SVHN RESULTS

The results are on a 3 layer CNN as specified in the paper. Data is cropped and later augmented by rotation and scaling.

fullyconnected (Num. of hidden units in the fully connected layer(dropout/dropconnect))
p=0.5 (Probability of choosing an element of the mask in the dropout/dropconnect layer as 1)
Learning rate decay=0.5 (unless stated otherwise)
Momentum=0.9 (unless stated otherwise)
Models with the same parameters are run with different random permutations of data to implement the voting technique as in the paper.

1. test_dropconnect_cropscalrot(batch_size = 20,fileName='svhndropconnect1',nkerns = [32,32,64],learning_rate = 0.1,verbose=True,n_epochs = 200,activation=relu,fullyconnected=128,p=0.5) - training @ iter = 38500
   epoch 9, minibatch 4285/4285, validation error 54.398907 %
   epoch 9, minibatch 4285/4285, test error of best model 36.087625 %

2. test_dropconnect_cropscalrot(batch_size = 20,fileName='svhndropconnect12',nkerns = [64,64,128],learning_rate = 0.1,verbose=True,n_epochs = 6,activation=relu,fullyconnected=128,p=0.5) - epoch 6, minibatch 4285/4285, validation error 39.781421 %
   Optimization complete.
   Best validation score of 39.781421 % obtained at iteration 21425, with test performance 38.120676 %
   The training process for function test_dropconnect_cropscalrot ran for 152.30m

3. test_dropconnect_cropscalrot(batch_size = 20,fileName='svhndropconnect2',nkerns = [32,32,64],learning_rate = 0.1,verbose=True,n_epochs = 200,activation=relu,fullyconnected=128,p=0.5) -training @ iter = 85500
   training @ iter = 85600
   epoch 20, minibatch 4285/4285, validation error 45.478142 %
   epoch 20, minibatch 4285/4285, test error of best model 35.549577 %

4. test_dropconnect_cropscalrot(batch_size = 20,fileName='svhndropconnect3',nkerns = [32,32,64],learning_rate = 0.1,verbose=True,n_epochs = 200,activation=relu,fullyconnected=128,p=0.5) - training @ iter = 42800
   epoch 10, minibatch 4285/4285, validation error 36.024590 %
   epoch 10, minibatch 4285/4285, test error of best model 34.788624 %
   training @ iter = 42900

5. test_dropout_cropscalrot(batch_size = 20,fileName='svhndropout2',nkerns = [32,32,64],learning_rate = 0.1,verbose=True,n_epochs = 1000,activation=relu,fullyconnected=128,p=0.5) - Best validation score of 51.625683 % obtained at iteration 467065, with test performance 66.817832 %.The training process for function test_dropout_cropscalrot ran for 60.74m

6. - test_dropout_cropscalrot(batch_size = 20,fileName='svhndropout2',nkerns = [64,64,64],learning_rate = 0.1,verbose=True,n_epochs = 1000,activation=relu,fullyconnected=128,p=0.5) - Best validation score of 40.450820 % obtained at iteration 647035, with test performance 35.614912 %.The training process for function test_dropout_cropscalrot ran for 76.12m

7. test_dropconnect_cropscalrot(batch_size = 20,fileName='svhndropconnectfinal',nkerns = [64,128,128],learning_rate = 0.1,verbose=True,n_epochs = 6,activation=relu,fullyconnected=128,p=0.5) - Best validation score of 35.628415 % obtained at iteration 25710, with test performance 29.100692 %.The training process for function test_dropconnect_cropscalrot ran for 120.21m

8. test_dropout_cropscalrot(batch_size = 20,fileName='svhndropout3',nkerns = [32,32,64],learning_rate = 0.1,verbose=True,n_epochs = 1000,activation=relu,fullyconnected=128,p=0.5) - Best validation score of 39.890710 % obtained at iteration 149975, with test performance 45.019216 %.The training process for function test_dropout_cropscalrot ran for 59.64m

9. test_dropout_cropscalrot(batch_size = 20,fileName='svhndropout24',nkerns = [256,256,512],learning_rate = 0.1,verbose=True,n_epochs = 1000,activation=relu,fullyconnected=128,p=0.5) - training @ iter = 38500
epoch 9, minibatch 4285/4285, validation error 35.997268 % .epoch 9, minibatch 4285/4285, test error of best model 35.242121 %

10. test_dropout_cropscalrot(batch_size = 20,fileName='svhndropout1',nkerns = [32,32,64],learning_rate = 0.1,verbose=True,n_epochs = 1000,activation=relu,fullyconnected=128,p=0.5) - Best validation score of 39.357923 % obtained at iteration 569905, with test performance 46.998463 % .The training process for function test_dropout_cropscalrot ran for 59.59m

11. test_dropout_cropscalrot(batch_size = 20,fileName='svhndropout23',nkerns = [64,128,128],learning_rate = 0.1,verbose=True,n_epochs = 1000,activation=relu,fullyconnected=128,p=0.5) - Best validation score of 33.551913 % obtained at iteration 621325, with test performance 31.902383 %

