# CSE 691 - Deep Learning
# Resnet - Programming Assignment
# Report

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### *resnet_size*

I have tried various resnet_size for both standard and bottleneck neck models with varying size {3,5,7,18}

The below is for the bottleneck variant with varying resnet size and configured with :

batch_size = 128,

learning_rate = 0.1(gamma = 0.1 for every 15000 steps),

momentum = 0.9,

weight decay = 0.0001,

start_filter_size = 16

Training done for 500 epochs

| Resent Size | Training Loss ( for last epoch ) | Test Accuracy |
|---|---|---|
| 3 | 1.217 | ~ 85% |
| 5 | 1.207 | ~ 85% |
| 7 | 1.184 | ~ 86% |
| 18 | 1.153 | ~ 87% |

- We can see that resnet size = 18 performs better.
- The similar observations were there for standard variant also.

### *learning_rate*

I have tried varying learning rate{0.1, 0.2} for standard variant and configured with :

resnet_size = 3,

Reducing learning with gamma = 0.1 for every 15000 steps

Momentum = 0.9,

weight_decay = 0.0001,

start_filter_size = 16

Training done for 200 epochs

- I observed that the training loss for lr = 0.2 is larger than for lr = 0.1 for the last epoch.

- And also the test accuracies were better for lr = 0.1 (~85%) , lr = 0.2(~84%)

Next I tried varying the learning reduction steps, reducing learning rate with :
- Gamma = 0.1 for 15000 steps
- Gamma = 0.1 for 25000 steps
- Gamma - 0.1 for 40000 steps

Training done for 200 epochs
For the same model
And the training loss converged better for 25000 steps and gave the test accuracy of around 86%

### batch_size

I have tried varying the batch_size {128, 256} for standard variant with :
resnet_size = 3
learning_rate = 0.1 (gamma = 0.1 and reduce for every 25000 steps)
momentum = 0.9
weight_decay = 0.0001,
start_filter_size = 16
Training done for 200 epochs
- I observed that batch_size = 256, training loss converged better than for batch_size = 128 and also the 256 gave out test accuracy ~ 87% better than for 128.

For bottleneck variant, tried batch_size{128, 256} configured with:
resnet_size = 18 and training for 500 epochs remaining parameters same.
- It turns that batch_size = 128 with test_accuracy ~88% performed better than batch_size = 256 test_accuracy ~87%.

### weight_decay

I have tried varying the weight decay {0.0001, 0.0002} for standard variant with:
resnet_size = 3
learning_rate = 0.1 (gamma = 0.1 and reduce for every 25000 steps)
momentum = 0.9,
batch_size = 256,
start_filter_size = 16
Training done for 200 epochs
- I observed that for weight_decay = 0.0002, the model performed better by giving out test accuracy ~88.5%

### *momentum*

  I have tried varying the momentum {0.7, 0.8, 0.9} for standard variant configured with:

resnet_size = 3

learning_rate = 0.1 (gamma = 0.1 and reduce for every 25000 steps)

batch_size = 256,

weight_decay = 0.0002

start_filter_size = 16

Training done for 200 epochs

- I observed that for momentum = 0.9, the model performs better by giving out the test accuracy ~ 88.5% while the other 2 momentum = {0.7, 0.8} gave out the test accuracy ~ 87.5%, ~87.9% respectively.

### *Start filter size*

  I have tried varying the start filter size {16,32} for standard variant configured with :

resnet_size = 3

learning_rate = 0.1 (gamma = 0.1 and reduce for every 25000 steps)

batch_size = 256,

weight_decay = 0.0002,

Momentum = 0.9

Training done for 200 epochs

- It turns that start filter size = 16 performed better for training loss convergence and also gave test accuracy ~88.5% while the filter size starting with 32 gave the test accuracy ~87.3%.

**Best model for standard variant :**
resnet_size = 3,
Learning rate = 0.1 ( reduce with gamma = 0.1 for every 25000 steps )
Momentum = 0.9
batch_size = 256
Momentum = 0.9,
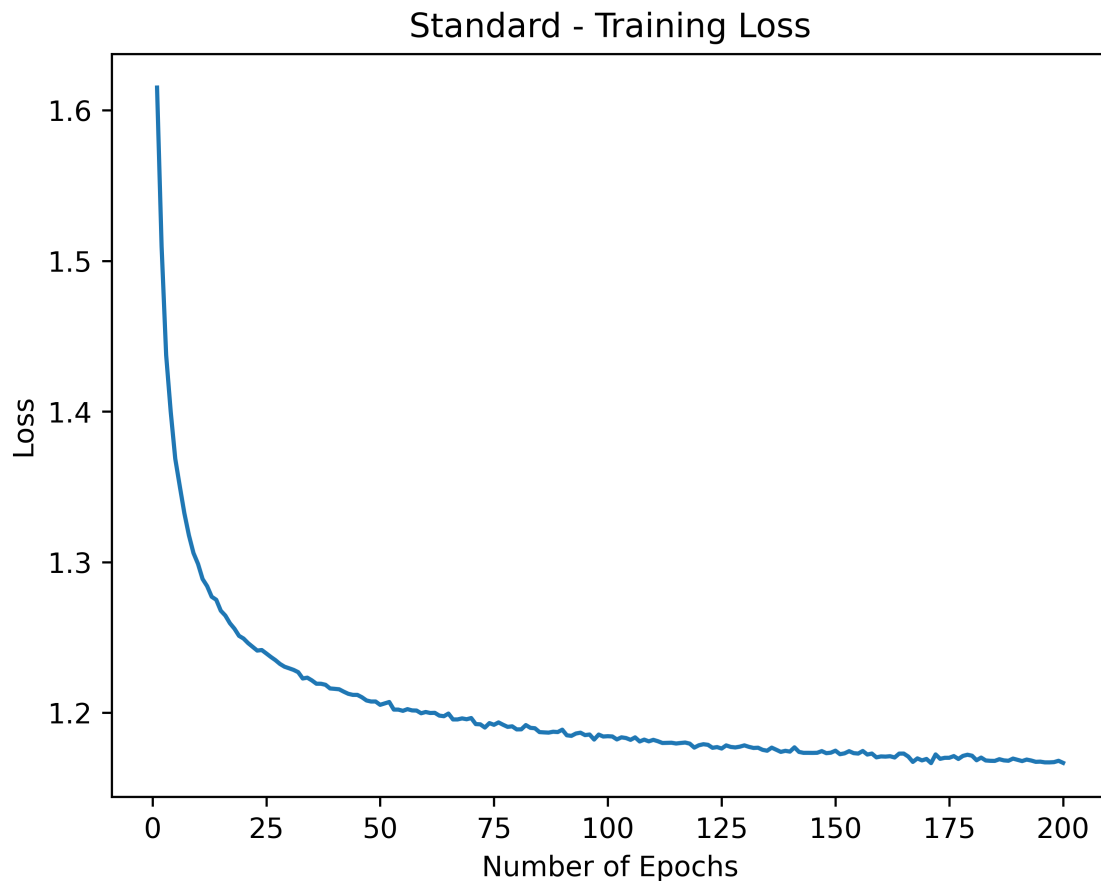start_filter_size = 16
weight_decay = 0.0002
Training done for 235 epochs
* NOTE : Check point 35 is available in model_v1 folder
Validation Accuracy ~ 89.3%
Test Accuracy ~ 88.7%
Below is the Training Loss curve V/s No.of Epochs :



Standard - Training Loss

**Best model for Bottleneck Variant**
resnet_size = 18,
learning_rate = 0.1 (reduce with gamma = 0.1 for every 25000 steps),
Momentum = 0.9,
batch_size = 128,
weight_decay=0.0002,
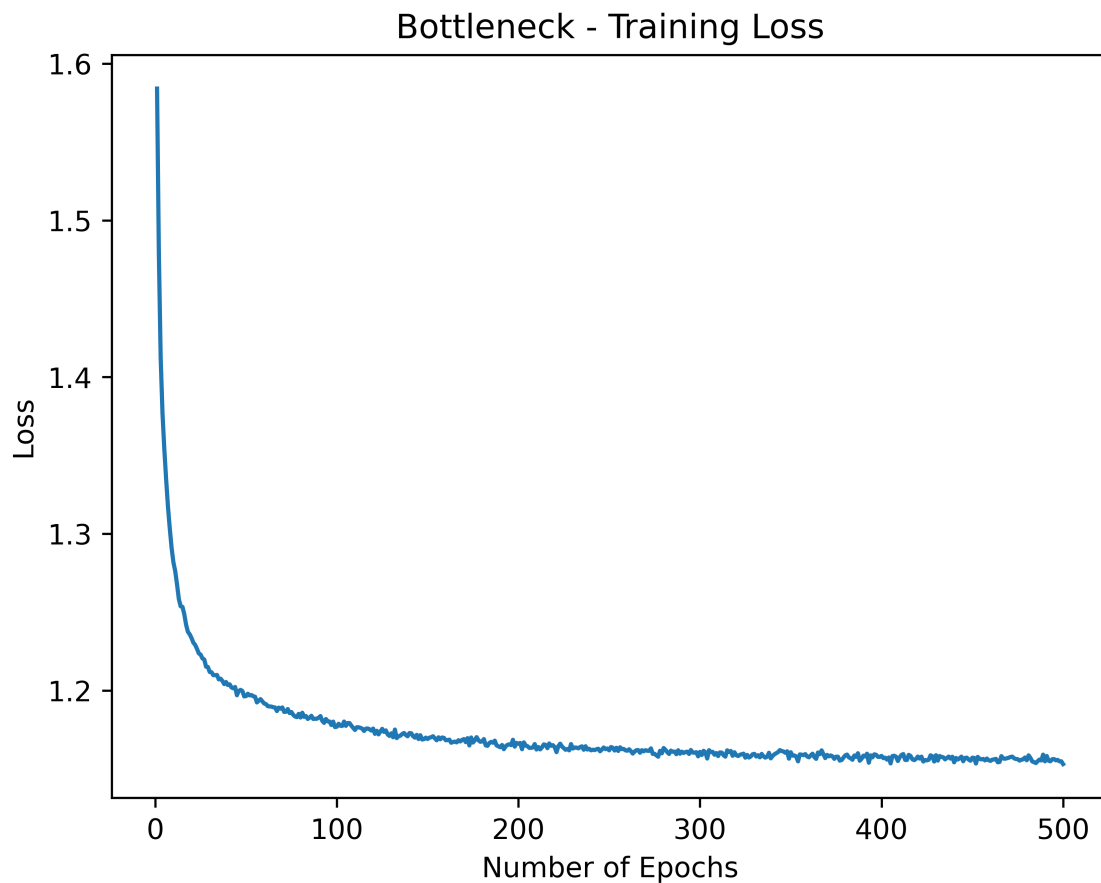start_filter_size = 16
Training done for 500 epochs
* NOTE : check point - 500 is available in model_v2 folder
Validation Accuracy ~ 90.5%
Test accuracy ~ 89.7%
Below is the training loss V/s no.of Epochs:

