CNN for MNSIT Digits

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| AdamOptimizer: | GradientDescentOptimizer: | AdagradOptimizer: |
| step 0, training accuracy 0.08  step 100, training accuracy 0.92  step 200, training accuracy 0.94  step 300, training accuracy 0.96  step 400, training accuracy 0.96  test accuracy 0.943  Time for building convnet:  119651 | step 0, training accuracy 0.16  step 100, training accuracy 0.18  step 200, training accuracy 0.1  step 300, training accuracy 0.3  step 400, training accuracy 0.24  test accuracy 0.3269  Time for building convnet:  120323 | step 0, training accuracy 0.04  step 100, training accuracy 0.34  step 200, training accuracy 0.24  step 300, training accuracy 0.42  step 400, training accuracy 0.48  test accuracy 0.5352  Time for building convnet:  105014 |
| Filter size: 32,64,1024 | Filter size: 16, 36, 128 |  |
| step 0, training accuracy 0.08  step 100, training accuracy 0.92  step 200, training accuracy 0.94  step 300, training accuracy 0.96  step 400, training accuracy 0.96  test accuracy 0.943  Time for building convnet:  119651 | step 0, training accuracy 0.16  step 100, training accuracy 0.04  step 200, training accuracy 0.06  step 300, training accuracy 0.04  step 400, training accuracy 0.02  test accuracy 0.0612  Time for building convnet:  36761 |  |
| Conclusion: AdamOptimizer with filter size(32,64,1024) have the best accuracy(0.943) | | |

CNN for Zalando Fashion:

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| AdamOptimizer: | GradientDescentOptimizer: | AdagradOptimizer: |
| step 0, training accuracy 0.06  step 100, training accuracy 0.76  step 200, training accuracy 0.84  step 300, training accuracy 0.82  step 400, training accuracy 0.8  test accuracy 0.8224  Time for building convnet:  118288 | step 0, training accuracy 0.14  step 100, training accuracy 0.18  step 200, training accuracy 0.2  step 300, training accuracy 0.46  step 400, training accuracy 0.48  test accuracy 0.457  Time for building convnet:  83423 | step 0, training accuracy 0.06  step 100, training accuracy 0.32  step 200, training accuracy 0.32  step 300, training accuracy 0.42  step 400, training accuracy 0.44  test accuracy 0.5579  Time for building convnet:  88964 |
| Filter size:32,64,1024 | Filter size:16, 36, 128 |  |
| step 0, training accuracy 0.06  step 100, training accuracy 0.76  step 200, training accuracy 0.84  step 300, training accuracy 0.82  step 400, training accuracy 0.8  test accuracy 0.8224  Time for building convnet:  118288 | step 0, training accuracy 0.08  step 100, training accuracy 0.62  step 200, training accuracy 0.8  step 300, training accuracy 0.76  step 400, training accuracy 0.76  test accuracy 0.7636  Time for building convnet:  36202 |  |
| Conclusion: AdamOptimizer with filter size(32,64,1024) have the best accuracy(0.8224) | | |