

Loading time is 8.4525 s.

***change learning rate 0.05,0.01,0.005

size_batch: 50

hidden_units: 100

lr: 0.05

[Epoch 1, mb 200]	Avg.Loss = 0.320		
Train Loss: 0.616	Train Acc: 72.63%	Error Rate: 27.37%	
Test Loss: 0.626	Test Acc: 72.40%	Error Rate: 27.60%	
[Epoch 2, mb 200]	Avg.Loss = 0.294		
Train Loss: 0.561	Train Acc: 75.30%	Error Rate: 24.70%	
Test Loss: 0.592	Test Acc: 73.90%	Error Rate: 26.10%	
[Epoch 3, mb 200]	Avg.Loss = 0.250		
Train Loss: 0.506	Train Acc: 77.84%	Error Rate: 22.16%	
Test Loss: 0.564	Test Acc: 75.35%	Error Rate: 24.65%	
[Epoch 4, mb 200]	Avg.Loss = 0.229		
Train Loss: 0.463	Train Acc: 80.00%	Error Rate: 20.00%	
Test Loss: 0.544	Test Acc: 76.90%	Error Rate: 23.10%	
[Epoch 5, mb 200]	Avg.Loss = 0.205		
Train Loss: 0.418	Train Acc: 82.31%	Error Rate: 17.69%	
Test Loss: 0.523	Test Acc: 78.20%	Error Rate: 21.80%	
[Epoch 6, mb 200]	Avg.Loss = 0.185		
Train Loss: 0.386	Train Acc: 83.90%	Error Rate: 16.10%	
Test Loss: 0.516	Test Acc: 78.95%	Error Rate: 21.05%	
[Epoch 7, mb 200]	Avg.Loss = 0.162		
Train Loss: 0.355	Train Acc: 85.13%	Error Rate: 14.87%	
Test Loss: 0.511	Test Acc: 78.90%	Error Rate: 21.10%	
[Epoch 8, mb 200]	Avg.Loss = 0.148		
Train Loss: 0.327	Train Acc: 86.17%	Error Rate: 13.83%	
Test Loss: 0.507	Test Acc: 79.65%	Error Rate: 20.35%	
[Epoch 9, mb 200]	Avg.Loss = 0.138		
Train Loss: 0.302	Train Acc: 87.41%	Error Rate: 12.59%	
Test Loss: 0.506	Test Acc: 80.20%	Error Rate: 19.80%	
[Epoch 10, mb 200]	Avg.Loss = 0.135		
Train Loss: 0.282	Train Acc: 88.41%	Error Rate: 11.59%	
Test Loss: 0.509	Test Acc: 80.45%	Error Rate: 19.55%	
[Epoch 11, mb 200]	Avg.Loss = 0.126		
Train Loss: 0.262	Train Acc: 89.41%	Error Rate: 10.59%	
Test Loss: 0.512	Test Acc: 80.75%	Error Rate: 19.25%	
[Epoch 12, mb 200]	Avg.Loss = 0.114		
Train Loss: 0.248	Train Acc: 90.27%	Error Rate: 9.73%	
Test Loss: 0.517	Test Acc: 81.25%	Error Rate: 18.75%	
[Epoch 13, mb 200]	Avg.Loss = 0.127		
Train Loss: 0.234	Train Acc: 90.82%	Error Rate: 9.18%	
Test Loss: 0.526	Test Acc: 81.55%	Error Rate: 18.45%	
[Epoch 14, mb 200]	Avg.Loss = 0.132		
Train Loss: 0.221	Train Acc: 91.35%	Error Rate: 8.65%	
Test Loss: 0.545	Test Acc: 81.25%	Error Rate: 18.75%	
[Epoch 15, mb 200]	Avg.Loss = 0.104		
Train Loss: 0.209	Train Acc: 91.61%	Error Rate: 8.39%	