Bottleneck - Training Loss

# APPENDIX

**Pls find below the console of best standard and bottleneck models**

# For Best Standard Variant - Training Phase

Epoch 1 Loss 1.615054 Duration 22.804 seconds.
Checkpoint has been created.
Epoch 2 Loss 1.509425 Duration 21.968 seconds.
Checkpoint has been created.
Epoch 3 Loss 1.437399 Duration 21.118 seconds.
Checkpoint has been created.
Epoch 4 Loss 1.399903 Duration 21.990 seconds.
Checkpoint has been created.
Epoch 5 Loss 1.368614 Duration 21.136 seconds.
Checkpoint has been created.
Epoch 6 Loss 1.350284 Duration 22.580 seconds.
Checkpoint has been created.
Epoch 7 Loss 1.332436 Duration 21.401 seconds.
Checkpoint has been created.
Epoch 8 Loss 1.317795 Duration 22.371 seconds.
Checkpoint has been created.
Epoch 9 Loss 1.306031 Duration 21.160 seconds.
Checkpoint has been created.
Epoch 10 Loss 1.298799 Duration 22.312 seconds.
Checkpoint has been created.
Epoch 11 Loss 1.288792 Duration 21.142 seconds.
Checkpoint has been created.
Epoch 12 Loss 1.284035 Duration 22.096 seconds.
Checkpoint has been created.
Epoch 13 Loss 1.277014 Duration 21.431 seconds.
Checkpoint has been created.
Epoch 14 Loss 1.274987 Duration 21.982 seconds.
Checkpoint has been created.
Epoch 15 Loss 1.267728 Duration 21.531 seconds.
Checkpoint has been created.
Epoch 16 Loss 1.264495 Duration 23.264 seconds.
Checkpoint has been created.
Epoch 17 Loss 1.259435 Duration 22.308 seconds.
Checkpoint has been created.
Epoch 18 Loss 1.255791 Duration 21.180 seconds.
Checkpoint has been created.
Epoch 19 Loss 1.251063 Duration 22.180 seconds.
Checkpoint has been created.
Epoch 20 Loss 1.249245 Duration 21.030 seconds.
Checkpoint has been created.
Epoch 21 Loss 1.246212 Duration 22.029 seconds.
Checkpoint has been created.
Epoch 22 Loss 1.243754 Duration 21.183 seconds.
Checkpoint has been created.
Epoch 23 Loss 1.241269 Duration 22.389 seconds.
Checkpoint has been created.
Epoch 24 Loss 1.241624 Duration 21.104 seconds.
Checkpoint has been created.
Epoch 25 Loss 1.239356 Duration 22.164 seconds.
Checkpoint has been created.
Epoch 26 Loss 1.237031 Duration 21.083 seconds.
Checkpoint has been created.
Epoch 27 Loss 1.234905 Duration 22.159 seconds.
Checkpoint has been created.
Epoch 28 Loss 1.232390 Duration 21.117 seconds.
Checkpoint has been created.
Epoch 29 Loss 1.230553 Duration 22.065 seconds.
Checkpoint has been created.
Epoch 30 Loss 1.229511 Duration 21.509 seconds.

Checkpoint has been created.
Epoch 31 Loss 1.228427 Duration 21.769 seconds.
Checkpoint has been created.
Epoch 32 Loss 1.226928 Duration 21.757 seconds.
Checkpoint has been created.
Epoch 33 Loss 1.222741 Duration 21.676 seconds.
Checkpoint has been created.
Epoch 34 Loss 1.223288 Duration 22.198 seconds.
Checkpoint has been created.
Epoch 35 Loss 1.221480 Duration 21.479 seconds.
Checkpoint has been created.
Epoch 36 Loss 1.219263 Duration 22.162 seconds.
Checkpoint has been created.
Epoch 37 Loss 1.219248 Duration 21.204 seconds.
Checkpoint has been created.
Epoch 38 Loss 1.218551 Duration 22.436 seconds.
Checkpoint has been created.
Epoch 39 Loss 1.216122 Duration 21.207 seconds.
Checkpoint has been created.
Epoch 40 Loss 1.215872 Duration 22.292 seconds.
Checkpoint has been created.
Epoch 41 Loss 1.215562 Duration 21.667 seconds.
Checkpoint has been created.
Epoch 42 Loss 1.213987 Duration 22.715 seconds.
Checkpoint has been created.
Epoch 43 Loss 1.212573 Duration 21.678 seconds.
Checkpoint has been created.
Epoch 44 Loss 1.211862 Duration 22.355 seconds.
Checkpoint has been created.
Epoch 45 Loss 1.211846 Duration 21.577 seconds.
Checkpoint has been created.
Epoch 46 Loss 1.210265 Duration 21.831 seconds.
Checkpoint has been created.
Epoch 47 Loss 1.208157 Duration 21.865 seconds.
Checkpoint has been created.
Epoch 48 Loss 1.207445 Duration 21.670 seconds.
Checkpoint has been created.
Epoch 49 Loss 1.207457 Duration 22.374 seconds.
Checkpoint has been created.
Epoch 50 Loss 1.205256 Duration 21.600 seconds.
Checkpoint has been created.
Epoch 51 Loss 1.206195 Duration 22.511 seconds.
Checkpoint has been created.
Epoch 52 Loss 1.207123 Duration 21.396 seconds.
Checkpoint has been created.
Epoch 53 Loss 1.202099 Duration 22.460 seconds.
Checkpoint has been created.
Epoch 54 Loss 1.202069 Duration 21.306 seconds.
Checkpoint has been created.
Epoch 55 Loss 1.201262 Duration 22.565 seconds.
Checkpoint has been created.
Epoch 56 Loss 1.202388 Duration 21.344 seconds.
Checkpoint has been created.
Epoch 57 Loss 1.201545 Duration 22.479 seconds.
Checkpoint has been created.
Epoch 58 Loss 1.201439 Duration 21.765 seconds.
Checkpoint has been created.
Epoch 59 Loss 1.199648 Duration 22.016 seconds.
Checkpoint has been created.
Epoch 60 Loss 1.200486 Duration 21.788 seconds.

Checkpoint has been created.
Epoch 61 Loss 1.199826 Duration 22.009 seconds.
Checkpoint has been created.
Epoch 62 Loss 1.199942 Duration 22.102 seconds.
Checkpoint has been created.
Epoch 63 Loss 1.198097 Duration 21.824 seconds.
Checkpoint has been created.
Epoch 64 Loss 1.197685 Duration 22.254 seconds.
Checkpoint has been created.
Epoch 65 Loss 1.199438 Duration 21.217 seconds.
Checkpoint has been created.
Epoch 66 Loss 1.195550 Duration 22.502 seconds.
Checkpoint has been created.
Epoch 67 Loss 1.195550 Duration 21.238 seconds.
Checkpoint has been created.
Epoch 68 Loss 1.196240 Duration 22.210 seconds.
Checkpoint has been created.
Epoch 69 Loss 1.195671 Duration 21.457 seconds.
Checkpoint has been created.
Epoch 70 Loss 1.196474 Duration 22.577 seconds.
Checkpoint has been created.
Epoch 71 Loss 1.192456 Duration 21.323 seconds.
Checkpoint has been created.
Epoch 72 Loss 1.192300 Duration 22.427 seconds.
Checkpoint has been created.
Epoch 73 Loss 1.190173 Duration 21.751 seconds.
Checkpoint has been created.
Epoch 74 Loss 1.193104 Duration 21.869 seconds.
Checkpoint has been created.
Epoch 75 Loss 1.191982 Duration 21.645 seconds.
Checkpoint has been created.
Epoch 76 Loss 1.193571 Duration 21.695 seconds.
Checkpoint has been created.
Epoch 77 Loss 1.192010 Duration 22.062 seconds.
Checkpoint has been created.
Epoch 78 Loss 1.190620 Duration 21.435 seconds.
Checkpoint has been created.
Epoch 79 Loss 1.190969 Duration 22.224 seconds.
Checkpoint has been created.
Epoch 80 Loss 1.188931 Duration 21.363 seconds.
Checkpoint has been created.
Epoch 81 Loss 1.188983 Duration 22.285 seconds.
Checkpoint has been created.
Epoch 82 Loss 1.191791 Duration 21.263 seconds.
Checkpoint has been created.
Epoch 83 Loss 1.189981 Duration 22.415 seconds.
Checkpoint has been created.
Epoch 84 Loss 1.189676 Duration 21.287 seconds.
Checkpoint has been created.
Epoch 85 Loss 1.187144 Duration 22.325 seconds.
Checkpoint has been created.
Epoch 86 Loss 1.186949 Duration 21.398 seconds.
Checkpoint has been created.
Epoch 87 Loss 1.186793 Duration 22.124 seconds.
Checkpoint has been created.
Epoch 88 Loss 1.187383 Duration 21.220 seconds.
Checkpoint has been created.
Epoch 89 Loss 1.187165 Duration 22.440 seconds.
Checkpoint has been created.
Epoch 90 Loss 1.188736 Duration 21.251 seconds.

