Question 5: Learning With Restarts

testPenData Accuracy

Max: 0.909376786735

Average: 0.90354488279

Standard Deviation: 0.0078864932642

testCarData Accuracy

Max: 0.875654450262

Average: 0.839790575916

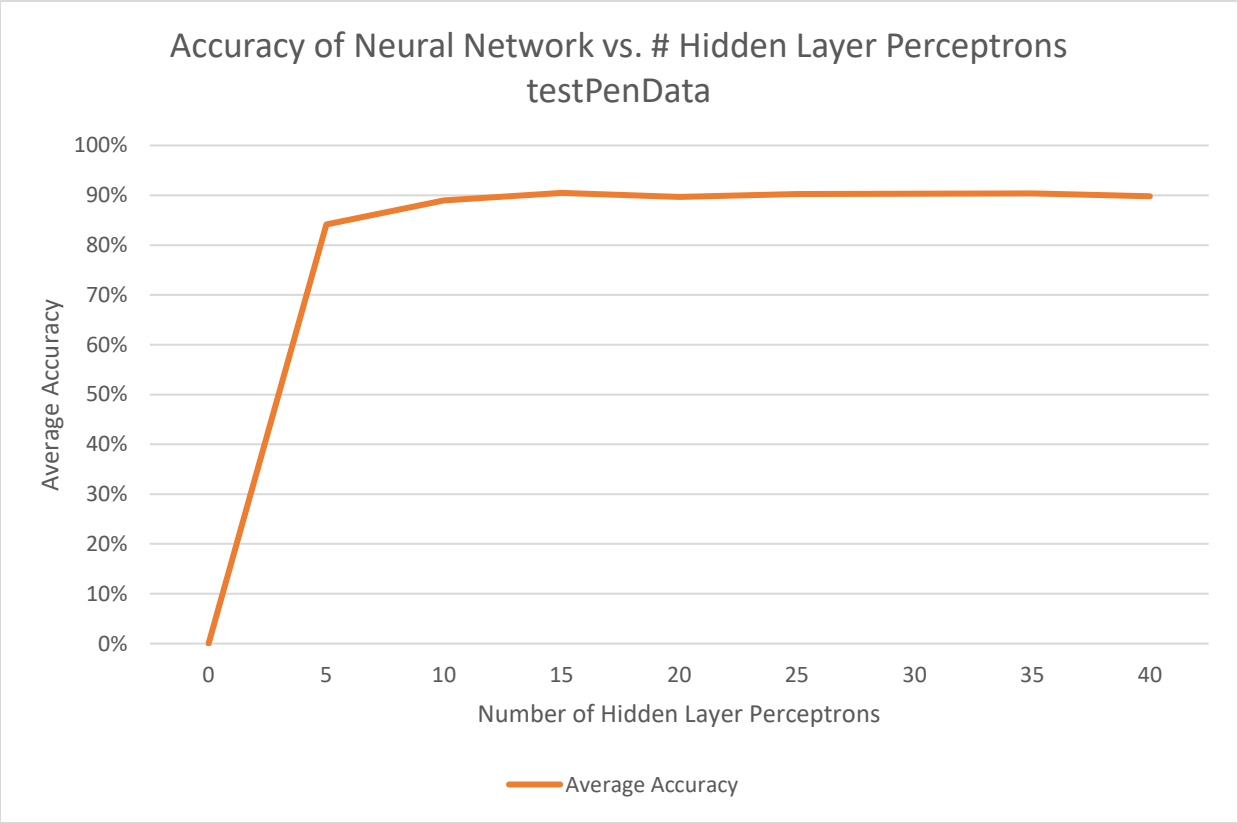
Standard Deviation: 0.02278915722

Yue Gu

Question 6: Varying The Hidden Layer

Data from testPenData Runs

Perceptrons	0	5	10	15	20	25	30	35	40
Max Accuracy	0.0000	0.8453	0.8988	0.9082	0.9017	0.9065	0.9079	0.9065	0.9062
Average Accuracy	0.0000	0.8416	0.8899	0.9047	0.8969	0.9027	0.9034	0.9035	0.8979
Standard Deviation	0.0000	0.0019	0.0065	0.0037	0.0030	0.0026	0.0039	0.0024	0.0070