Test Loss: 0.563	Test Acc: 80.95%	Error Rate: 19.05%
[Epoch 16, mb 200]	Avg.Loss = 0.074	
Train Loss: 0.210	Train Acc: 91.81%	Error Rate: 8.19%
Test Loss: 0.555	Test Acc: 81.65%	Error Rate: 18.35%
[Epoch 17, mb 200]	Avg.Loss = 0.075	
Train Loss: 0.193	Train Acc: 92.30%	Error Rate: 7.70%
Test Loss: 0.565	Test Acc: 80.95%	Error Rate: 19.05%
[Epoch 18, mb 200]	Avg.Loss = 0.093	
Train Loss: 0.176	Train Acc: 93.04%	Error Rate: 6.96%
Test Loss: 0.572	Test Acc: 80.65%	Error Rate: 19.35%
[Epoch 19, mb 200]	Avg.Loss = 0.108	
Train Loss: 0.172	Train Acc: 93.38%	Error Rate: 6.62%
Test Loss: 0.588	Test Acc: 81.20%	Error Rate: 18.80%
[Epoch 20, mb 200]	Avg.Loss = 0.087	
Train Loss: 0.161	Train Acc: 93.62%	Error Rate: 6.38%
Test Loss: 0.614	Test Acc: 81.10%	Error Rate: 18.90%
[Epoch 21, mb 200]	Avg.Loss = 0.101	
Train Loss: 0.203	Train Acc: 92.50%	Error Rate: 7.50%
Test Loss: 0.647	Test Acc: 81.05%	Error Rate: 18.95%
[Epoch 22, mb 200]	Avg.Loss = 0.095	
Train Loss: 0.145	Train Acc: 94.42%	Error Rate: 5.58%
Test Loss: 0.604	Test Acc: 81.45%	Error Rate: 18.55%
[Epoch 23, mb 200]	Avg.Loss = 0.141	
Train Loss: 0.152	Train Acc: 94.38%	Error Rate: 5.62%
Test Loss: 0.655	Test Acc: 81.35%	Error Rate: 18.65%
[Epoch 24, mb 200]	Avg.Loss = 0.077	
Train Loss: 0.124	Train Acc: 95.28%	Error Rate: 4.72%
Test Loss: 0.606	Test Acc: 81.75%	Error Rate: 18.25%
[Epoch 25, mb 200]	Avg.Loss = 0.105	
Train Loss: 0.139	Train Acc: 94.75%	Error Rate: 5.25%
Test Loss: 0.629	Test Acc: 81.75%	Error Rate: 18.25%
[Epoch 26, mb 200]	Avg.Loss = 0.075	
Train Loss: 0.114	Train Acc: 95.70%	Error Rate: 4.30%
Test Loss: 0.668	Test Acc: 81.70%	Error Rate: 18.30%
[Epoch 27, mb 200]	Avg.Loss = 0.064	
Train Loss: 0.094	Train Acc: 96.52%	Error Rate: 3.48%
Test Loss: 0.621	Test Acc: 82.30%	Error Rate: 17.70%
[Epoch 28, mb 200]	Avg.Loss = 0.055	
Train Loss: 0.104	Train Acc: 96.13%	Error Rate: 3.87%
Test Loss: 0.664	Test Acc: 81.60%	Error Rate: 18.40%
[Epoch 29, mb 200]	Avg.Loss = 0.036	
Train Loss: 0.104	Train Acc: 96.14%	Error Rate: 3.86%
Test Loss: 0.672	Test Acc: 81.90%	Error Rate: 18.10%
[Epoch 30, mb 200]	Avg.Loss = 0.089	
Train Loss: 0.123	Train Acc: 95.56%	Error Rate: 4.44%
Test Loss: 0.669	Test Acc: 82.10%	Error Rate: 17.90%
[Epoch 31, mb 200]	Avg.Loss = 0.026	
Train Loss: 0.087	Train Acc: 97.01%	Error Rate: 2.99%
Test Loss: 0.692	Test Acc: 81.95%	Error Rate: 18.05%
[Epoch 32, mb 200]	Avg.Loss = 0.015	

Train Loss: 0.084	Train Acc: 97.02%	Error Rate: 2.98%
Test Loss: 0.709	Test Acc: 81.35%	Error Rate: 18.65%
[Epoch 33, mb 200]	Avg.Loss = 0.037	
Train Loss: 0.078	Train Acc: 97.36%	Error Rate: 2.64%
Test Loss: 0.681	Test Acc: 82.10%	Error Rate: 17.90%
[Epoch 34, mb 200]	Avg.Loss = 0.025	
Train Loss: 0.081	Train Acc: 97.10%	Error Rate: 2.90%
Test Loss: 0.698	Test Acc: 81.50%	Error Rate: 18.50%
[Epoch 35, mb 200]	Avg.Loss = 0.023	
Train Loss: 0.073	Train Acc: 97.56%	Error Rate: 2.44%
Test Loss: 0.740	Test Acc: 81.80%	Error Rate: 18.20%
[Epoch 36, mb 200]	Avg.Loss = 0.046	
Train Loss: 0.148	Train Acc: 94.79%	Error Rate: 5.21%
Test Loss: 0.843	Test Acc: 81.70%	Error Rate: 18.30%
[Epoch 37, mb 200]	Avg.Loss = 0.042	
Train Loss: 0.070	Train Acc: 97.58%	Error Rate: 2.42%
Test Loss: 0.699	Test Acc: 82.05%	Error Rate: 17.95%
[Epoch 38, mb 200]	Avg.Loss = 0.045	
Train Loss: 0.064	Train Acc: 97.88%	Error Rate: 2.12%
Test Loss: 0.742	Test Acc: 82.15%	Error Rate: 17.85%
[Epoch 39, mb 200]	Avg.Loss = 0.019	
Train Loss: 0.063	Train Acc: 97.97%	Error Rate: 2.03%
Test Loss: 0.744	Test Acc: 82.10%	Error Rate: 17.90%
[Epoch 40, mb 200]	Avg.Loss = 0.006	
Train Loss: 0.046	Train Acc: 98.53%	Error Rate: 1.47%
Test Loss: 0.748	Test Acc: 82.15%	Error Rate: 17.85%

hidden units: 100, size_batch: 50, learning rate: 0.0500, momentum: 0.8

Running time is 1222.8330 s.

size_batch: 50

hidden_units: 100

lr: 0.01

[Epoch 1, mb 200]	Avg.Loss = 0.495	
Train Loss: 0.595	Train Acc: 71.36%	Error Rate: 28.64%
Test Loss: 0.590	Test Acc: 71.70%	Error Rate: 28.30%
[Epoch 2, mb 200]	Avg.Loss = 0.437	
Train Loss: 0.547	Train Acc: 73.57%	Error Rate: 26.43%
Test Loss: 0.548	Test Acc: 73.80%	Error Rate: 26.20%
[Epoch 3, mb 200]	Avg.Loss = 0.415	
Train Loss: 0.519	Train Acc: 75.13%	Error Rate: 24.87%
Test Loss: 0.528	Test Acc: 74.50%	Error Rate: 25.50%
[Epoch 4, mb 200]	Avg.Loss = 0.402	
Train Loss: 0.498	Train Acc: 76.23%	Error Rate: 23.77%
Test Loss: 0.514	Test Acc: 75.50%	Error Rate: 24.50%
[Epoch 5, mb 200]	Avg.Loss = 0.394	
Train Loss: 0.482	Train Acc: 77.14%	Error Rate: 22.86%
Test Loss: 0.503	Test Acc: 75.95%	Error Rate: 24.05%
[Epoch 6, mb 200]	Avg.Loss = 0.388	
Train Loss: 0.468	Train Acc: 77.93%	Error Rate: 22.07%

