

UNIVERSITY AT BUFFALO

CSE 574 INTRODUCTION TO MACHINE
LEARNING, SPRING 2017

Programming Assignment 1: Handwritten Digits Classification

Project Report

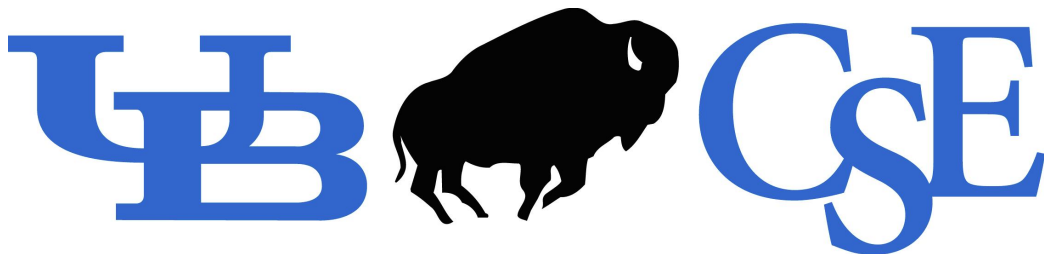
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March 5, 2017



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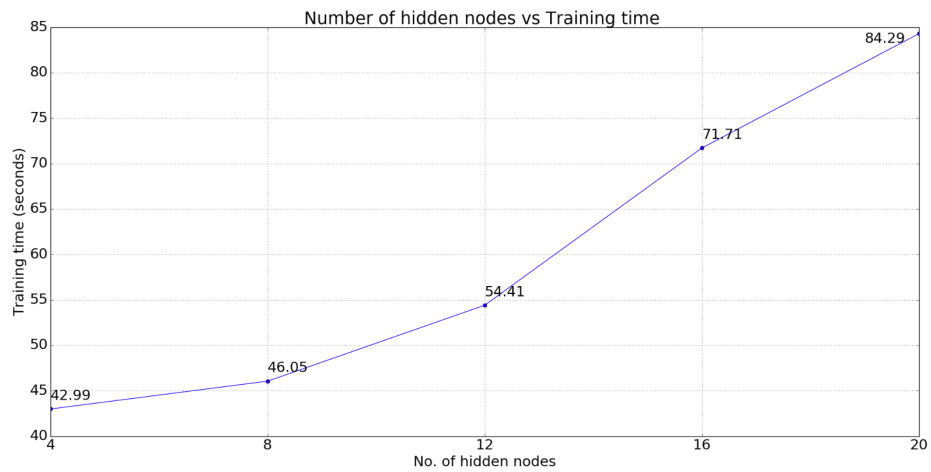
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1 Choosing the hyper-parameters for Neural Network

Explanation here

No. of hidden nodes	Training Time (seconds)
4	42.99
8	46.05
12	54.41
16	71.71
20	84.29

Table 1: Comparison of hidden nodes and training time

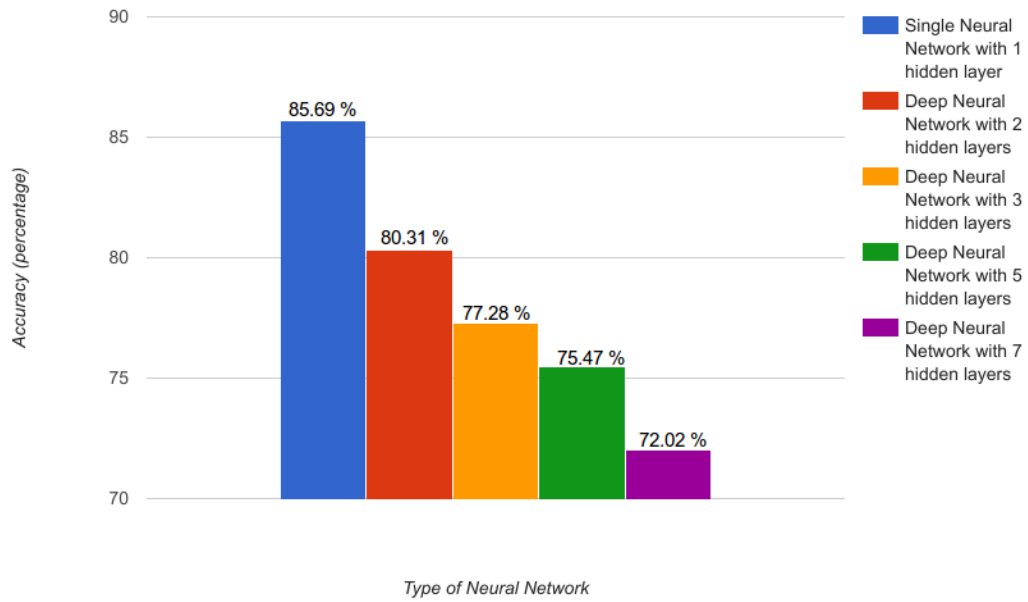


2 Comparison of performance of single vs. deep neural network

No. of hidden layers / Type of neural network	Accuracy (percentage)	Training time (seconds)
1 / Single Neural Network	85.69 %	113.46
2 / Deep Neural Network	80.31 %	172.09
3 / Deep Neural Network	77.28 %	173.75
5 / Deep Neural Network	75.47 %	203.78
7 / Deep Neural Network	72.02 %	243.5

Table 2: Comparison of Neural Network and Deep Neural Network

2.1 Comparison of accuracy in single neural network and the deep neural network



2.2 Comparison of learning time in single neural network and the deep neural network