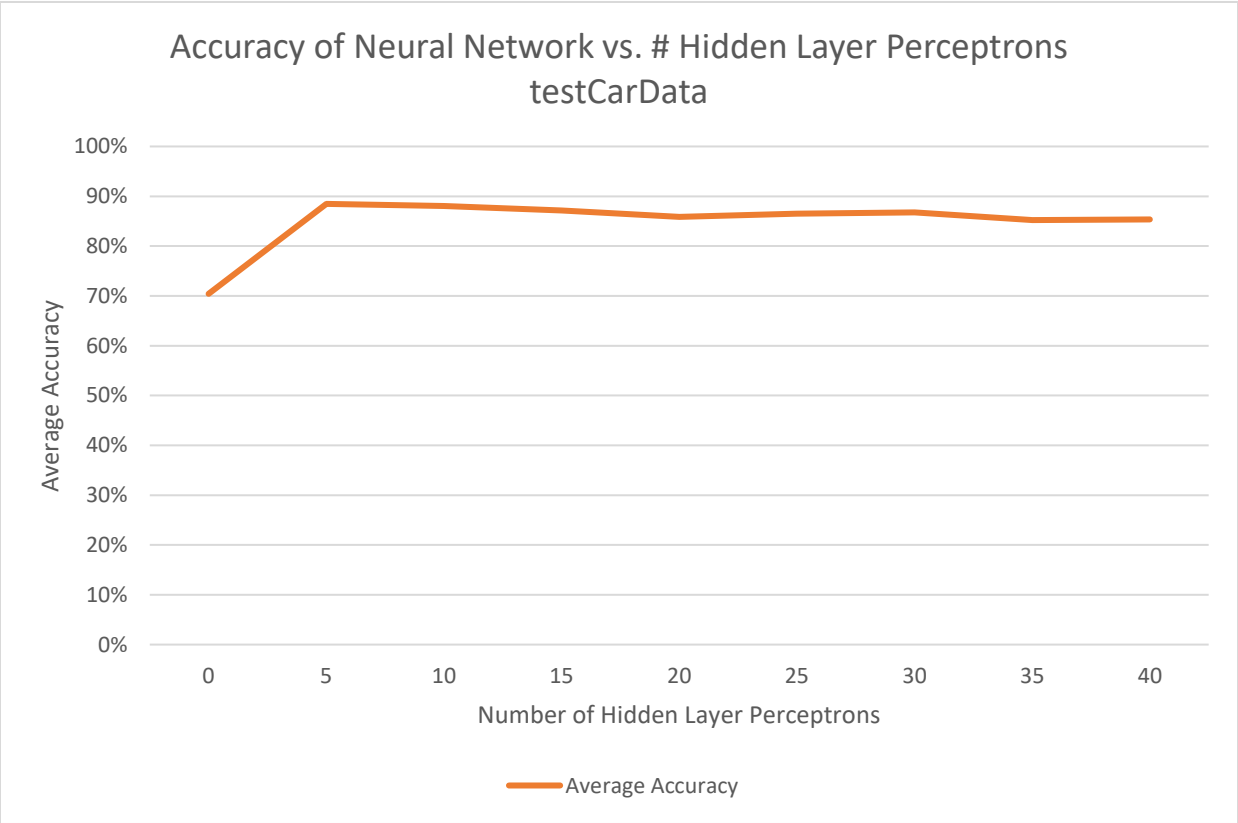


For the testPen dataset, the improvement in average accuracy for the neural networks seems to fall off dramatically after 5 hidden layer perceptrons, with little discernible difference in average accuracy among networks with 10-40 perceptrons. In this case, the neural net was unable to function with 0 perceptrons.

Yue Gu

Data from testCarData Runs

Perceptrons	0	5	10	15	20	25	30	35	40
Max Accuracy	0.7042	0.9018	0.8953	0.8894	0.8691	0.8835	0.8770	0.8665	0.8632
Average Accuracy	0.7042	0.8847	0.8805	0.8715	0.8588	0.8652	0.8675	0.8521	0.8537
Standard Deviation	0.0000	0.0142	0.0181	0.0133	0.0077	0.0114	0.0103	0.0119	0.0061



For the testCar dataset, the improvement in average accuracy for the neural networks seems to fall off *at* 5 hidden layer perceptrons, with little discernible difference in average accuracy among networks with 5-40 perceptrons. In fact, the average accuracy trended slightly down as the number of perceptrons increased. However, the network still boasted 70% accuracy with 0 hidden layer perceptrons.