# Classification

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## Classification Algorithms used

* Neural Network

## Result

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| Performance of Neural Network | | | |
| Parameters | Time to Train (seconds) | Time to Test (seconds) | Accuracy |
| Batch\_size=100, learning rate=0.001, iterations=500 | 9 | 1 | 75.26 |
| Batch\_size=100, learning rate=0.001, iterations=1000 | 13 | 1 | 96.08 |
| Batch\_size=100, learning rate=0.001, iterations=2000 | 23 | 1 | 98.06 |
| Batch\_size=100, learning rate=0.001, iterations=5000 | 53 | 1 | 99.11 |
|  |  |  |  |
| Batch\_size=100, learning rate=0.0001, iterations=2000 | 23 | 1 | 78.49 |
| Batch\_size=100, learning rate=0.0001, iterations=5000 | 53 | 1 | 97.32 |
| Batch\_size=100, learning rate=0.0001, iterations=8000 | 1:23 | 1 | 97.47 |
| Batch\_size=100, learning rate=0.0001, iterations=15000 | 2:33 | 1 | 98.71 |
|  |  |  |  |
| Batch\_size=10, learning rate=0.001, iterations=2000 | 9 | 0 | 94.76 |
| Batch\_size=10, learning rate=0.001, iterations=5000 | 17 | 0 | 98.67 |
| Batch\_size=10, learning rate=0.001, iterations=8000 | 25 | 0 | 99.34 |
| Batch\_size=10, learning rate=0.001, iterations=15000 | 43 | 0 | 99.57 |

## Discussions and Conclusion

Overall neural network gave very good results. Batch size=10, learning rate=0.001, iterations=15000 gave best results in relatively shorter peroid of time. I have not done any new preprocessing that gave good results. I used normalization and scaling. I think deskewing would have improved the results.