Checkpoint has been created.
Epoch 91 Loss 1.185028 Duration 22.360 seconds.
Checkpoint has been created.
Epoch 92 Loss 1.184642 Duration 21.331 seconds.
Checkpoint has been created.
Epoch 93 Loss 1.186202 Duration 22.209 seconds.
Checkpoint has been created.
Epoch 94 Loss 1.186751 Duration 21.824 seconds.
Checkpoint has been created.
Epoch 95 Loss 1.185151 Duration 21.831 seconds.
Checkpoint has been created.
Epoch 96 Loss 1.185535 Duration 22.258 seconds.
Checkpoint has been created.
Epoch 97 Loss 1.182210 Duration 22.038 seconds.
Checkpoint has been created.
Epoch 98 Loss 1.185496 Duration 22.779 seconds.
Checkpoint has been created.
Epoch 99 Loss 1.184214 Duration 21.613 seconds.
Checkpoint has been created.
Epoch 100 Loss 1.184417 Duration 22.678 seconds.
Checkpoint has been created.
Epoch 101 Loss 1.184236 Duration 21.545 seconds.
Checkpoint has been created.
Epoch 102 Loss 1.182281 Duration 22.616 seconds.
Checkpoint has been created.
Epoch 103 Loss 1.183660 Duration 22.234 seconds.
Checkpoint has been created.
Epoch 104 Loss 1.183209 Duration 22.623 seconds.
Checkpoint has been created.
Epoch 105 Loss 1.182014 Duration 22.453 seconds.
Checkpoint has been created.
Epoch 106 Loss 1.183638 Duration 22.076 seconds.
Checkpoint has been created.
Epoch 107 Loss 1.180925 Duration 22.880 seconds.
Checkpoint has been created.
Epoch 108 Loss 1.182150 Duration 21.560 seconds.
Checkpoint has been created.
Epoch 109 Loss 1.181000 Duration 22.817 seconds.
Checkpoint has been created.
Epoch 110 Loss 1.182003 Duration 21.728 seconds.
Checkpoint has been created.
Epoch 111 Loss 1.181078 Duration 22.560 seconds.
Checkpoint has been created.
Epoch 112 Loss 1.179920 Duration 21.595 seconds.
Checkpoint has been created.
Epoch 113 Loss 1.179994 Duration 22.593 seconds.
Checkpoint has been created.
Epoch 114 Loss 1.180086 Duration 21.867 seconds.
Checkpoint has been created.
Epoch 115 Loss 1.179565 Duration 22.035 seconds.
Checkpoint has been created.
Epoch 116 Loss 1.179920 Duration 22.354 seconds.
Checkpoint has been created.
Epoch 117 Loss 1.180214 Duration 21.764 seconds.
Checkpoint has been created.
Epoch 118 Loss 1.179480 Duration 22.278 seconds.
Checkpoint has been created.
Epoch 119 Loss 1.176850 Duration 21.211 seconds.
Checkpoint has been created.
Epoch 120 Loss 1.178400 Duration 22.316 seconds.

Checkpoint has been created.
Epoch 121 Loss 1.179092 Duration 21.214 seconds.
Checkpoint has been created.
Epoch 122 Loss 1.178700 Duration 22.298 seconds.
Checkpoint has been created.
Epoch 123 Loss 1.176717 Duration 21.122 seconds.
Checkpoint has been created.
Epoch 124 Loss 1.177188 Duration 22.472 seconds.
Checkpoint has been created.
Epoch 125 Loss 1.176241 Duration 21.047 seconds.
Checkpoint has been created.
Epoch 126 Loss 1.178306 Duration 22.194 seconds.
Checkpoint has been created.
Epoch 127 Loss 1.177299 Duration 21.066 seconds.
Checkpoint has been created.
Epoch 128 Loss 1.176951 Duration 22.003 seconds.
Checkpoint has been created.
Epoch 129 Loss 1.177471 Duration 21.189 seconds.
Checkpoint has been created.
Epoch 130 Loss 1.178329 Duration 21.947 seconds.
Checkpoint has been created.
Epoch 131 Loss 1.177347 Duration 21.256 seconds.
Checkpoint has been created.
Epoch 132 Loss 1.176623 Duration 21.847 seconds.
Checkpoint has been created.
Epoch 133 Loss 1.176773 Duration 21.616 seconds.
Checkpoint has been created.
Epoch 134 Loss 1.175371 Duration 21.947 seconds.
Checkpoint has been created.
Epoch 135 Loss 1.174778 Duration 21.955 seconds.
Checkpoint has been created.
Epoch 136 Loss 1.176825 Duration 21.366 seconds.
Checkpoint has been created.
Epoch 137 Loss 1.175430 Duration 22.042 seconds.
Checkpoint has been created.
Epoch 138 Loss 1.174007 Duration 21.339 seconds.
Checkpoint has been created.
Epoch 139 Loss 1.174722 Duration 22.036 seconds.
Checkpoint has been created.
Epoch 140 Loss 1.174197 Duration 21.260 seconds.
Checkpoint has been created.
Epoch 141 Loss 1.177018 Duration 21.990 seconds.
Checkpoint has been created.
Epoch 142 Loss 1.173986 Duration 20.955 seconds.
Checkpoint has been created.
Epoch 143 Loss 1.173373 Duration 22.336 seconds.
Checkpoint has been created.
Epoch 144 Loss 1.173378 Duration 21.024 seconds.
Checkpoint has been created.
Epoch 145 Loss 1.173343 Duration 21.963 seconds.
Checkpoint has been created.
Epoch 146 Loss 1.173416 Duration 21.056 seconds.
Checkpoint has been created.
Epoch 147 Loss 1.174526 Duration 22.049 seconds.
Checkpoint has been created.
Epoch 148 Loss 1.173149 Duration 21.011 seconds.
Checkpoint has been created.
Epoch 149 Loss 1.173496 Duration 22.009 seconds.
Checkpoint has been created.
Epoch 150 Loss 1.174804 Duration 20.974 seconds.

Checkpoint has been created.
Epoch 151 Loss 1.172470 Duration 22.023 seconds.
Checkpoint has been created.
Epoch 152 Loss 1.173043 Duration 21.040 seconds.
Checkpoint has been created.
Epoch 153 Loss 1.174484 Duration 22.130 seconds.
Checkpoint has been created.
Epoch 154 Loss 1.173172 Duration 21.073 seconds.
Checkpoint has been created.
Epoch 155 Loss 1.172889 Duration 22.235 seconds.
Checkpoint has been created.
Epoch 156 Loss 1.174594 Duration 21.072 seconds.
Checkpoint has been created.
Epoch 157 Loss 1.172243 Duration 22.015 seconds.
Checkpoint has been created.
Epoch 158 Loss 1.172893 Duration 21.399 seconds.
Checkpoint has been created.
Epoch 159 Loss 1.170380 Duration 21.595 seconds.
Checkpoint has been created.
Epoch 160 Loss 1.170994 Duration 21.687 seconds.
Checkpoint has been created.
Epoch 161 Loss 1.170868 Duration 21.810 seconds.
Checkpoint has been created.
Epoch 162 Loss 1.171133 Duration 21.797 seconds.
Checkpoint has been created.
Epoch 163 Loss 1.170290 Duration 21.739 seconds.
Checkpoint has been created.
Epoch 164 Loss 1.172860 Duration 21.840 seconds.
Checkpoint has been created.
Epoch 165 Loss 1.172881 Duration 21.289 seconds.
Checkpoint has been created.
Epoch 166 Loss 1.170893 Duration 22.133 seconds.
Checkpoint has been created.
Epoch 167 Loss 1.167370 Duration 21.214 seconds.
Checkpoint has been created.
Epoch 168 Loss 1.169692 Duration 22.245 seconds.
Checkpoint has been created.
Epoch 169 Loss 1.168356 Duration 21.194 seconds.
Checkpoint has been created.
Epoch 170 Loss 1.169313 Duration 22.464 seconds.
Checkpoint has been created.
Epoch 171 Loss 1.166579 Duration 21.498 seconds.
Checkpoint has been created.
Epoch 172 Loss 1.172307 Duration 22.170 seconds.
Checkpoint has been created.
Epoch 173 Loss 1.169403 Duration 21.238 seconds.
Checkpoint has been created.
Epoch 174 Loss 1.170075 Duration 22.311 seconds.
Checkpoint has been created.
Epoch 175 Loss 1.170097 Duration 21.161 seconds.
Checkpoint has been created.
Epoch 176 Loss 1.171218 Duration 22.147 seconds.
Checkpoint has been created.
Epoch 177 Loss 1.169311 Duration 21.404 seconds.
Checkpoint has been created.
Epoch 178 Loss 1.171332 Duration 22.045 seconds.
Checkpoint has been created.
Epoch 179 Loss 1.172119 Duration 21.592 seconds.
Checkpoint has been created.
Epoch 180 Loss 1.171458 Duration 21.595 seconds.

Checkpoint has been created.
Epoch 181 Loss 1.168464 Duration 21.700 seconds.
Checkpoint has been created.
Epoch 182 Loss 1.170216 Duration 21.220 seconds.
Checkpoint has been created.
Epoch 183 Loss 1.168317 Duration 22.283 seconds.
Checkpoint has been created.
Epoch 184 Loss 1.168084 Duration 21.154 seconds.
Checkpoint has been created.
Epoch 185 Loss 1.168025 Duration 22.298 seconds.
Checkpoint has been created.
Epoch 186 Loss 1.169147 Duration 21.249 seconds.
Checkpoint has been created.
Epoch 187 Loss 1.168361 Duration 22.116 seconds.
Checkpoint has been created.
Epoch 188 Loss 1.168121 Duration 21.026 seconds.
Checkpoint has been created.
Epoch 189 Loss 1.169561 Duration 22.251 seconds.
Checkpoint has been created.
Epoch 190 Loss 1.168732 Duration 21.209 seconds.
Checkpoint has been created.
Epoch 191 Loss 1.167908 Duration 22.114 seconds.
Checkpoint has been created.
Epoch 192 Loss 1.168910 Duration 21.215 seconds.
Checkpoint has been created.
Epoch 193 Loss 1.168276 Duration 22.333 seconds.
Checkpoint has been created.
Epoch 194 Loss 1.167404 Duration 21.438 seconds.
Checkpoint has been created.
Epoch 195 Loss 1.167528 Duration 21.898 seconds.
Checkpoint has been created.
Epoch 196 Loss 1.167045 Duration 21.813 seconds.
Checkpoint has been created.
Epoch 197 Loss 1.167039 Duration 21.721 seconds.
Checkpoint has been created.
Epoch 198 Loss 1.167203 Duration 22.226 seconds.
Checkpoint has been created.
Epoch 199 Loss 1.168100 Duration 21.854 seconds.
Checkpoint has been created.
Epoch 200 Loss 1.166717 Duration 22.473 seconds.
Checkpoint has been created.

