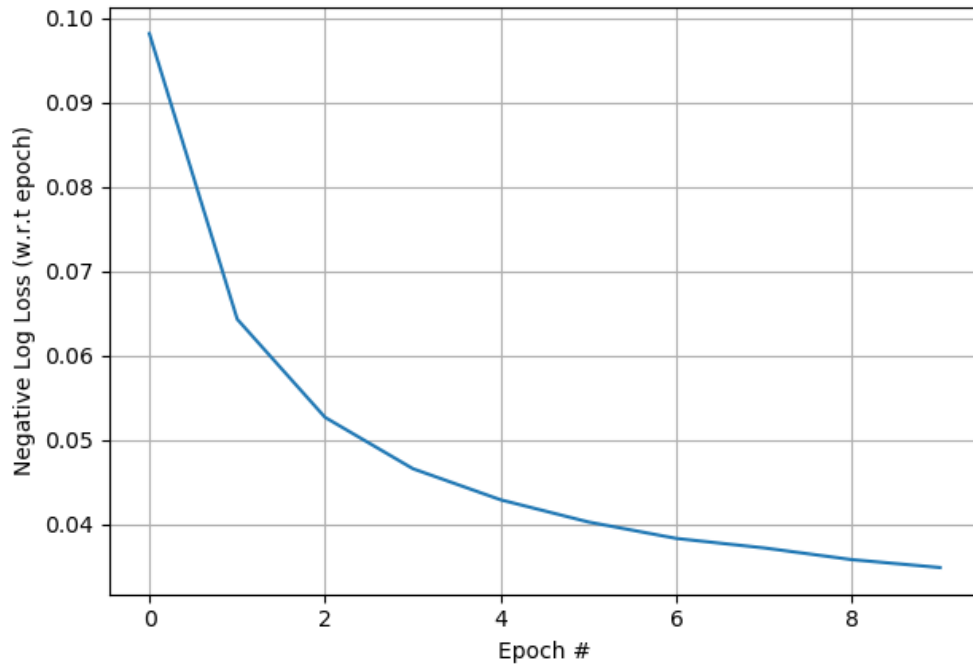
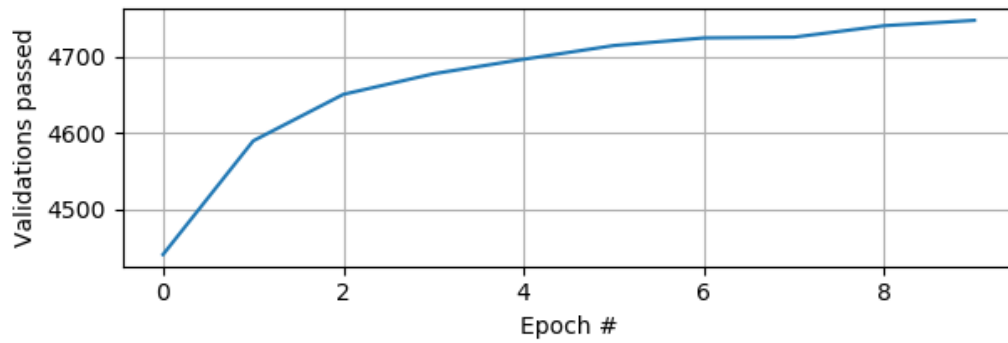
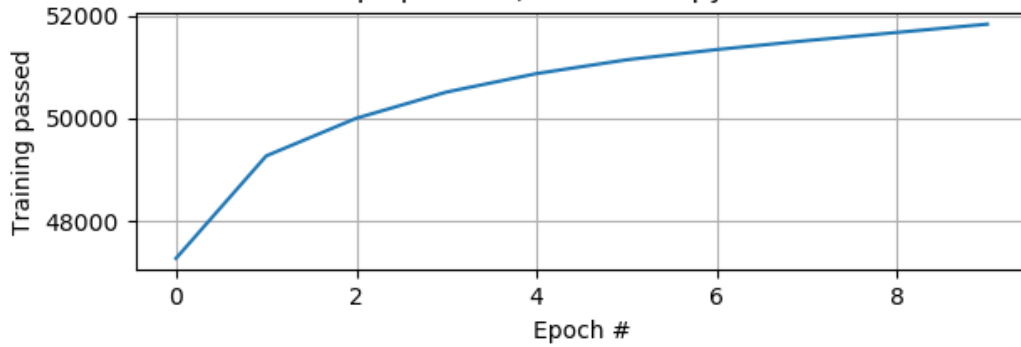


Learning Curve - Negative log loss
RMSProp optimizer, cross-entropy cost function



Training 55k and Validation 5k Accuracy Curve
RMSProp optimizer, cross-entropy cost function



Started Epoch 0...

EPOCH 0 - for RMSProp optimizer, cross-entropy cost function:

Negative Log Loss (Valid): 0.0981

Accuracy training examples: 47277 / 55000 = 85.96%

Accuracy validation examples: 4441 / 5000 = 88.82%

Epoch elapsed time: 23.4029998779 seconds.

Started Epoch 1...

EPOCH 1 - for RMSProp optimizer, cross-entropy cost function:

Negative Log Loss (Valid): 0.0643

Accuracy training examples: 49269 / 55000 = 89.58%

Accuracy validation examples: 4590 / 5000 = 91.8%

Epoch elapsed time: 23.3480000496 seconds.

Started Epoch 2...

EPOCH 2 - for RMSProp optimizer, cross-entropy cost function:

Negative Log Loss (Valid): 0.0527

Accuracy training examples: 50002 / 55000 = 90.91%

Accuracy validation examples: 4651 / 5000 = 93.02%

Epoch elapsed time: 23.0340001583 seconds.

Started Epoch 3...

EPOCH 3 - for RMSProp optimizer, cross-entropy cost function:

Negative Log Loss (Valid): 0.0466

Accuracy training examples: 50511 / 55000 = 91.84%

Accuracy validation examples: 4678 / 5000 = 93.56%

Epoch elapsed time: 22.5649998188 seconds.

Started Epoch 4...

EPOCH 4 - for RMSProp optimizer, cross-entropy cost function:

Negative Log Loss (Valid): 0.0429

Accuracy training examples: 50871 / 55000 = 92.49%

Accuracy validation examples: 4697 / 5000 = 93.94%

Epoch elapsed time: 23.0680000782 seconds.

Started Epoch 5...

EPOCH 5 - for RMSProp optimizer, cross-entropy cost function:

Negative Log Loss (Valid): 0.0403

Accuracy training examples: 51139 / 55000 = 92.98%

Accuracy validation examples: 4715 / 5000 = 94.3%

Epoch elapsed time: 21.4309999943 seconds.

Started Epoch 6...

EPOCH 6 - for RMSProp optimizer, cross-entropy cost function:

Negative Log Loss (Valid): 0.0384

Accuracy training examples: 51338 / 55000 = 93.34%

Accuracy validation examples: 4725 / 5000 = 94.5%

Epoch elapsed time: 23.7170000076 seconds.

Started Epoch 7...

EPOCH 7 - for RMSProp optimizer, cross-entropy cost function:

Negative Log Loss (Valid): 0.0372

Accuracy training examples: 51512 / 55000 = 93.66%

Accuracy validation examples: 4726 / 5000 = 94.52%

Epoch elapsed time: 22.0009999275 seconds.

Started Epoch 8...

EPOCH 8 - for RMSProp optimizer, cross-entropy cost function:

Negative Log Loss (Valid): 0.0358

Accuracy training examples: 51671 / 55000 = 93.95%

Accuracy validation examples: 4741 / 5000 = 94.82%

Epoch elapsed time: 22.5399999619 seconds.

Started Epoch 9...

EPOCH 9 - for RMSProp optimizer, cross-entropy cost function:

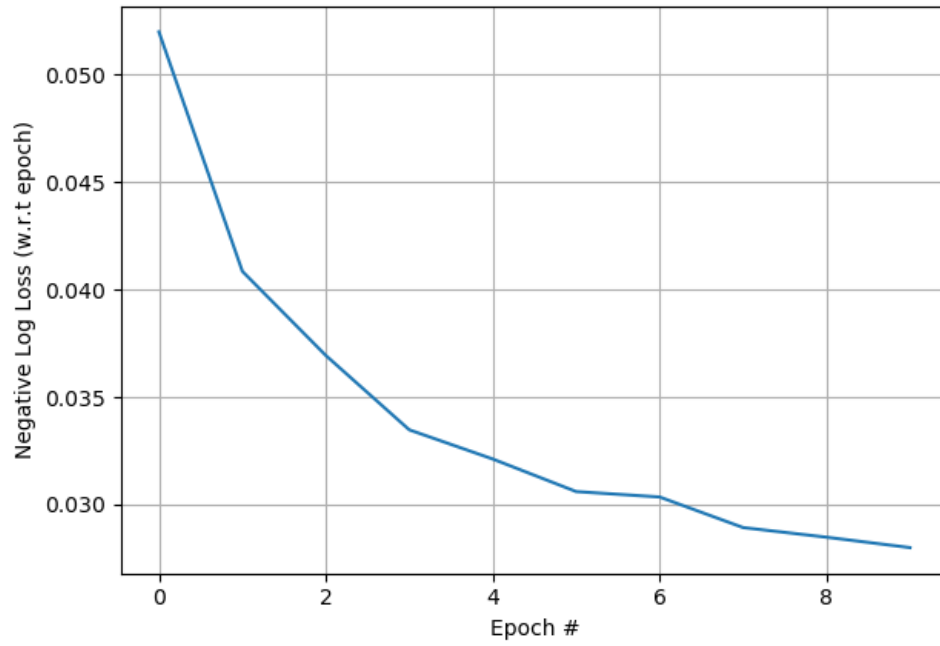
Negative Log Loss (Valid): 0.0349

Accuracy training examples: 51832 / 55000 = 94.24%

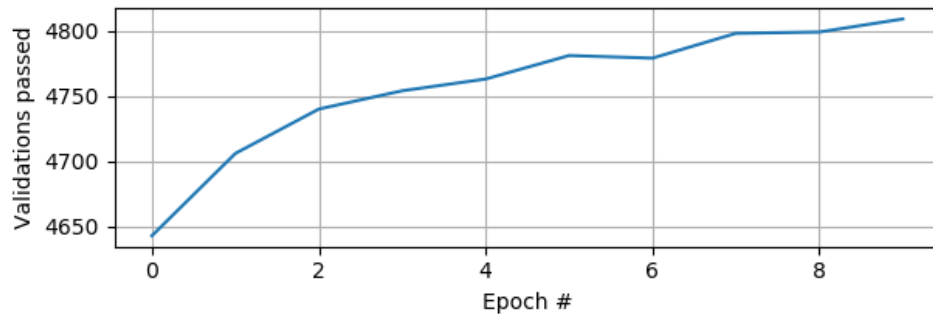
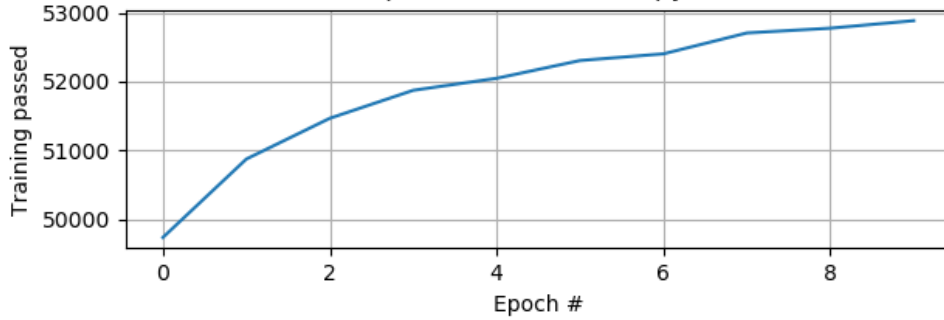
Accuracy validation examples: 4748 / 5000 = 94.96%

Epoch elapsed time: 21.0720000267 seconds.

Learning Curve - Negative log loss
Momentum optimizer, cross-entropy cost function



Training 55k and Validation 5k Accuracy Curve
Momentum optimizer, cross-entropy cost function



Started Epoch 0...

EPOCH 0 - for Momentum optimizer, cross-entropy cost function:

Negative Log Loss (Valid): 0.052

Accuracy training examples: 49740 / 55000 = 90.44%

Accuracy validation examples: 4643 / 5000 = 92.86%

Epoch elapsed time: 19.1190001965 seconds.

Started Epoch 1...

EPOCH 1 - for Momentum optimizer, cross-entropy cost function:

Negative Log Loss (Valid): 0.0409

Accuracy training examples: 50877 / 55000 = 92.5%

Accuracy validation examples: 4706 / 5000 = 94.12%

Epoch elapsed time: 21.5009999275 seconds.

Started Epoch 2...

EPOCH 2 - for Momentum optimizer, cross-entropy cost function:

Negative Log Loss (Valid): 0.0369

Accuracy training examples: 51468 / 55000 = 93.58%

Accuracy validation examples: 4740 / 5000 = 94.8%

Epoch elapsed time: 23.6909999847 seconds.

Started Epoch 3...

EPOCH 3 - for Momentum optimizer, cross-entropy cost function:

Negative Log Loss (Valid): 0.0335

Accuracy training examples: 51874 / 55000 = 94.32%

Accuracy validation examples: 4754 / 5000 = 95.08%

Epoch elapsed time: 25.3199999332 seconds.

Started Epoch 4...

EPOCH 4 - for Momentum optimizer, cross-entropy cost function:

Negative Log Loss (Valid): 0.0321

Accuracy training examples: 52048 / 55000 = 94.63%

Accuracy validation examples: 4763 / 5000 = 95.26%

Epoch elapsed time: 20.756000042 seconds.

Started Epoch 5...

EPOCH 5 - for Momentum optimizer, cross-entropy cost function:

Negative Log Loss (Valid): 0.0306

Accuracy training examples: 52306 / 55000 = 95.1%

Accuracy validation examples: 4781 / 5000 = 95.62%

Epoch elapsed time: 20.625 seconds.

Started Epoch 6...

EPOCH 6 - for Momentum optimizer, cross-entropy cost function:

Negative Log Loss (Valid): 0.0303

Accuracy training examples: 52403 / 55000 = 95.28%

Accuracy validation examples: 4779 / 5000 = 95.58%

Epoch elapsed time: 21.5299999714 seconds.

Started Epoch 7...

EPOCH 7 - for Momentum optimizer, cross-entropy cost function:

Negative Log Loss (Valid): 0.0289

Accuracy training examples: 52706 / 55000 = 95.83%

Accuracy validation examples: 4798 / 5000 = 95.96%

Epoch elapsed time: 3631.49900007 seconds.

Started Epoch 8...

EPOCH 8 - for Momentum optimizer, cross-entropy cost function:

Negative Log Loss (Valid): 0.0285

Accuracy training examples: 52775 / 55000 = 95.95%

Accuracy validation examples: 4799 / 5000 = 95.98%

Epoch elapsed time: 20.0569999218 seconds.

Started Epoch 9...

EPOCH 9 - for Momentum optimizer, cross-entropy cost function:

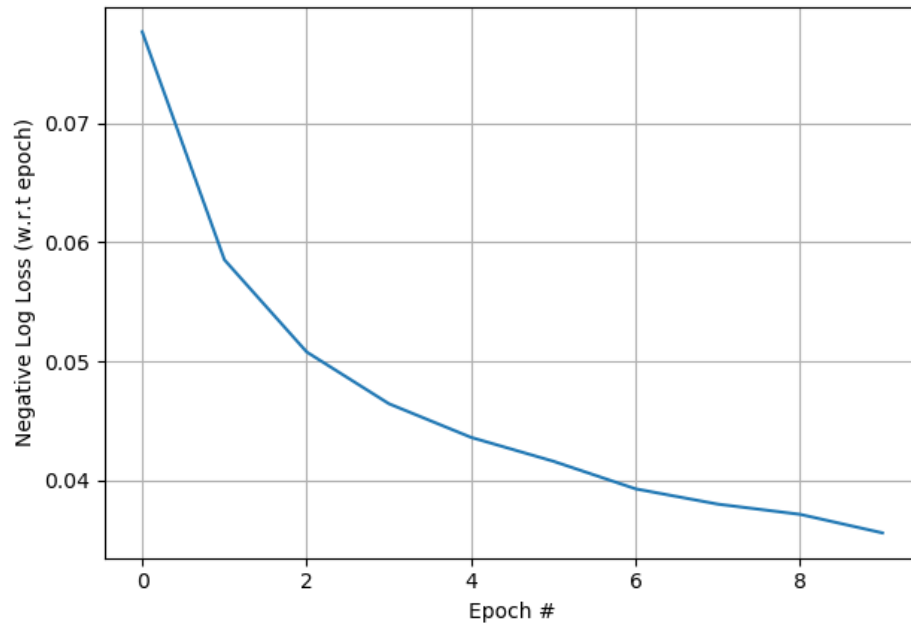
Negative Log Loss (Valid): 0.028

Accuracy training examples: 52884 / 55000 = 96.15%

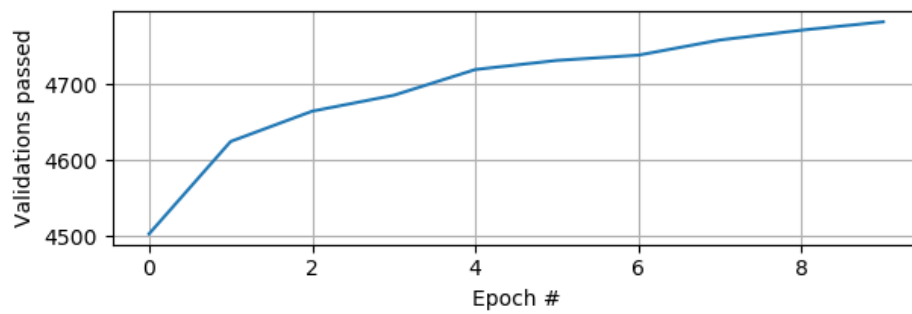
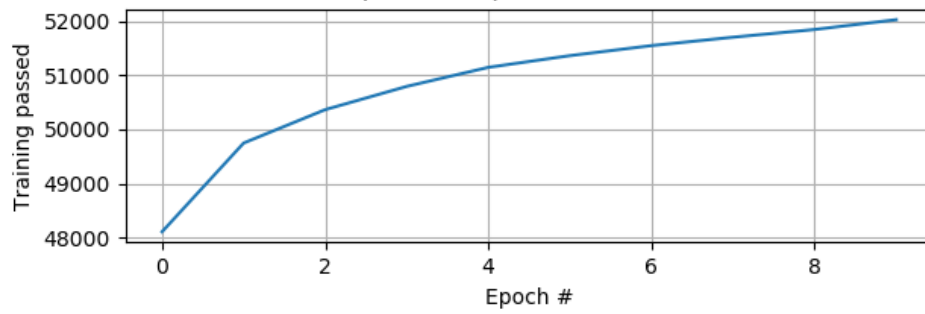
Accuracy validation examples: 4809 / 5000 = 96.18%

Epoch elapsed time: 21.2990000248 seconds.

Learning Curve - Negative log loss
SGD optimizer, quadratic cost function



Training 55k and Validation 5k Accuracy Curve
SGD optimizer, quadratic cost function



Started Epoch 0...

EPOCH 0 - for SGD optimizer, quadratic cost function:

Negative Log Loss (Valid): 0.0777

Accuracy training examples: 48111 / 55000 = 87.47%

Accuracy validation examples: 4503 / 5000 = 90.06%

Epoch elapsed time: 21.6820001602 seconds.

Started Epoch 1...

EPOCH 1 - for SGD optimizer, quadratic cost function:

Negative Log Loss (Valid): 0.0585

Accuracy training examples: 49747 / 55000 = 90.45%

Accuracy validation examples: 4625 / 5000 = 92.5%

Epoch elapsed time: 23.3039999008 seconds.

Started Epoch 2...

EPOCH 2 - for SGD optimizer, quadratic cost function:

Negative Log Loss (Valid): 0.0508

Accuracy training examples: 50363 / 55000 = 91.57%

Accuracy validation examples: 4665 / 5000 = 93.3%

Epoch elapsed time: 24.4979999065 seconds.

Started Epoch 3...

EPOCH 3 - for SGD optimizer, quadratic cost function:

Negative Log Loss (Valid): 0.0464

Accuracy training examples: 50792 / 55000 = 92.35%

Accuracy validation examples: 4686 / 5000 = 93.72%

Epoch elapsed time: 21.5840001106 seconds.

Started Epoch 4...

EPOCH 4 - for SGD optimizer, quadratic cost function:

Negative Log Loss (Valid): 0.0436

Accuracy training examples: 51143 / 55000 = 92.99%

Accuracy validation examples: 4720 / 5000 = 94.4%

Epoch elapsed time: 20.3789999485 seconds.

Started Epoch 5...

EPOCH 5 - for SGD optimizer, quadratic cost function:

Negative Log Loss (Valid): 0.0416

Accuracy training examples: 51359 / 55000 = 93.38%

Accuracy validation examples: 4732 / 5000 = 94.64%

Epoch elapsed time: 20.510999918 seconds.

Started Epoch 6...

EPOCH 6 - for SGD optimizer, quadratic cost function:

Negative Log Loss (Valid): 0.0393

Accuracy training examples: 51544 / 55000 = 93.72%

Accuracy validation examples: 4739 / 5000 = 94.78%

Epoch elapsed time: 20.4910001755 seconds.

Started Epoch 7...

EPOCH 7 - for SGD optimizer, quadratic cost function:

Negative Log Loss (Valid): 0.038

Accuracy training examples: 51699 / 55000 = 94.0%

Accuracy validation examples: 4759 / 5000 = 95.18%

Epoch elapsed time: 20.5379998684 seconds.

Started Epoch 8...

EPOCH 8 - for SGD optimizer, quadratic cost function:

Negative Log Loss (Valid): 0.0371

Accuracy training examples: 51841 / 55000 = 94.26%

Accuracy validation examples: 4772 / 5000 = 95.44%

Epoch elapsed time: 20.6570000648 seconds.

Started Epoch 9...