Test Loss: 0.496	Test Acc: 76.10%	Error Rate: 23.90%
[Epoch 7, mb 200]	Avg.Loss = 0.382	
Train Loss: 0.456	Train Acc: 78.81%	Error Rate: 21.19%
Test Loss: 0.489	Test Acc: 76.70%	Error Rate: 23.30%
[Epoch 8, mb 200]	Avg.Loss = 0.377	
Train Loss: 0.445	Train Acc: 79.35%	Error Rate: 20.65%
Test Loss: 0.484	Test Acc: 77.25%	Error Rate: 22.75%
[Epoch 9, mb 200]	Avg.Loss = 0.373	
Train Loss: 0.435	Train Acc: 80.20%	Error Rate: 19.80%
Test Loss: 0.480	Test Acc: 77.55%	Error Rate: 22.45%
[Epoch 10, mb 200]	Avg.Loss = 0.370	
Train Loss: 0.425	Train Acc: 80.71%	Error Rate: 19.29%
Test Loss: 0.476	Test Acc: 77.85%	Error Rate: 22.15%
[Epoch 11, mb 200]	Avg.Loss = 0.367	
Train Loss: 0.416	Train Acc: 81.13%	Error Rate: 18.87%
Test Loss: 0.474	Test Acc: 78.00%	Error Rate: 22.00%
[Epoch 12, mb 200]	Avg.Loss = 0.363	
Train Loss: 0.408	Train Acc: 81.54%	Error Rate: 18.46%
Test Loss: 0.471	Test Acc: 78.10%	Error Rate: 21.90%
[Epoch 13, mb 200]	Avg.Loss = 0.359	
Train Loss: 0.399	Train Acc: 82.00%	Error Rate: 18.00%
Test Loss: 0.470	Test Acc: 78.55%	Error Rate: 21.45%
[Epoch 14, mb 200]	Avg.Loss = 0.356	
Train Loss: 0.392	Train Acc: 82.50%	Error Rate: 17.50%
Test Loss: 0.469	Test Acc: 78.55%	Error Rate: 21.45%
[Epoch 15, mb 200]	Avg.Loss = 0.353	
Train Loss: 0.384	Train Acc: 82.88%	Error Rate: 17.12%
Test Loss: 0.468	Test Acc: 78.95%	Error Rate: 21.05%
[Epoch 16, mb 200]	Avg.Loss = 0.351	
Train Loss: 0.376	Train Acc: 83.30%	Error Rate: 16.70%
Test Loss: 0.467	Test Acc: 79.25%	Error Rate: 20.75%
[Epoch 17, mb 200]	Avg.Loss = 0.349	
Train Loss: 0.369	Train Acc: 83.75%	Error Rate: 16.25%
Test Loss: 0.467	Test Acc: 79.60%	Error Rate: 20.40%
[Epoch 18, mb 200]	Avg.Loss = 0.346	
Train Loss: 0.361	Train Acc: 84.06%	Error Rate: 15.94%
Test Loss: 0.467	Test Acc: 79.65%	Error Rate: 20.35%
[Epoch 19, mb 200]	Avg.Loss = 0.344	
Train Loss: 0.354	Train Acc: 84.46%	Error Rate: 15.54%
Test Loss: 0.468	Test Acc: 79.90%	Error Rate: 20.10%
[Epoch 20, mb 200]	Avg.Loss = 0.342	
Train Loss: 0.347	Train Acc: 84.94%	Error Rate: 15.06%
Test Loss: 0.469	Test Acc: 79.80%	Error Rate: 20.20%
[Epoch 21, mb 200]	Avg.Loss = 0.341	
Train Loss: 0.340	Train Acc: 85.24%	Error Rate: 14.76%
Test Loss: 0.470	Test Acc: 79.55%	Error Rate: 20.45%
[Epoch 22, mb 200]	Avg.Loss = 0.341	
Train Loss: 0.333	Train Acc: 85.74%	Error Rate: 14.26%
Test Loss: 0.472	Test Acc: 79.35%	Error Rate: 20.65%
[Epoch 23, mb 200]	Avg.Loss = 0.340	