# Testing Phase Extra 35 epochs with whole data set :

### Test or Validation ###
Restored model parameters from stnd1/model-35.ckpt
Test accuracy: 0.8930

Epoch 1 Loss 1.173416 Duration 21.056 seconds.
Checkpoint has been created.
Epoch 2 Loss 1.174526 Duration 22.049 seconds.
Checkpoint has been created.
Epoch 3 Loss 1.173149 Duration 21.011 seconds.
Checkpoint has been created.
Epoch 4 Loss 1.173496 Duration 22.009 seconds.
Checkpoint has been created.
Epoch 5 Loss 1.174804 Duration 20.974 seconds.
Checkpoint has been created.
Epoch 6 Loss 1.172470 Duration 22.023 seconds.
Checkpoint has been created.
Epoch 7 Loss 1.173043 Duration 21.040 seconds.
Checkpoint has been created.
Epoch 8 Loss 1.174484 Duration 22.130 seconds.
Checkpoint has been created.
Epoch 9 Loss 1.173172 Duration 21.073 seconds.
Checkpoint has been created.
Epoch 10 Loss 1.172889 Duration 22.235 seconds.
Checkpoint has been created.
Epoch 11 Loss 1.174594 Duration 21.072 seconds.
Checkpoint has been created.
Epoch 12 Loss 1.172243 Duration 22.015 seconds.
Checkpoint has been created.
Epoch 13 Loss 1.172893 Duration 21.399 seconds.
Checkpoint has been created.
Epoch 14 Loss 1.170380 Duration 21.595 seconds.
Checkpoint has been created.
Epoch 15 Loss 1.170994 Duration 21.687 seconds.
Checkpoint has been created.
Epoch 16 Loss 1.170868 Duration 21.810 seconds.
Checkpoint has been created.
Epoch 17 Loss 1.171133 Duration 21.797 seconds.
Checkpoint has been created.
Epoch 18 Loss 1.170290 Duration 21.739 seconds.
Checkpoint has been created.
Epoch 19 Loss 1.172860 Duration 21.840 seconds.
Checkpoint has been created.
Epoch 20 Loss 1.172881 Duration 21.289 seconds.
Checkpoint has been created.
Epoch 21 Loss 1.170893 Duration 22.133 seconds.
Checkpoint has been created.
Epoch 22 Loss 1.167370 Duration 21.214 seconds.
Checkpoint has been created.
Epoch 23 Loss 1.169692 Duration 22.245 seconds.
Checkpoint has been created.
Epoch 24 Loss 1.168356 Duration 21.194 seconds.
Checkpoint has been created.
Epoch 25 Loss 1.169313 Duration 22.464 seconds.
Checkpoint has been created.
Epoch 26 Loss 1.166579 Duration 21.498 seconds.
Checkpoint has been created.
Epoch 27 Loss 1.172307 Duration 22.170 seconds.
Checkpoint has been created.
Epoch 28 Loss 1.169403 Duration 21.238 seconds.

Checkpoint has been created.
Epoch 29 Loss 1.170075 Duration 22.311 seconds.
Checkpoint has been created.
Epoch 30 Loss 1.170097 Duration 21.161 seconds.
Checkpoint has been created.
Epoch 31 Loss 1.171218 Duration 22.147 seconds.
Checkpoint has been created.
Epoch 32 Loss 1.169311 Duration 21.404 seconds.
Checkpoint has been created.
Epoch 33 Loss 1.171332 Duration 22.045 seconds.
Checkpoint has been created.
Epoch 34 Loss 1.172119 Duration 21.592 seconds.
Checkpoint has been created.
Epoch 35 Loss 1.171458 Duration 21.595 seconds.

### Test or Validation ###
Restored model parameters from stnd1/model-35.ckpt
Test accuracy: 0.8872

**For Best Bottleneck Variant : Training 500 epochs**

Epoch 1 Loss 1.584033 Duration 68.113 seconds.
Checkpoint has been created.
Epoch 2 Loss 1.478352 Duration 54.200 seconds.
Checkpoint has been created.
Epoch 3 Loss 1.411916 Duration 54.610 seconds.
Checkpoint has been created.
Epoch 4 Loss 1.376837 Duration 54.486 seconds.
Checkpoint has been created.
Epoch 5 Loss 1.354003 Duration 54.432 seconds.
Checkpoint has been created.
Epoch 6 Loss 1.334801 Duration 53.939 seconds.
Checkpoint has been created.
Epoch 7 Loss 1.317448 Duration 54.014 seconds.
Checkpoint has been created.
Epoch 8 Loss 1.303530 Duration 54.182 seconds.
Checkpoint has been created.
Epoch 9 Loss 1.291159 Duration 55.533 seconds.
Checkpoint has been created.
Epoch 10 Loss 1.281881 Duration 56.567 seconds.
Checkpoint has been created.
Epoch 11 Loss 1.276287 Duration 53.791 seconds.
Checkpoint has been created.
Epoch 12 Loss 1.267798 Duration 55.310 seconds.
Checkpoint has been created.
Epoch 13 Loss 1.258460 Duration 55.256 seconds.
Checkpoint has been created.
Epoch 14 Loss 1.253763 Duration 60.525 seconds.
Checkpoint has been created.
Epoch 15 Loss 1.253427 Duration 55.024 seconds.
Checkpoint has been created.
Epoch 16 Loss 1.248677 Duration 55.171 seconds.
Checkpoint has been created.
Epoch 17 Loss 1.242000 Duration 55.565 seconds.
Checkpoint has been created.
Epoch 18 Loss 1.237477 Duration 53.729 seconds.
Checkpoint has been created.
Epoch 19 Loss 1.235868 Duration 54.654 seconds.
Checkpoint has been created.
Epoch 20 Loss 1.233531 Duration 60.119 seconds.
Checkpoint has been created.
Epoch 21 Loss 1.230572 Duration 58.134 seconds.
Checkpoint has been created.
Epoch 22 Loss 1.229153 Duration 55.071 seconds.
Checkpoint has been created.
Epoch 23 Loss 1.226612 Duration 54.771 seconds.
Checkpoint has been created.
Epoch 24 Loss 1.223727 Duration 54.244 seconds.
Checkpoint has been created.
Epoch 25 Loss 1.222946 Duration 54.668 seconds.
Checkpoint has been created.
Epoch 26 Loss 1.220537 Duration 55.564 seconds.
Checkpoint has been created.
Epoch 27 Loss 1.219833 Duration 54.471 seconds.
Checkpoint has been created.
Epoch 28 Loss 1.215251 Duration 54.755 seconds.
Checkpoint has been created.
Epoch 29 Loss 1.215068 Duration 54.341 seconds.
Checkpoint has been created.
Epoch 30 Loss 1.211914 Duration 53.826 seconds.

Checkpoint has been created.
Epoch 31 Loss 1.211699 Duration 53.103 seconds.
Checkpoint has been created.
Epoch 32 Loss 1.209856 Duration 53.409 seconds.
Checkpoint has been created.
Epoch 33 Loss 1.209832 Duration 54.357 seconds.
Checkpoint has been created.
Epoch 34 Loss 1.209966 Duration 57.010 seconds.
Checkpoint has been created.
Epoch 35 Loss 1.207149 Duration 55.508 seconds.
Checkpoint has been created.
Epoch 36 Loss 1.207565 Duration 54.355 seconds.
Checkpoint has been created.
Epoch 37 Loss 1.206172 Duration 54.765 seconds.
Checkpoint has been created.
Epoch 38 Loss 1.204151 Duration 54.193 seconds.
Checkpoint has been created.
Epoch 39 Loss 1.205457 Duration 54.705 seconds.
Checkpoint has been created.
Epoch 40 Loss 1.203556 Duration 53.914 seconds.
Checkpoint has been created.
Epoch 41 Loss 1.203994 Duration 54.038 seconds.
Checkpoint has been created.
Epoch 42 Loss 1.201974 Duration 55.398 seconds.
Checkpoint has been created.
Epoch 43 Loss 1.201484 Duration 55.385 seconds.
Checkpoint has been created.
Epoch 44 Loss 1.202308 Duration 55.236 seconds.
Checkpoint has been created.
Epoch 45 Loss 1.197045 Duration 55.479 seconds.
Checkpoint has been created.
Epoch 46 Loss 1.199773 Duration 55.475 seconds.
Checkpoint has been created.
Epoch 47 Loss 1.200464 Duration 55.047 seconds.
Checkpoint has been created.
Epoch 48 Loss 1.199744 Duration 55.879 seconds.
Checkpoint has been created.
Epoch 49 Loss 1.196310 Duration 55.256 seconds.
Checkpoint has been created.
Epoch 50 Loss 1.196519 Duration 54.676 seconds.
Checkpoint has been created.
Epoch 51 Loss 1.197983 Duration 54.513 seconds.
Checkpoint has been created.
Epoch 52 Loss 1.196940 Duration 54.820 seconds.
Checkpoint has been created.
Epoch 53 Loss 1.197158 Duration 55.010 seconds.
Checkpoint has been created.
Epoch 54 Loss 1.196387 Duration 54.618 seconds.
Checkpoint has been created.
Epoch 55 Loss 1.196072 Duration 55.131 seconds.
Checkpoint has been created.
Epoch 56 Loss 1.192452 Duration 53.719 seconds.
Checkpoint has been created.
Epoch 57 Loss 1.193610 Duration 55.495 seconds.
Checkpoint has been created.
Epoch 58 Loss 1.194547 Duration 55.024 seconds.
Checkpoint has been created.
Epoch 59 Loss 1.193133 Duration 60.390 seconds.
Checkpoint has been created.
Epoch 60 Loss 1.191775 Duration 60.529 seconds.

Checkpoint has been created.
Epoch 61 Loss 1.191366 Duration 60.532 seconds.
Checkpoint has been created.
Epoch 62 Loss 1.190049 Duration 60.524 seconds.
Checkpoint has been created.
Epoch 63 Loss 1.189902 Duration 57.310 seconds.
Checkpoint has been created.
Epoch 64 Loss 1.189794 Duration 54.752 seconds.
Checkpoint has been created.
Epoch 65 Loss 1.189416 Duration 56.198 seconds.
Checkpoint has been created.
Epoch 66 Loss 1.189214 Duration 55.149 seconds.
Checkpoint has been created.
Epoch 67 Loss 1.186971 Duration 55.217 seconds.
Checkpoint has been created.
Epoch 68 Loss 1.189117 Duration 54.205 seconds.
Checkpoint has been created.
Epoch 69 Loss 1.188483 Duration 55.346 seconds.
Checkpoint has been created.
Epoch 70 Loss 1.189240 Duration 55.214 seconds.
Checkpoint has been created.
Epoch 71 Loss 1.186410 Duration 55.253 seconds.
Checkpoint has been created.
Epoch 72 Loss 1.186521 Duration 55.297 seconds.
Checkpoint has been created.
Epoch 73 Loss 1.188218 Duration 55.099 seconds.
Checkpoint has been created.
Epoch 74 Loss 1.185666 Duration 56.128 seconds.
Checkpoint has been created.
Epoch 75 Loss 1.186329 Duration 60.014 seconds.
Checkpoint has been created.
Epoch 76 Loss 1.184520 Duration 54.322 seconds.
Checkpoint has been created.
Epoch 77 Loss 1.183505 Duration 54.128 seconds.
Checkpoint has been created.
Epoch 78 Loss 1.183076 Duration 54.573 seconds.
Checkpoint has been created.
Epoch 79 Loss 1.185142 Duration 54.775 seconds.
Checkpoint has been created.
Epoch 80 Loss 1.182849 Duration 54.273 seconds.
Checkpoint has been created.
Epoch 81 Loss 1.185859 Duration 54.605 seconds.
Checkpoint has been created.
Epoch 82 Loss 1.183255 Duration 54.333 seconds.
Checkpoint has been created.
Epoch 83 Loss 1.183753 Duration 54.442 seconds.
Checkpoint has been created.
Epoch 84 Loss 1.181923 Duration 54.742 seconds.
Checkpoint has been created.
Epoch 85 Loss 1.182702 Duration 58.350 seconds.
Checkpoint has been created.
Epoch 86 Loss 1.183908 Duration 56.308 seconds.
Checkpoint has been created.
Epoch 87 Loss 1.181918 Duration 55.285 seconds.
Checkpoint has been created.
Epoch 88 Loss 1.182041 Duration 55.231 seconds.
Checkpoint has been created.
Epoch 89 Loss 1.182042 Duration 54.522 seconds.
Checkpoint has been created.
Epoch 90 Loss 1.182738 Duration 55.030 seconds.

Checkpoint has been created.
Epoch 91 Loss 1.183739 Duration 54.605 seconds.
Checkpoint has been created.
Epoch 92 Loss 1.180680 Duration 54.956 seconds.
Checkpoint has been created.
Epoch 93 Loss 1.179422 Duration 54.839 seconds.
Checkpoint has been created.
Epoch 94 Loss 1.181865 Duration 54.391 seconds.
Checkpoint has been created.
Epoch 95 Loss 1.180387 Duration 54.540 seconds.
Checkpoint has been created.
Epoch 96 Loss 1.180270 Duration 54.101 seconds.
Checkpoint has been created.
Epoch 97 Loss 1.178039 Duration 55.766 seconds.
Checkpoint has been created.
Epoch 98 Loss 1.180196 Duration 54.001 seconds.
Checkpoint has been created.
Epoch 99 Loss 1.176754 Duration 54.321 seconds.
Checkpoint has been created.
Epoch 100 Loss 1.176944 Duration 54.162 seconds.
Checkpoint has been created.
Epoch 101 Loss 1.178840 Duration 54.067 seconds.
Checkpoint has been created.
Epoch 102 Loss 1.177547 Duration 53.377 seconds.
Checkpoint has been created.
Epoch 103 Loss 1.177477 Duration 53.340 seconds.
Checkpoint has been created.
Epoch 104 Loss 1.180251 Duration 52.700 seconds.
Checkpoint has been created.
Epoch 105 Loss 1.177526 Duration 54.026 seconds.
Checkpoint has been created.
Epoch 106 Loss 1.179302 Duration 53.837 seconds.
Checkpoint has been created.
Epoch 107 Loss 1.179276 Duration 53.269 seconds.
Checkpoint has been created.
Epoch 108 Loss 1.177629 Duration 54.266 seconds.
Checkpoint has been created.
Epoch 109 Loss 1.176258 Duration 53.108 seconds.
Checkpoint has been created.
Epoch 110 Loss 1.174903 Duration 53.573 seconds.
Checkpoint has been created.
Epoch 111 Loss 1.176615 Duration 53.973 seconds.
Checkpoint has been created.
Epoch 112 Loss 1.176602 Duration 54.477 seconds.
Checkpoint has been created.
Epoch 113 Loss 1.176258 Duration 53.354 seconds.
Checkpoint has been created.
Epoch 114 Loss 1.175746 Duration 53.012 seconds.
Checkpoint has been created.
Epoch 115 Loss 1.174256 Duration 52.194 seconds.
Checkpoint has been created.
Epoch 116 Loss 1.175711 Duration 52.627 seconds.
Checkpoint has been created.
Epoch 117 Loss 1.175828 Duration 52.099 seconds.
Checkpoint has been created.
Epoch 118 Loss 1.175319 Duration 52.764 seconds.
Checkpoint has been created.
Epoch 119 Loss 1.174508 Duration 59.074 seconds.
Checkpoint has been created.
Epoch 120 Loss 1.175763 Duration 57.165 seconds.

Checkpoint has been created.
Epoch 121 Loss 1.172422 Duration 59.209 seconds.
Checkpoint has been created.
Epoch 122 Loss 1.174354 Duration 59.233 seconds.
Checkpoint has been created.
Epoch 123 Loss 1.172092 Duration 59.176 seconds.
Checkpoint has been created.
Epoch 124 Loss 1.173932 Duration 55.951 seconds.
Checkpoint has been created.
Epoch 125 Loss 1.175578 Duration 53.258 seconds.
Checkpoint has been created.
Epoch 126 Loss 1.173645 Duration 53.927 seconds.
Checkpoint has been created.
Epoch 127 Loss 1.174600 Duration 53.054 seconds.
Checkpoint has been created.
Epoch 128 Loss 1.172057 Duration 53.764 seconds.
Checkpoint has been created.
Epoch 129 Loss 1.171088 Duration 54.215 seconds.
Checkpoint has been created.
Epoch 130 Loss 1.172722 Duration 54.049 seconds.
Checkpoint has been created.
Epoch 131 Loss 1.170253 Duration 53.870 seconds.
Checkpoint has been created.
Epoch 132 Loss 1.175131 Duration 54.094 seconds.
Checkpoint has been created.
Epoch 133 Loss 1.169719 Duration 53.997 seconds.
Checkpoint has been created.
Epoch 134 Loss 1.170903 Duration 53.865 seconds.
Checkpoint has been created.
Epoch 135 Loss 1.171247 Duration 53.757 seconds.
Checkpoint has been created.
Epoch 136 Loss 1.172288 Duration 54.000 seconds.
Checkpoint has been created.
Epoch 137 Loss 1.172953 Duration 53.430 seconds.
Checkpoint has been created.
Epoch 138 Loss 1.171703 Duration 53.478 seconds.
Checkpoint has been created.
Epoch 139 Loss 1.170876 Duration 55.436 seconds.
Checkpoint has been created.
Epoch 140 Loss 1.172914 Duration 56.268 seconds.
Checkpoint has been created.
Epoch 141 Loss 1.172764 Duration 55.184 seconds.
Checkpoint has been created.
Epoch 142 Loss 1.170942 Duration 53.947 seconds.
Checkpoint has been created.
Epoch 143 Loss 1.169996 Duration 54.508 seconds.
Checkpoint has been created.
Epoch 144 Loss 1.171744 Duration 58.074 seconds.
Checkpoint has been created.
Epoch 145 Loss 1.169110 Duration 57.778 seconds.
Checkpoint has been created.
Epoch 146 Loss 1.171521 Duration 54.351 seconds.
Checkpoint has been created.
Epoch 147 Loss 1.168784 Duration 52.356 seconds.
Checkpoint has been created.
Epoch 148 Loss 1.169032 Duration 53.111 seconds.
Checkpoint has been created.
Epoch 149 Loss 1.169982 Duration 54.134 seconds.
Checkpoint has been created.
Epoch 150 Loss 1.169125 Duration 56.112 seconds.

Checkpoint has been created.
Epoch 151 Loss 1.169947 Duration 53.352 seconds.
Checkpoint has been created.
Epoch 152 Loss 1.170294 Duration 52.996 seconds.
Checkpoint has been created.
Epoch 153 Loss 1.170854 Duration 59.255 seconds.
Checkpoint has been created.
Epoch 154 Loss 1.169543 Duration 53.031 seconds.
Checkpoint has been created.
Epoch 155 Loss 1.168311 Duration 52.061 seconds.
Checkpoint has been created.
Epoch 156 Loss 1.170183 Duration 53.116 seconds.
Checkpoint has been created.
Epoch 157 Loss 1.168960 Duration 53.593 seconds.
Checkpoint has been created.
Epoch 158 Loss 1.170089 Duration 52.140 seconds.
Checkpoint has been created.
Epoch 159 Loss 1.169843 Duration 52.231 seconds.
Checkpoint has been created.
Epoch 160 Loss 1.168335 Duration 52.936 seconds.
Checkpoint has been created.
Epoch 161 Loss 1.168400 Duration 53.099 seconds.
Checkpoint has been created.
Epoch 162 Loss 1.168701 Duration 52.345 seconds.
Checkpoint has been created.
Epoch 163 Loss 1.166750 Duration 52.620 seconds.
Checkpoint has been created.
Epoch 164 Loss 1.167197 Duration 53.502 seconds.
Checkpoint has been created.
Epoch 165 Loss 1.167449 Duration 53.540 seconds.
Checkpoint has been created.
Epoch 166 Loss 1.166977 Duration 53.295 seconds.
Checkpoint has been created.
Epoch 167 Loss 1.168333 Duration 53.344 seconds.
Checkpoint has been created.
Epoch 168 Loss 1.167572 Duration 53.313 seconds.
Checkpoint has been created.
Epoch 169 Loss 1.168545 Duration 54.301 seconds.
Checkpoint has been created.
Epoch 170 Loss 1.169051 Duration 54.130 seconds.
Checkpoint has been created.
Epoch 171 Loss 1.167157 Duration 52.461 seconds.
Checkpoint has been created.
Epoch 172 Loss 1.169644 Duration 53.133 seconds.
Checkpoint has been created.
Epoch 173 Loss 1.165014 Duration 53.171 seconds.
Checkpoint has been created.
Epoch 174 Loss 1.170070 Duration 53.958 seconds.
Checkpoint has been created.
Epoch 175 Loss 1.166857 Duration 53.811 seconds.
Checkpoint has been created.
Epoch 176 Loss 1.168352 Duration 54.379 seconds.
Checkpoint has been created.
Epoch 177 Loss 1.170288 Duration 53.704 seconds.
Checkpoint has been created.
Epoch 178 Loss 1.168373 Duration 54.055 seconds.
Checkpoint has been created.
Epoch 179 Loss 1.167381 Duration 54.049 seconds.
Checkpoint has been created.
Epoch 180 Loss 1.167526 Duration 54.110 seconds.