EPOCH 9 - for SGD optimizer, quadratic cost function:

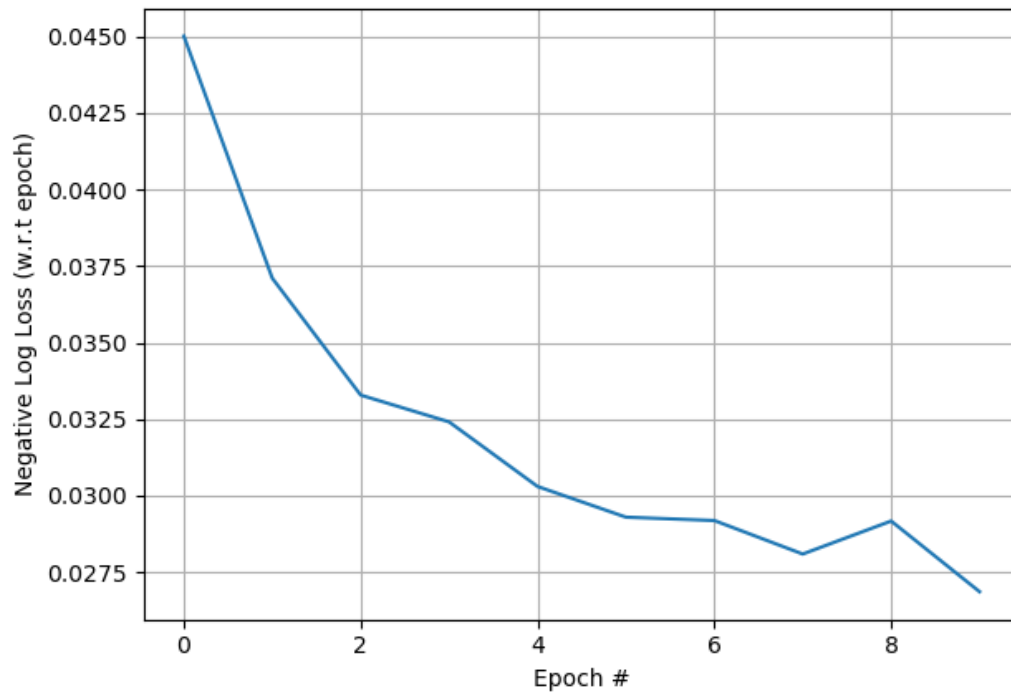
Negative Log Loss (Valid): 0.0356

Accuracy training examples: 52022 / 55000 = 94.59%

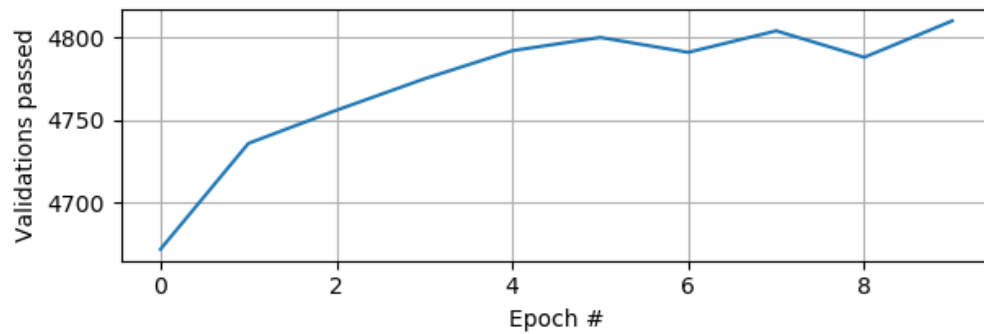
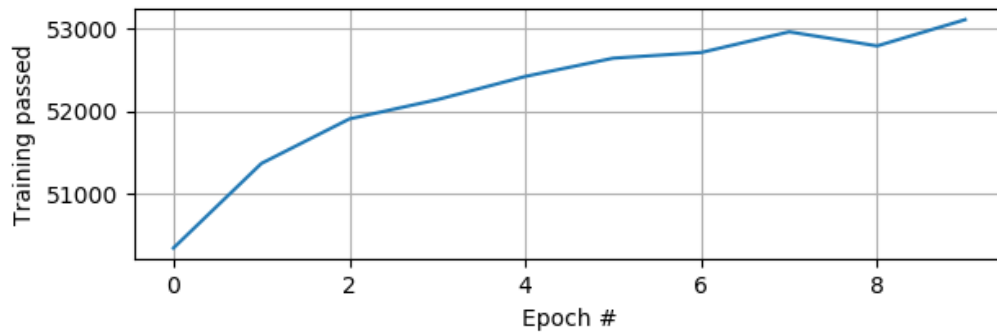
Accuracy validation examples: 4783 / 5000 = 95.66%

Epoch elapsed time: 20.5399999619 seconds.

Learning Curve - Negative log loss
SGD optimizer, cross-entropy cost function



Training 55k and Validation 5k Accuracy Curve
SGD optimizer, cross-entropy cost function



Started Epoch 0...

EPOCH 0 - for SGD optimizer, cross-entropy cost function:

Negative Log Loss (Valid): 0.045

Accuracy training examples: 50339 / 55000 = 91.53%

Accuracy validation examples: 4672 / 5000 = 93.44%

Epoch elapsed time: 19.8340001106 seconds.

Started Epoch 1...

EPOCH 1 - for SGD optimizer, cross-entropy cost function:

Negative Log Loss (Valid): 0.0371

Accuracy training examples: 51367 / 55000 = 93.39%

Accuracy validation examples: 4736 / 5000 = 94.72%

Epoch elapsed time: 19.6889998913 seconds.

Started Epoch 2...

EPOCH 2 - for SGD optimizer, cross-entropy cost function:

Negative Log Loss (Valid): 0.0333

Accuracy training examples: 51908 / 55000 = 94.38%

Accuracy validation examples: 4756 / 5000 = 95.12%

Epoch elapsed time: 19.7239999771 seconds.

Started Epoch 3...

EPOCH 3 - for SGD optimizer, cross-entropy cost function:

Negative Log Loss (Valid): 0.0324

Accuracy training examples: 52142 / 55000 = 94.8%

Accuracy validation examples: 4775 / 5000 = 95.5%

Epoch elapsed time: 19.7899999619 seconds.

Started Epoch 4...

EPOCH 4 - for SGD optimizer, cross-entropy cost function:

Negative Log Loss (Valid): 0.0303

Accuracy training examples: 52424 / 55000 = 95.32%

Accuracy validation examples: 4792 / 5000 = 95.84%

Epoch elapsed time: 19.8330001831 seconds.

Started Epoch 5...

EPOCH 5 - for SGD optimizer, cross-entropy cost function:

Negative Log Loss (Valid): 0.0293

Accuracy training examples: 52646 / 55000 = 95.72%

Accuracy validation examples: 4800 / 5000 = 96.0%

Epoch elapsed time: 19.763999939 seconds.

Started Epoch 6...

EPOCH 6 - for SGD optimizer, cross-entropy cost function:

Negative Log Loss (Valid): 0.0292

Accuracy training examples: 52715 / 55000 = 95.85%

Accuracy validation examples: 4791 / 5000 = 95.82%

Epoch elapsed time: 19.6809999943 seconds.

Started Epoch 7...

EPOCH 7 - for SGD optimizer, cross-entropy cost function:

Negative Log Loss (Valid): 0.0281

Accuracy training examples: 52966 / 55000 = 96.3%

Accuracy validation examples: 4804 / 5000 = 96.08%

Epoch elapsed time: 19.9179999828 seconds.

Started Epoch 8...

EPOCH 8 - for SGD optimizer, cross-entropy cost function:

Negative Log Loss (Valid): 0.0292

Accuracy training examples: 52795 / 55000 = 95.99%

Accuracy validation examples: 4788 / 5000 = 95.76%

Epoch elapsed time: 19.8980000019 seconds.

Started Epoch 9...

EPOCH 9 - for SGD optimizer, cross-entropy cost function:

Negative Log Loss (Valid): 0.0269

Accuracy training examples: 53114 / 55000 = 96.57%

Accuracy validation examples: 4810 / 5000 = 96.2%

Epoch elapsed time: 19.8280000687 seconds.