Train Loss: 0.326	Train Acc: 85.94%	Error Rate: 14.06%
Test Loss: 0.474	Test Acc: 79.60%	Error Rate: 20.40%
[Epoch 24, mb 200]	Avg.Loss = 0.338	
Train Loss: 0.320	Train Acc: 86.46%	Error Rate: 13.54%
Test Loss: 0.476	Test Acc: 79.50%	Error Rate: 20.50%
[Epoch 25, mb 200]	Avg.Loss = 0.334	
Train Loss: 0.313	Train Acc: 86.82%	Error Rate: 13.18%
Test Loss: 0.478	Test Acc: 79.35%	Error Rate: 20.65%
[Epoch 26, mb 200]	Avg.Loss = 0.331	
Train Loss: 0.307	Train Acc: 87.15%	Error Rate: 12.85%
Test Loss: 0.481	Test Acc: 79.30%	Error Rate: 20.70%
[Epoch 27, mb 200]	Avg.Loss = 0.328	
Train Loss: 0.300	Train Acc: 87.45%	Error Rate: 12.55%
Test Loss: 0.483	Test Acc: 79.25%	Error Rate: 20.75%
[Epoch 28, mb 200]	Avg.Loss = 0.325	
Train Loss: 0.293	Train Acc: 87.81%	Error Rate: 12.19%
Test Loss: 0.486	Test Acc: 79.25%	Error Rate: 20.75%
[Epoch 29, mb 200]	Avg.Loss = 0.320	
Train Loss: 0.286	Train Acc: 88.17%	Error Rate: 11.83%
Test Loss: 0.490	Test Acc: 79.15%	Error Rate: 20.85%
[Epoch 30, mb 200]	Avg.Loss = 0.315	
Train Loss: 0.280	Train Acc: 88.49%	Error Rate: 11.51%
Test Loss: 0.493	Test Acc: 79.20%	Error Rate: 20.80%
[Epoch 31, mb 200]	Avg.Loss = 0.309	
Train Loss: 0.274	Train Acc: 88.84%	Error Rate: 11.16%
Test Loss: 0.497	Test Acc: 79.15%	Error Rate: 20.85%
[Epoch 32, mb 200]	Avg.Loss = 0.302	
Train Loss: 0.267	Train Acc: 89.04%	Error Rate: 10.96%
Test Loss: 0.501	Test Acc: 79.05%	Error Rate: 20.95%
[Epoch 33, mb 200]	Avg.Loss = 0.296	
Train Loss: 0.261	Train Acc: 89.30%	Error Rate: 10.70%
Test Loss: 0.505	Test Acc: 79.15%	Error Rate: 20.85%
[Epoch 34, mb 200]	Avg.Loss = 0.290	
Train Loss: 0.255	Train Acc: 89.64%	Error Rate: 10.36%
Test Loss: 0.509	Test Acc: 79.15%	Error Rate: 20.85%
[Epoch 35, mb 200]	Avg.Loss = 0.285	
Train Loss: 0.249	Train Acc: 89.92%	Error Rate: 10.08%
Test Loss: 0.514	Test Acc: 79.25%	Error Rate: 20.75%
[Epoch 36, mb 200]	Avg.Loss = 0.279	
Train Loss: 0.243	Train Acc: 90.30%	Error Rate: 9.70%
Test Loss: 0.518	Test Acc: 79.25%	Error Rate: 20.75%
[Epoch 37, mb 200]	Avg.Loss = 0.271	
Train Loss: 0.236	Train Acc: 90.50%	Error Rate: 9.50%
Test Loss: 0.523	Test Acc: 79.35%	Error Rate: 20.65%
[Epoch 38, mb 200]	Avg.Loss = 0.263	
Train Loss: 0.230	Train Acc: 90.78%	Error Rate: 9.22%
Test Loss: 0.528	Test Acc: 79.50%	Error Rate: 20.50%
[Epoch 39, mb 200]	Avg.Loss = 0.256	
Train Loss: 0.224	Train Acc: 91.23%	Error Rate: 8.77%
Test Loss: 0.534	Test Acc: 79.45%	Error Rate: 20.55%

[Epoch 40, mb 200] Avg.Loss = 0.248
Train Loss: 0.219 Train Acc: 91.52% Error Rate: 8.48%
Test Loss: 0.539 Test Acc: 79.50% Error Rate: 20.50%
hidden units: 100, size_batch: 50, learning rate: 0.0100, momentum:
0.8
Running time is 1261.4984 s.

size_batch: 50
hidden_units: 100
lr: 0.005

[Epoch 1, mb 200]	Avg.Loss = 0.492		
Train Loss: 0.610	Train Acc: 69.58%	Error Rate: 30.42%	
Test Loss: 0.611	Test Acc: 70.35%	Error Rate: 29.65%	
[Epoch 2, mb 200]	Avg.Loss = 0.434		
Train Loss: 0.548	Train Acc: 72.43%	Error Rate: 27.57%	
Test Loss: 0.554	Test Acc: 72.50%	Error Rate: 27.50%	
[Epoch 3, mb 200]	Avg.Loss = 0.411		
Train Loss: 0.522	Train Acc: 73.90%	Error Rate: 26.10%	
Test Loss: 0.531	Test Acc: 73.45%	Error Rate: 26.55%	
[Epoch 4, mb 200]	Avg.Loss = 0.395		
Train Loss: 0.506	Train Acc: 75.08%	Error Rate: 24.92%	
Test Loss: 0.518	Test Acc: 73.80%	Error Rate: 26.20%	
[Epoch 5, mb 200]	Avg.Loss = 0.381		
Train Loss: 0.494	Train Acc: 76.06%	Error Rate: 23.94%	
Test Loss: 0.509	Test Acc: 74.50%	Error Rate: 25.50%	
[Epoch 6, mb 200]	Avg.Loss = 0.368		
Train Loss: 0.483	Train Acc: 76.91%	Error Rate: 23.09%	
Test Loss: 0.503	Test Acc: 74.65%	Error Rate: 25.35%	
[Epoch 7, mb 200]	Avg.Loss = 0.356		
Train Loss: 0.474	Train Acc: 77.61%	Error Rate: 22.39%	
Test Loss: 0.497	Test Acc: 74.90%	Error Rate: 25.10%	
[Epoch 8, mb 200]	Avg.Loss = 0.346		
Train Loss: 0.466	Train Acc: 78.05%	Error Rate: 21.95%	
Test Loss: 0.492	Test Acc: 75.10%	Error Rate: 24.90%	
[Epoch 9, mb 200]	Avg.Loss = 0.336		
Train Loss: 0.459	Train Acc: 78.45%	Error Rate: 21.55%	
Test Loss: 0.489	Test Acc: 75.85%	Error Rate: 24.15%	
[Epoch 10, mb 200]	Avg.Loss = 0.328		
Train Loss: 0.452	Train Acc: 78.91%	Error Rate: 21.09%	
Test Loss: 0.485	Test Acc: 75.95%	Error Rate: 24.05%	
[Epoch 11, mb 200]	Avg.Loss = 0.320		
Train Loss: 0.446	Train Acc: 79.35%	Error Rate: 20.65%	
Test Loss: 0.482	Test Acc: 76.40%	Error Rate: 23.60%	
[Epoch 12, mb 200]	Avg.Loss = 0.314		
Train Loss: 0.440	Train Acc: 79.80%	Error Rate: 20.20%	
Test Loss: 0.480	Test Acc: 76.60%	Error Rate: 23.40%	
[Epoch 13, mb 200]	Avg.Loss = 0.307		
Train Loss: 0.434	Train Acc: 80.27%	Error Rate: 19.73%	
Test Loss: 0.478	Test Acc: 76.85%	Error Rate: 23.15%	
[Epoch 14, mb 200]	Avg.Loss = 0.301		