Checkpoint has been created.
Epoch 181 Loss 1.169057 Duration 53.926 seconds.
Checkpoint has been created.
Epoch 182 Loss 1.165083 Duration 53.284 seconds.
Checkpoint has been created.
Epoch 183 Loss 1.164785 Duration 53.788 seconds.
Checkpoint has been created.
Epoch 184 Loss 1.166579 Duration 53.360 seconds.
Checkpoint has been created.
Epoch 185 Loss 1.167256 Duration 52.954 seconds.
Checkpoint has been created.
Epoch 186 Loss 1.166755 Duration 53.496 seconds.
Checkpoint has been created.
Epoch 187 Loss 1.168060 Duration 53.521 seconds.
Checkpoint has been created.
Epoch 188 Loss 1.165049 Duration 53.400 seconds.
Checkpoint has been created.
Epoch 189 Loss 1.164468 Duration 53.261 seconds.
Checkpoint has been created.
Epoch 190 Loss 1.163877 Duration 53.814 seconds.
Checkpoint has been created.
Epoch 191 Loss 1.165292 Duration 57.481 seconds.
Checkpoint has been created.
Epoch 192 Loss 1.162633 Duration 58.444 seconds.
Checkpoint has been created.
Epoch 193 Loss 1.164491 Duration 55.541 seconds.
Checkpoint has been created.
Epoch 194 Loss 1.165399 Duration 53.338 seconds.
Checkpoint has been created.
Epoch 195 Loss 1.165737 Duration 53.646 seconds.
Checkpoint has been created.
Epoch 196 Loss 1.165236 Duration 53.557 seconds.
Checkpoint has been created.
Epoch 197 Loss 1.168599 Duration 54.006 seconds.
Checkpoint has been created.
Epoch 198 Loss 1.164265 Duration 54.348 seconds.
Checkpoint has been created.
Epoch 199 Loss 1.166609 Duration 53.351 seconds.
Checkpoint has been created.
Epoch 200 Loss 1.166080 Duration 52.952 seconds.
Checkpoint has been created.
Epoch 201 Loss 1.166581 Duration 53.697 seconds.
Checkpoint has been created.
Epoch 202 Loss 1.162625 Duration 52.972 seconds.
Checkpoint has been created.
Epoch 203 Loss 1.166961 Duration 53.756 seconds.
Checkpoint has been created.
Epoch 204 Loss 1.164978 Duration 53.454 seconds.
Checkpoint has been created.
Epoch 205 Loss 1.164552 Duration 52.997 seconds.
Checkpoint has been created.
Epoch 206 Loss 1.163462 Duration 52.911 seconds.
Checkpoint has been created.
Epoch 207 Loss 1.163498 Duration 53.231 seconds.
Checkpoint has been created.
Epoch 208 Loss 1.163721 Duration 52.728 seconds.
Checkpoint has been created.
Epoch 209 Loss 1.165885 Duration 54.177 seconds.
Checkpoint has been created.
Epoch 210 Loss 1.162427 Duration 53.011 seconds.

Checkpoint has been created.
Epoch 211 Loss 1.163988 Duration 53.570 seconds.
Checkpoint has been created.
Epoch 212 Loss 1.162509 Duration 54.088 seconds.
Checkpoint has been created.
Epoch 213 Loss 1.163804 Duration 54.034 seconds.
Checkpoint has been created.
Epoch 214 Loss 1.165668 Duration 53.969 seconds.
Checkpoint has been created.
Epoch 215 Loss 1.165351 Duration 54.104 seconds.
Checkpoint has been created.
Epoch 216 Loss 1.163285 Duration 53.725 seconds.
Checkpoint has been created.
Epoch 217 Loss 1.166262 Duration 53.320 seconds.
Checkpoint has been created.
Epoch 218 Loss 1.164797 Duration 53.061 seconds.
Checkpoint has been created.
Epoch 219 Loss 1.165192 Duration 54.061 seconds.
Checkpoint has been created.
Epoch 220 Loss 1.163943 Duration 54.035 seconds.
Checkpoint has been created.
Epoch 221 Loss 1.160757 Duration 53.961 seconds.
Checkpoint has been created.
Epoch 222 Loss 1.164497 Duration 52.840 seconds.
Checkpoint has been created.
Epoch 223 Loss 1.166145 Duration 53.966 seconds.
Checkpoint has been created.
Epoch 224 Loss 1.164355 Duration 53.906 seconds.
Checkpoint has been created.
Epoch 225 Loss 1.163321 Duration 53.428 seconds.
Checkpoint has been created.
Epoch 226 Loss 1.162263 Duration 53.561 seconds.
Checkpoint has been created.
Epoch 227 Loss 1.162750 Duration 53.079 seconds.
Checkpoint has been created.
Epoch 228 Loss 1.161896 Duration 53.641 seconds.
Checkpoint has been created.
Epoch 229 Loss 1.165869 Duration 52.607 seconds.
Checkpoint has been created.
Epoch 230 Loss 1.163054 Duration 53.429 seconds.
Checkpoint has been created.
Epoch 231 Loss 1.163676 Duration 53.024 seconds.
Checkpoint has been created.
Epoch 232 Loss 1.163634 Duration 53.755 seconds.
Checkpoint has been created.
Epoch 233 Loss 1.163164 Duration 53.916 seconds.
Checkpoint has been created.
Epoch 234 Loss 1.163969 Duration 52.532 seconds.
Checkpoint has been created.
Epoch 235 Loss 1.164444 Duration 53.710 seconds.
Checkpoint has been created.
Epoch 236 Loss 1.162279 Duration 53.945 seconds.
Checkpoint has been created.
Epoch 237 Loss 1.164486 Duration 53.980 seconds.
Checkpoint has been created.
Epoch 238 Loss 1.162405 Duration 53.917 seconds.
Checkpoint has been created.
Epoch 239 Loss 1.162871 Duration 52.653 seconds.
Checkpoint has been created.
Epoch 240 Loss 1.161933 Duration 56.320 seconds.

Checkpoint has been created.
Epoch 241 Loss 1.162277 Duration 59.244 seconds.
Checkpoint has been created.
Epoch 242 Loss 1.162070 Duration 59.729 seconds.
Checkpoint has been created.
Epoch 243 Loss 1.162569 Duration 58.754 seconds.
Checkpoint has been created.
Epoch 244 Loss 1.162890 Duration 58.748 seconds.
Checkpoint has been created.
Epoch 245 Loss 1.161302 Duration 58.065 seconds.
Checkpoint has been created.
Epoch 246 Loss 1.162382 Duration 53.597 seconds.
Checkpoint has been created.
Epoch 247 Loss 1.163696 Duration 54.505 seconds.
Checkpoint has been created.
Epoch 248 Loss 1.162666 Duration 54.557 seconds.
Checkpoint has been created.
Epoch 249 Loss 1.163054 Duration 53.988 seconds.
Checkpoint has been created.
Epoch 250 Loss 1.161927 Duration 53.974 seconds.
Checkpoint has been created.
Epoch 251 Loss 1.163990 Duration 53.495 seconds.
Checkpoint has been created.
Epoch 252 Loss 1.163524 Duration 54.664 seconds.
Checkpoint has been created.
Epoch 253 Loss 1.161777 Duration 53.590 seconds.
Checkpoint has been created.
Epoch 254 Loss 1.163507 Duration 52.997 seconds.
Checkpoint has been created.
Epoch 255 Loss 1.161513 Duration 52.533 seconds.
Checkpoint has been created.
Epoch 256 Loss 1.163817 Duration 52.213 seconds.
Checkpoint has been created.
Epoch 257 Loss 1.162660 Duration 53.384 seconds.
Checkpoint has been created.
Epoch 258 Loss 1.162771 Duration 53.685 seconds.
Checkpoint has been created.
Epoch 259 Loss 1.161899 Duration 53.676 seconds.
Checkpoint has been created.
Epoch 260 Loss 1.161655 Duration 53.840 seconds.
Checkpoint has been created.
Epoch 261 Loss 1.162564 Duration 53.613 seconds.
Checkpoint has been created.
Epoch 262 Loss 1.161367 Duration 53.631 seconds.
Checkpoint has been created.
Epoch 263 Loss 1.159837 Duration 52.658 seconds.
Checkpoint has been created.
Epoch 264 Loss 1.161097 Duration 52.932 seconds.
Checkpoint has been created.
Epoch 265 Loss 1.161985 Duration 53.259 seconds.
Checkpoint has been created.
Epoch 266 Loss 1.162044 Duration 53.228 seconds.
Checkpoint has been created.
Epoch 267 Loss 1.160376 Duration 52.459 seconds.
Checkpoint has been created.
Epoch 268 Loss 1.161981 Duration 53.508 seconds.
Checkpoint has been created.
Epoch 269 Loss 1.161249 Duration 53.153 seconds.
Checkpoint has been created.
Epoch 270 Loss 1.161985 Duration 52.886 seconds.

Checkpoint has been created.
Epoch 271 Loss 1.161639 Duration 53.050 seconds.
Checkpoint has been created.
Epoch 272 Loss 1.161581 Duration 52.489 seconds.
Checkpoint has been created.
Epoch 273 Loss 1.163122 Duration 52.431 seconds.
Checkpoint has been created.
Epoch 274 Loss 1.159613 Duration 52.651 seconds.
Checkpoint has been created.
Epoch 275 Loss 1.159679 Duration 53.794 seconds.
Checkpoint has been created.
Epoch 276 Loss 1.158692 Duration 53.788 seconds.
Checkpoint has been created.
Epoch 277 Loss 1.157841 Duration 53.280 seconds.
Checkpoint has been created.
Epoch 278 Loss 1.161566 Duration 52.315 seconds.
Checkpoint has been created.
Epoch 279 Loss 1.159998 Duration 52.328 seconds.
Checkpoint has been created.
Epoch 280 Loss 1.163350 Duration 51.972 seconds.
Checkpoint has been created.
Epoch 281 Loss 1.162214 Duration 52.043 seconds.
Checkpoint has been created.
Epoch 282 Loss 1.160732 Duration 51.991 seconds.
Checkpoint has been created.
Epoch 283 Loss 1.159589 Duration 52.014 seconds.
Checkpoint has been created.
Epoch 284 Loss 1.161698 Duration 53.163 seconds.
Checkpoint has been created.
Epoch 285 Loss 1.161005 Duration 53.725 seconds.
Checkpoint has been created.
Epoch 286 Loss 1.161099 Duration 54.117 seconds.
Checkpoint has been created.
Epoch 287 Loss 1.159454 Duration 54.169 seconds.
Checkpoint has been created.
Epoch 288 Loss 1.161927 Duration 53.715 seconds.
Checkpoint has been created.
Epoch 289 Loss 1.159756 Duration 53.845 seconds.
Checkpoint has been created.
Epoch 290 Loss 1.161033 Duration 53.265 seconds.
Checkpoint has been created.
Epoch 291 Loss 1.160199 Duration 53.823 seconds.
Checkpoint has been created.
Epoch 292 Loss 1.160805 Duration 53.521 seconds.
Checkpoint has been created.
Epoch 293 Loss 1.161031 Duration 53.527 seconds.
Checkpoint has been created.
Epoch 294 Loss 1.159598 Duration 53.458 seconds.
Checkpoint has been created.
Epoch 295 Loss 1.162075 Duration 53.455 seconds.
Checkpoint has been created.
Epoch 296 Loss 1.160512 Duration 53.638 seconds.
Checkpoint has been created.
Epoch 297 Loss 1.160391 Duration 53.600 seconds.
Checkpoint has been created.
Epoch 298 Loss 1.160698 Duration 53.343 seconds.
Checkpoint has been created.
Epoch 299 Loss 1.158070 Duration 53.661 seconds.
Checkpoint has been created.
Epoch 300 Loss 1.160879 Duration 53.611 seconds.