12.test_dropconnect_cropscalrot(batch_size = 20,fileName='svhndropconnectfinal2',nkerns = [64,128,128],learning_rate = 0.1,verbose=True,n_epochs = 60,activation=relu,fullyconnected=128,p=0.5) - epoch 7, minibatch 4285/4285, validation error 28.060109 % epoch 7, minibatch 4285/4285, test error of best model 44.277479 %

13. test_dropconnect_cropscalrot(batch_size = 20,fileName='svhndropconnect3',nkerns = [128,128,128],learning_rate = 0.1,verbose=True,n_epochs = 200,activation=relu,fullyconnected=128,p=0.5) - training @ iter = 25700
epoch 6, minibatch 4285/4285, validation error 28.210383 %
epoch 6, minibatch 4285/4285, test error of best model 30.672560 %

14. test_dropconnect_cropscalrot(batch_size = 20,fileName='svhndropconnect2',nkerns = [64,128,128],learning_rate = 0.1,verbose=True,n_epochs = 200,activation=relu,fullyconnected=128,p=0.5)- training @ iter = 34200
epoch 8, minibatch 4285/4285, validation error 46.844262 %
epoch 8, minibatch 4285/4285, test error of best model 29.296695 %

15.test_dropconnect_cropscalrot(batch_size = 20,fileName='svhndropconnect123',nkerns = [64,128,256],learning_rate = 0.1,verbose=True,n_epochs = 6,activation=relu,fullyconnected=256,p=0.5)- epoch 5, minibatch 4285/4285, validation error 25.478142 %epoch 5, minibatch 4285/4285, test error of best model 23.950807 %

16-15.test_dropconnect_cropscalrot(batch_size = 20,fileName='svhndropconnect123',nkerns = [64,128,128],learning_rate = 0.1,verbose=True,n_epochs = 6,activation=relu,fullyconnected=128,p=0.5)- At the end of 9 epochs we have epoch 9, minibatch 3296/3296, validation error 23.961749%
epoch 9, minibatch 3296/3296, test error of best model 25.634128 %

17) test_lenet_cropscalrot(learning_rate=0.1, n_epochs=200, nkerns=[32, 32,64],
batch_size=20, verbose=True, fileName = 'SVHN_fully128',fullyconnected=128,activation=relu)
The training process for function test_lenet_cropscalrot ran for 48.01m
Best validation score of 41.243169 % obtained at iteration 25710, with test performance 36.810146

18)test_lenet_cropscalrot(learning_rate=0.1, n_epochs=200, nkerns=[32, 32,64],
batch_size=20, verbose=True, fileName = 'SVHN_fully128_Whitened',fullyconnected=128,activation=relu)

The training process for function test_lenet_cropscalrot ran for 33.50m
Best validation score of 56.311475 % obtained at iteration 385650, with test performance 50.749424 %

19) test_lenet_cropscalrot(learning_rate=0.1, n_epochs=200, nkerns=[32, 32,64],
batch_size=20, verbose=True, fileName = 'SVHN_fully1281',fullyconnected=128,activation=relu)

The training process for function test_lenet_cropscalrot ran for 32.31m
Best validation score of 41.707650 % obtained at iteration 21425, with test performance 44.396618 %

20)
test_lenet_cropscalrot(learning_rate=0.01, n_epochs=200, nkerns=[32, 32,64],
batch_size=20, verbose=True, fileName = 'SVHN_fully1281',fullyconnected=128,activation=relu)
The training process for function test_lenet_cropscalrot ran for 38.04m
Best validation score of 28.265027 % obtained at iteration 51420, with test performance 31.748655 %

21) test_dropconnect(learning_rate=0.1, n_epochs=300, nkerns=[16, 64,20],
batch_size=20, verbose=True, fileName = 'dropConnect_SVHN',fullyconnected=300,activation=relu,p=0.5)

22) test_lenet_cropscalrot(learning_rate=0.1, n_epochs=200, nkerns=[32, 32,64],
batch_size=20, verbose=True, fileName = 'SVHN_fully128_2',fullyconnected=128,activation=relu)

The training process for function test_lenet_cropscalrot ran for 35.65m
Best validation score of 40.109290 % obtained at iteration 25710, with test performance 47.767102 %

23) test_lenet_cropscalrot(learning_rate=0.001, n_epochs=200, nkerns=[32, 32,64],
batch_size=20, verbose=True, fileName = 'SVHN_fully128_2_0.001lr_whiten',
fullyconnected=128,activation=relu)
The training process for function test_lenet_cropscalrot ran for 31.25m
Best validation score of 36.379781 % obtained at iteration 287095, with test performance 44.727133 %

24) test_dropconnect(learning_rate=0.1, n_epochs=300, nkerns=[64, 128,128],
batch_size=20, verbose=True, fileName = 'dropConnect_SVHN',
fullyconnected=128,activation=relu,p=0.5)
epoch 8, minibatch 3296/3296, validation error 24.439891 %
epoch 8, minibatch 3296/3296, test error of best model 26.410453 %