Train Loss: 0.429	Train Acc: 80.56%	Error Rate: 19.44%
Test Loss: 0.476	Test Acc: 77.00%	Error Rate: 23.00%
[Epoch 15, mb 200]	Avg.Loss = 0.296	
Train Loss: 0.424	Train Acc: 80.97%	Error Rate: 19.03%
Test Loss: 0.474	Test Acc: 77.05%	Error Rate: 22.95%
[Epoch 16, mb 200]	Avg.Loss = 0.292	
Train Loss: 0.419	Train Acc: 81.33%	Error Rate: 18.67%
Test Loss: 0.473	Test Acc: 77.30%	Error Rate: 22.70%
[Epoch 17, mb 200]	Avg.Loss = 0.287	
Train Loss: 0.414	Train Acc: 81.54%	Error Rate: 18.46%
Test Loss: 0.472	Test Acc: 77.45%	Error Rate: 22.55%
[Epoch 18, mb 200]	Avg.Loss = 0.282	
Train Loss: 0.410	Train Acc: 81.86%	Error Rate: 18.14%
Test Loss: 0.470	Test Acc: 77.45%	Error Rate: 22.55%
[Epoch 19, mb 200]	Avg.Loss = 0.278	
Train Loss: 0.405	Train Acc: 81.99%	Error Rate: 18.01%
Test Loss: 0.469	Test Acc: 77.80%	Error Rate: 22.20%
[Epoch 20, mb 200]	Avg.Loss = 0.273	
Train Loss: 0.401	Train Acc: 82.17%	Error Rate: 17.83%
Test Loss: 0.468	Test Acc: 78.05%	Error Rate: 21.95%
[Epoch 21, mb 200]	Avg.Loss = 0.269	
Train Loss: 0.397	Train Acc: 82.35%	Error Rate: 17.65%
Test Loss: 0.468	Test Acc: 78.25%	Error Rate: 21.75%
[Epoch 22, mb 200]	Avg.Loss = 0.266	
Train Loss: 0.393	Train Acc: 82.58%	Error Rate: 17.42%
Test Loss: 0.467	Test Acc: 78.25%	Error Rate: 21.75%
[Epoch 23, mb 200]	Avg.Loss = 0.262	
Train Loss: 0.389	Train Acc: 82.76%	Error Rate: 17.24%
Test Loss: 0.466	Test Acc: 78.40%	Error Rate: 21.60%
[Epoch 24, mb 200]	Avg.Loss = 0.258	
Train Loss: 0.385	Train Acc: 82.90%	Error Rate: 17.10%
Test Loss: 0.466	Test Acc: 78.70%	Error Rate: 21.30%
[Epoch 25, mb 200]	Avg.Loss = 0.254	
Train Loss: 0.381	Train Acc: 83.10%	Error Rate: 16.90%
Test Loss: 0.465	Test Acc: 78.55%	Error Rate: 21.45%
[Epoch 26, mb 200]	Avg.Loss = 0.250	
Train Loss: 0.377	Train Acc: 83.38%	Error Rate: 16.62%
Test Loss: 0.465	Test Acc: 78.70%	Error Rate: 21.30%
[Epoch 27, mb 200]	Avg.Loss = 0.247	
Train Loss: 0.373	Train Acc: 83.60%	Error Rate: 16.40%
Test Loss: 0.465	Test Acc: 78.80%	Error Rate: 21.20%
[Epoch 28, mb 200]	Avg.Loss = 0.245	
Train Loss: 0.369	Train Acc: 83.75%	Error Rate: 16.25%
Test Loss: 0.465	Test Acc: 78.70%	Error Rate: 21.30%
[Epoch 29, mb 200]	Avg.Loss = 0.242	
Train Loss: 0.365	Train Acc: 83.80%	Error Rate: 16.20%
Test Loss: 0.465	Test Acc: 78.70%	Error Rate: 21.30%
[Epoch 30, mb 200]	Avg.Loss = 0.239	
Train Loss: 0.362	Train Acc: 83.91%	Error Rate: 16.09%
Test Loss: 0.465	Test Acc: 78.85%	Error Rate: 21.15%