Checkpoint has been created.
Epoch 301 Loss 1.158930 Duration 54.186 seconds.
Checkpoint has been created.
Epoch 302 Loss 1.161574 Duration 54.278 seconds.
Checkpoint has been created.
Epoch 303 Loss 1.160658 Duration 54.740 seconds.
Checkpoint has been created.
Epoch 304 Loss 1.156695 Duration 52.823 seconds.
Checkpoint has been created.
Epoch 305 Loss 1.161968 Duration 53.211 seconds.
Checkpoint has been created.
Epoch 306 Loss 1.160799 Duration 54.106 seconds.
Checkpoint has been created.
Epoch 307 Loss 1.160935 Duration 53.841 seconds.
Checkpoint has been created.
Epoch 308 Loss 1.159118 Duration 52.847 seconds.
Checkpoint has been created.
Epoch 309 Loss 1.160170 Duration 54.902 seconds.
Checkpoint has been created.
Epoch 310 Loss 1.158266 Duration 54.091 seconds.
Checkpoint has been created.
Epoch 311 Loss 1.160557 Duration 52.265 seconds.
Checkpoint has been created.
Epoch 312 Loss 1.160461 Duration 52.071 seconds.
Checkpoint has been created.
Epoch 313 Loss 1.158735 Duration 52.155 seconds.
Checkpoint has been created.
Epoch 314 Loss 1.157892 Duration 52.024 seconds.
Checkpoint has been created.
Epoch 315 Loss 1.161893 Duration 52.256 seconds.
Checkpoint has been created.
Epoch 316 Loss 1.160819 Duration 52.164 seconds.
Checkpoint has been created.
Epoch 317 Loss 1.161466 Duration 52.614 seconds.
Checkpoint has been created.
Epoch 318 Loss 1.158426 Duration 52.007 seconds.
Checkpoint has been created.
Epoch 319 Loss 1.160651 Duration 52.066 seconds.
Checkpoint has been created.
Epoch 320 Loss 1.158802 Duration 53.782 seconds.
Checkpoint has been created.
Epoch 321 Loss 1.158265 Duration 54.032 seconds.
Checkpoint has been created.
Epoch 322 Loss 1.159023 Duration 54.422 seconds.
Checkpoint has been created.
Epoch 323 Loss 1.159417 Duration 52.898 seconds.
Checkpoint has been created.
Epoch 324 Loss 1.159759 Duration 52.753 seconds.
Checkpoint has been created.
Epoch 325 Loss 1.157232 Duration 52.297 seconds.
Checkpoint has been created.
Epoch 326 Loss 1.158965 Duration 51.980 seconds.
Checkpoint has been created.
Epoch 327 Loss 1.157308 Duration 51.981 seconds.
Checkpoint has been created.
Epoch 328 Loss 1.158012 Duration 54.367 seconds.
Checkpoint has been created.
Epoch 329 Loss 1.159391 Duration 54.618 seconds.
Checkpoint has been created.
Epoch 330 Loss 1.159625 Duration 54.201 seconds.

Checkpoint has been created.
Epoch 331 Loss 1.157972 Duration 54.309 seconds.
Checkpoint has been created.
Epoch 332 Loss 1.158755 Duration 52.679 seconds.
Checkpoint has been created.
Epoch 333 Loss 1.157441 Duration 52.857 seconds.
Checkpoint has been created.
Epoch 334 Loss 1.159586 Duration 54.136 seconds.
Checkpoint has been created.
Epoch 335 Loss 1.158044 Duration 55.585 seconds.
Checkpoint has been created.
Epoch 336 Loss 1.157252 Duration 56.967 seconds.
Checkpoint has been created.
Epoch 337 Loss 1.157854 Duration 59.805 seconds.
Checkpoint has been created.
Epoch 338 Loss 1.160300 Duration 54.527 seconds.
Checkpoint has been created.
Epoch 339 Loss 1.156782 Duration 54.073 seconds.
Checkpoint has been created.
Epoch 340 Loss 1.158294 Duration 55.199 seconds.
Checkpoint has been created.
Epoch 341 Loss 1.159368 Duration 55.181 seconds.
Checkpoint has been created.
Epoch 342 Loss 1.160058 Duration 54.021 seconds.
Checkpoint has been created.
Epoch 343 Loss 1.160745 Duration 54.005 seconds.
Checkpoint has been created.
Epoch 344 Loss 1.162040 Duration 54.158 seconds.
Checkpoint has been created.
Epoch 345 Loss 1.161447 Duration 53.692 seconds.
Checkpoint has been created.
Epoch 346 Loss 1.161146 Duration 53.698 seconds.
Checkpoint has been created.
Epoch 347 Loss 1.160360 Duration 53.028 seconds.
Checkpoint has been created.
Epoch 348 Loss 1.161271 Duration 52.887 seconds.
Checkpoint has been created.
Epoch 349 Loss 1.156597 Duration 53.793 seconds.
Checkpoint has been created.
Epoch 350 Loss 1.160668 Duration 53.870 seconds.
Checkpoint has been created.
Epoch 351 Loss 1.158508 Duration 52.375 seconds.
Checkpoint has been created.
Epoch 352 Loss 1.158602 Duration 52.860 seconds.
Checkpoint has been created.
Epoch 353 Loss 1.158014 Duration 57.586 seconds.
Checkpoint has been created.
Epoch 354 Loss 1.154882 Duration 59.042 seconds.
Checkpoint has been created.
Epoch 355 Loss 1.159272 Duration 59.274 seconds.
Checkpoint has been created.
Epoch 356 Loss 1.159151 Duration 57.323 seconds.
Checkpoint has been created.
Epoch 357 Loss 1.158804 Duration 54.092 seconds.
Checkpoint has been created.
Epoch 358 Loss 1.159477 Duration 52.375 seconds.
Checkpoint has been created.
Epoch 359 Loss 1.158038 Duration 52.036 seconds.
Checkpoint has been created.
Epoch 360 Loss 1.157458 Duration 53.816 seconds.

Checkpoint has been created.
Epoch 361 Loss 1.158627 Duration 54.232 seconds.
Checkpoint has been created.
Epoch 362 Loss 1.159737 Duration 53.067 seconds.
Checkpoint has been created.
Epoch 363 Loss 1.157596 Duration 52.185 seconds.
Checkpoint has been created.
Epoch 364 Loss 1.156476 Duration 53.214 seconds.
Checkpoint has been created.
Epoch 365 Loss 1.160495 Duration 52.032 seconds.
Checkpoint has been created.
Epoch 366 Loss 1.159396 Duration 52.453 seconds.
Checkpoint has been created.
Epoch 367 Loss 1.161867 Duration 53.725 seconds.
Checkpoint has been created.
Epoch 368 Loss 1.159449 Duration 53.777 seconds.
Checkpoint has been created.
Epoch 369 Loss 1.156953 Duration 51.933 seconds.
Checkpoint has been created.
Epoch 370 Loss 1.158975 Duration 53.089 seconds.
Checkpoint has been created.
Epoch 371 Loss 1.158072 Duration 54.276 seconds.
Checkpoint has been created.
Epoch 372 Loss 1.158613 Duration 53.336 seconds.
Checkpoint has been created.
Epoch 373 Loss 1.158057 Duration 56.465 seconds.
Checkpoint has been created.
Epoch 374 Loss 1.156471 Duration 53.506 seconds.
Checkpoint has been created.
Epoch 375 Loss 1.157860 Duration 54.088 seconds.
Checkpoint has been created.
Epoch 376 Loss 1.157818 Duration 54.056 seconds.
Checkpoint has been created.
Epoch 377 Loss 1.155363 Duration 53.758 seconds.
Checkpoint has been created.
Epoch 378 Loss 1.155670 Duration 53.384 seconds.
Checkpoint has been created.
Epoch 379 Loss 1.157214 Duration 54.055 seconds.
Checkpoint has been created.
Epoch 380 Loss 1.158656 Duration 54.314 seconds.
Checkpoint has been created.
Epoch 381 Loss 1.159176 Duration 54.007 seconds.
Checkpoint has been created.
Epoch 382 Loss 1.157388 Duration 53.321 seconds.
Checkpoint has been created.
Epoch 383 Loss 1.156867 Duration 53.186 seconds.
Checkpoint has been created.
Epoch 384 Loss 1.155880 Duration 53.825 seconds.
Checkpoint has been created.
Epoch 385 Loss 1.158585 Duration 56.046 seconds.
Checkpoint has been created.
Epoch 386 Loss 1.157743 Duration 54.346 seconds.
Checkpoint has been created.
Epoch 387 Loss 1.160037 Duration 54.336 seconds.
Checkpoint has been created.
Epoch 388 Loss 1.155257 Duration 59.144 seconds.
Checkpoint has been created.
Epoch 389 Loss 1.156491 Duration 57.896 seconds.
Checkpoint has been created.
Epoch 390 Loss 1.158494 Duration 53.877 seconds.

