

Python 3.7.0 (default, Jun 28 2018, 07:39:16)  
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IPython 7.6.1 -- An enhanced Interactive Python.

Restarting kernel...

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For epoch 1 MSE loss is 1.8593742698431015

```
In [1]: runfile('/Users/jayasaharan/Documents/Mini 1/Machine
Learning 701/Project/Network.py', wdir='/Users/jayasaharan/
Documents/Mini 1/Machine Learning 701/Project')
```

```
In [2]: runfile('/Users/jayasaharan/Documents/Mini 1/Machine
Learning 701/Project/TestNetwork.py', wdir='/Users/
jayasaharan/Documents/Mini 1/Machine Learning 701/Project')
```

```
0%|          | 0/5 [00:00<?, ?it/s]Data Loaded
Constructing DAE Initialized NN
Training Layer fc1 : Begin
20%|█         | 1/5 [00:11<00:46, 11.53s/it]For epoch 0 MSE
loss is 2.9023217782378197
40%|██        | 2/5 [00:22<00:34, 11.47s/it]For epoch 1 MSE
loss is 1.8007901012897491
60%|████      | 3/5 [00:34<00:22, 11.50s/it]For epoch 2 MSE
loss is 1.6606832295656204
80%|██████    | 4/5 [00:45<00:11, 11.44s/it]For epoch 3 MSE
loss is 1.629080668091774
100%|████████ | 5/5 [00:57<00:00, 11.46s/it]
0%|          | 0/5 [00:00<?, ?it/s]For epoch 4 MSE loss is
1.609411470592022
Training Layer fc1 : End
Training Layer out : Begin
20%|█         | 1/5 [00:09<00:37, 9.26s/it]For epoch 0 MSE
loss is 20.966475024819374
40%|██        | 2/5 [00:18<00:27, 9.30s/it]For epoch 1 MSE
loss is 13.900343477725983
60%|████      | 3/5 [00:28<00:18, 9.33s/it]For epoch 2 MSE
loss is 13.407141327857971
80%|██████    | 4/5 [00:37<00:09, 9.33s/it]For epoch 3 MSE
loss is 13.139413356781006
100%|████████ | 5/5 [00:46<00:00, 9.32s/it]For epoch 4 MSE
loss is 12.990904286503792
Training Layer out : End
Model Constructed
Data Loaded
Constructing Random Initialized NN
```

Model Constructed

Data Loaded

Constructing Autoencoder Initialized NN

20%|██████| 1/5 [00:11<00:44, 11.10s/it]For epoch 0 MSE  
loss is 4.571557153016329

40%|██████| 2/5 [00:22<00:33, 11.15s/it]For epoch 1 MSE  
loss is 3.324964102357626

60%|██████| 3/5 [00:33<00:22, 11.18s/it]For epoch 2 MSE  
loss is 2.9651991985738277

80%|██████| 4/5 [00:44<00:11, 11.17s/it]For epoch 3 MSE  
loss is 2.767721064388752

100%|██████| 5/5 [00:56<00:00, 11.20s/it]For epoch 4 MSE  
loss is 2.6991454623639584

Model Constructed

model DAE Layer-by-Layer epoch 0 total correct: 46283 total %  
correct: 0.7713833333333333 loss func: 0.741944333910942

model Default Pytorch epoch 0 total correct: 52165 total %  
correct: 0.8694166666666666 loss func: 0.44944809352358184

model End-to-End Autoencoder epoch 0 total correct: 37460  
total % correct: 0.6243333333333333 loss func:  
1.2010638589660327

model DAE Layer-by-Layer epoch 1 total correct: 55924 total %  
correct: 0.9320666666666667 loss func: 0.240126895904541

model Default Pytorch epoch 1 total correct: 56784 total %  
correct: 0.9464 loss func: 0.1840864452222983

model End-to-End Autoencoder epoch 1 total correct: 53888  
total % correct: 0.8981333333333333 loss func:  
0.35352020983894666

model DAE Layer-by-Layer epoch 2 total correct: 56817 total %  
correct: 0.94695 loss func: 0.18414611431459585

model Default Pytorch epoch 2 total correct: 57695 total %  
correct: 0.9615833333333333 loss func: 0.12989206376175086

model End-to-End Autoencoder epoch 2 total correct: 54900  
total % correct: 0.915 loss func: 0.29665034810702007

model DAE Layer-by-Layer epoch 3 total correct: 57394 total %  
correct: 0.9565666666666667 loss func: 0.14915260213116804

model Default Pytorch epoch 3 total correct: 58217 total %  
correct: 0.9702833333333334 loss func: 0.10026682044068973

model End-to-End Autoencoder epoch 3 total correct: 55314  
total % correct: 0.9219 loss func: 0.2711649624009927

model DAE Layer-by-Layer epoch 4 total correct: 57777 total %

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correct: 0.96295 loss func: 0.12496798454473416
model Default Pytorch epoch 4 total correct: 58464 total %
correct: 0.9744 loss func: 0.08340040588130554
model End-to-End Autoencoder epoch 4 total correct: 55592
total % correct: 0.9265333333333333 loss func:
0.25474397068222365
```

In [3]: