9530	0.9878
5-fold	none	94.12	5.88	0.9434	0.9329	0.9666
Neural NW	adding noise weight decay,	95.21 75.32	3.79 24.68	0.9619 0.7442	0.9627 0.7633	0.9953 0.9191
1NN	adding noise,	92.92	7.08	0.9022	0.9111	0.9242
5-fold	adding noise weightdecay,	94.31 70.11	5.69 29.89	0.9655 0.7042	0.9627 0.7133	0.9753 0.8991