Checkpoint has been created.
Epoch 391 Loss 1.157973 Duration 53.685 seconds.
Checkpoint has been created.
Epoch 392 Loss 1.159721 Duration 53.482 seconds.
Checkpoint has been created.
Epoch 393 Loss 1.154005 Duration 53.847 seconds.
Checkpoint has been created.
Epoch 394 Loss 1.158683 Duration 53.961 seconds.
Checkpoint has been created.
Epoch 395 Loss 1.157409 Duration 53.795 seconds.
Checkpoint has been created.
Epoch 396 Loss 1.159329 Duration 53.838 seconds.
Checkpoint has been created.
Epoch 397 Loss 1.159054 Duration 53.679 seconds.
Checkpoint has been created.
Epoch 398 Loss 1.157749 Duration 53.441 seconds.
Checkpoint has been created.
Epoch 399 Loss 1.157705 Duration 55.397 seconds.
Checkpoint has been created.
Epoch 400 Loss 1.158327 Duration 58.294 seconds.
Checkpoint has been created.
Epoch 401 Loss 1.156935 Duration 56.594 seconds.
Checkpoint has been created.
Epoch 402 Loss 1.157214 Duration 53.982 seconds.
Checkpoint has been created.
Epoch 403 Loss 1.155985 Duration 53.718 seconds.
Checkpoint has been created.
Epoch 404 Loss 1.157316 Duration 53.447 seconds.
Checkpoint has been created.
Epoch 405 Loss 1.153565 Duration 54.837 seconds.
Checkpoint has been created.
Epoch 406 Loss 1.158247 Duration 56.826 seconds.
Checkpoint has been created.
Epoch 407 Loss 1.158439 Duration 57.122 seconds.
Checkpoint has been created.
Epoch 408 Loss 1.157856 Duration 52.409 seconds.
Checkpoint has been created.
Epoch 409 Loss 1.155099 Duration 52.123 seconds.
Checkpoint has been created.
Epoch 410 Loss 1.157427 Duration 53.281 seconds.
Checkpoint has been created.
Epoch 411 Loss 1.158962 Duration 53.722 seconds.
Checkpoint has been created.
Epoch 412 Loss 1.159498 Duration 53.937 seconds.
Checkpoint has been created.
Epoch 413 Loss 1.155801 Duration 53.749 seconds.
Checkpoint has been created.
Epoch 414 Loss 1.155735 Duration 53.755 seconds.
Checkpoint has been created.
Epoch 415 Loss 1.158994 Duration 53.655 seconds.
Checkpoint has been created.
Epoch 416 Loss 1.158270 Duration 53.748 seconds.
Checkpoint has been created.
Epoch 417 Loss 1.156175 Duration 53.810 seconds.
Checkpoint has been created.
Epoch 418 Loss 1.155647 Duration 53.729 seconds.
Checkpoint has been created.
Epoch 419 Loss 1.156442 Duration 53.728 seconds.
Checkpoint has been created.
Epoch 420 Loss 1.157903 Duration 54.074 seconds.

Checkpoint has been created.
Epoch 421 Loss 1.156631 Duration 53.860 seconds.
Checkpoint has been created.
Epoch 422 Loss 1.157840 Duration 53.335 seconds.
Checkpoint has been created.
Epoch 423 Loss 1.154773 Duration 53.722 seconds.
Checkpoint has been created.
Epoch 424 Loss 1.155684 Duration 53.132 seconds.
Checkpoint has been created.
Epoch 425 Loss 1.155506 Duration 54.132 seconds.
Checkpoint has been created.
Epoch 426 Loss 1.155895 Duration 52.436 seconds.
Checkpoint has been created.
Epoch 427 Loss 1.158704 Duration 52.704 seconds.
Checkpoint has been created.
Epoch 428 Loss 1.158118 Duration 54.142 seconds.
Checkpoint has been created.
Epoch 429 Loss 1.154759 Duration 53.676 seconds.
Checkpoint has been created.
Epoch 430 Loss 1.158775 Duration 53.859 seconds.
Checkpoint has been created.
Epoch 431 Loss 1.155369 Duration 54.738 seconds.
Checkpoint has been created.
Epoch 432 Loss 1.158241 Duration 53.282 seconds.
Checkpoint has been created.
Epoch 433 Loss 1.157682 Duration 53.963 seconds.
Checkpoint has been created.
Epoch 434 Loss 1.157477 Duration 54.177 seconds.
Checkpoint has been created.
Epoch 435 Loss 1.156145 Duration 53.772 seconds.
Checkpoint has been created.
Epoch 436 Loss 1.157062 Duration 53.778 seconds.
Checkpoint has been created.
Epoch 437 Loss 1.157901 Duration 53.674 seconds.
Checkpoint has been created.
Epoch 438 Loss 1.156624 Duration 54.092 seconds.
Checkpoint has been created.
Epoch 439 Loss 1.157794 Duration 53.762 seconds.
Checkpoint has been created.
Epoch 440 Loss 1.154278 Duration 53.882 seconds.
Checkpoint has been created.
Epoch 441 Loss 1.157039 Duration 52.915 seconds.
Checkpoint has been created.
Epoch 442 Loss 1.156046 Duration 54.199 seconds.
Checkpoint has been created.
Epoch 443 Loss 1.156844 Duration 54.095 seconds.
Checkpoint has been created.
Epoch 444 Loss 1.157861 Duration 54.151 seconds.
Checkpoint has been created.
Epoch 445 Loss 1.154960 Duration 53.952 seconds.
Checkpoint has been created.
Epoch 446 Loss 1.157065 Duration 53.811 seconds.
Checkpoint has been created.
Epoch 447 Loss 1.157206 Duration 54.015 seconds.
Checkpoint has been created.
Epoch 448 Loss 1.155992 Duration 56.777 seconds.
Checkpoint has been created.
Epoch 449 Loss 1.155271 Duration 55.952 seconds.
Checkpoint has been created.
Epoch 450 Loss 1.157180 Duration 54.036 seconds.

Checkpoint has been created.
Epoch 451 Loss 1.157077 Duration 52.085 seconds.
Checkpoint has been created.
Epoch 452 Loss 1.153472 Duration 52.215 seconds.
Checkpoint has been created.
Epoch 453 Loss 1.157696 Duration 52.044 seconds.
Checkpoint has been created.
Epoch 454 Loss 1.156473 Duration 52.023 seconds.
Checkpoint has been created.
Epoch 455 Loss 1.156124 Duration 52.765 seconds.
Checkpoint has been created.
Epoch 456 Loss 1.156409 Duration 54.117 seconds.
Checkpoint has been created.
Epoch 457 Loss 1.155472 Duration 54.383 seconds.
Checkpoint has been created.
Epoch 458 Loss 1.156670 Duration 53.674 seconds.
Checkpoint has been created.
Epoch 459 Loss 1.155540 Duration 52.916 seconds.
Checkpoint has been created.
Epoch 460 Loss 1.155191 Duration 54.079 seconds.
Checkpoint has been created.
Epoch 461 Loss 1.155937 Duration 53.930 seconds.
Checkpoint has been created.
Epoch 462 Loss 1.156128 Duration 54.179 seconds.
Checkpoint has been created.
Epoch 463 Loss 1.156443 Duration 54.110 seconds.
Checkpoint has been created.
Epoch 464 Loss 1.154289 Duration 52.824 seconds.
Checkpoint has been created.
Epoch 465 Loss 1.154459 Duration 53.095 seconds.
Checkpoint has been created.
Epoch 466 Loss 1.158184 Duration 53.986 seconds.
Checkpoint has been created.
Epoch 467 Loss 1.156728 Duration 54.109 seconds.
Checkpoint has been created.
Epoch 468 Loss 1.156541 Duration 54.117 seconds.
Checkpoint has been created.
Epoch 469 Loss 1.156823 Duration 54.081 seconds.
Checkpoint has been created.
Epoch 470 Loss 1.157143 Duration 53.699 seconds.
Checkpoint has been created.
Epoch 471 Loss 1.157641 Duration 54.110 seconds.
Checkpoint has been created.
Epoch 472 Loss 1.157863 Duration 54.347 seconds.
Checkpoint has been created.
Epoch 473 Loss 1.156814 Duration 53.774 seconds.
Checkpoint has been created.
Epoch 474 Loss 1.156380 Duration 54.416 seconds.
Checkpoint has been created.
Epoch 475 Loss 1.156258 Duration 58.121 seconds.
Checkpoint has been created.
Epoch 476 Loss 1.155349 Duration 59.103 seconds.
Checkpoint has been created.
Epoch 477 Loss 1.155895 Duration 58.644 seconds.
Checkpoint has been created.
Epoch 478 Loss 1.156140 Duration 59.105 seconds.
Checkpoint has been created.
Epoch 479 Loss 1.157306 Duration 56.245 seconds.
Checkpoint has been created.
Epoch 480 Loss 1.155572 Duration 54.001 seconds.

Checkpoint has been created.
Epoch 481 Loss 1.158686 Duration 54.191 seconds.
Checkpoint has been created.
Epoch 482 Loss 1.157078 Duration 53.821 seconds.
Checkpoint has been created.
Epoch 483 Loss 1.154817 Duration 57.181 seconds.
Checkpoint has been created.
Epoch 484 Loss 1.154359 Duration 58.482 seconds.
Checkpoint has been created.
Epoch 485 Loss 1.153787 Duration 58.186 seconds.
Checkpoint has been created.
Epoch 486 Loss 1.154980 Duration 59.423 seconds.
Checkpoint has been created.
Epoch 487 Loss 1.156014 Duration 59.065 seconds.
Checkpoint has been created.
Epoch 488 Loss 1.155445 Duration 59.162 seconds.
Checkpoint has been created.
Epoch 489 Loss 1.159141 Duration 55.825 seconds.
Checkpoint has been created.
Epoch 490 Loss 1.154886 Duration 51.936 seconds.
Checkpoint has been created.
Epoch 491 Loss 1.158249 Duration 51.908 seconds.
Checkpoint has been created.
Epoch 492 Loss 1.155298 Duration 51.915 seconds.
Checkpoint has been created.
Epoch 493 Loss 1.154907 Duration 51.926 seconds.
Checkpoint has been created.
Epoch 494 Loss 1.156202 Duration 52.166 seconds.
Checkpoint has been created.
Epoch 495 Loss 1.156324 Duration 52.030 seconds.
Checkpoint has been created.
Epoch 496 Loss 1.155507 Duration 52.051 seconds.
Checkpoint has been created.
Epoch 497 Loss 1.155782 Duration 53.540 seconds.
Checkpoint has been created.
Epoch 498 Loss 1.154895 Duration 53.486 seconds.
Checkpoint has been created.
Epoch 499 Loss 1.154902 Duration 53.741 seconds.
Checkpoint has been created.
Epoch 500 Loss 1.153128 Duration 54.092 seconds.
Checkpoint has been created.

## Testing phase:

### Test or Validation ###
Restored model parameters from bot_1/model-500.ckpt
Test accuracy: 0.9082
Epoch 1 Loss 1.158508 Duration 52.375 seconds.
Checkpoint has been created.
Epoch 2 Loss 1.158602 Duration 52.860 seconds.
Checkpoint has been created.
Epoch 3 Loss 1.158014 Duration 57.586 seconds.
Checkpoint has been created.
Epoch 4 Loss 1.154882 Duration 59.042 seconds.
Checkpoint has been created.
Epoch 5 Loss 1.159272 Duration 59.274 seconds.
Checkpoint has been created.
Epoch 6 Loss 1.159151 Duration 57.323 seconds.
Checkpoint has been created.
Epoch 7 Loss 1.158804 Duration 54.092 seconds.
Checkpoint has been created.
Epoch 8 Loss 1.159477 Duration 52.375 seconds.
Checkpoint has been created.
Epoch 9 Loss 1.158038 Duration 52.036 seconds.
Checkpoint has been created.
Epoch 10 Loss 1.157458 Duration 53.816 seconds.
### Test or Validation ###
Restored model parameters from bot_1/model-500.ckpt
Test accuracy: 0.8972