[Epoch 31, mb 200]	Avg.Loss = 0.236		
Train Loss: 0.358	Train Acc: 84.05%	Error Rate: 15.95%	
Test Loss: 0.465	Test Acc: 78.85%	Error Rate: 21.15%	
[Epoch 32, mb 200]	Avg.Loss = 0.234		
Train Loss: 0.354	Train Acc: 84.28%	Error Rate: 15.72%	
Test Loss: 0.465	Test Acc: 78.80%	Error Rate: 21.20%	
[Epoch 33, mb 200]	Avg.Loss = 0.232		
Train Loss: 0.351	Train Acc: 84.60%	Error Rate: 15.40%	
Test Loss: 0.465	Test Acc: 78.80%	Error Rate: 21.20%	
[Epoch 34, mb 200]	Avg.Loss = 0.229		
Train Loss: 0.347	Train Acc: 84.81%	Error Rate: 15.19%	
Test Loss: 0.465	Test Acc: 78.80%	Error Rate: 21.20%	
[Epoch 35, mb 200]	Avg.Loss = 0.227		
Train Loss: 0.344	Train Acc: 85.06%	Error Rate: 14.94%	
Test Loss: 0.465	Test Acc: 78.95%	Error Rate: 21.05%	
[Epoch 36, mb 200]	Avg.Loss = 0.225		
Train Loss: 0.340	Train Acc: 85.20%	Error Rate: 14.80%	
Test Loss: 0.466	Test Acc: 78.90%	Error Rate: 21.10%	
[Epoch 37, mb 200]	Avg.Loss = 0.223		
Train Loss: 0.336	Train Acc: 85.38%	Error Rate: 14.62%	
Test Loss: 0.466	Test Acc: 78.80%	Error Rate: 21.20%	
[Epoch 38, mb 200]	Avg.Loss = 0.221		
Train Loss: 0.333	Train Acc: 85.49%	Error Rate: 14.51%	
Test Loss: 0.466	Test Acc: 78.95%	Error Rate: 21.05%	
[Epoch 39, mb 200]	Avg.Loss = 0.219		
Train Loss: 0.329	Train Acc: 85.71%	Error Rate: 14.29%	
Test Loss: 0.467	Test Acc: 78.95%	Error Rate: 21.05%	
[Epoch 40, mb 200]	Avg.Loss = 0.217		
Train Loss: 0.326	Train Acc: 85.88%	Error Rate: 14.12%	
Test Loss: 0.467	Test Acc: 79.05%	Error Rate: 20.95%	

hidden units: 100, size_batch: 50, learning rate: 0.0050, momentum: 0.8

Running time is 1345.2932 s.

Time for tuning learning rate is 3829.6246 s.

*****change hidden size(10,100,200)

size_batch: 50

hidden_units: 10

lr: 0.005

[Epoch 1, mb 200]	Avg.Loss = 0.565		
Train Loss: 0.616	Train Acc: 66.56%	Error Rate: 33.44%	
Test Loss: 0.617	Test Acc: 67.25%	Error Rate: 32.75%	
[Epoch 2, mb 200]	Avg.Loss = 0.530		
Train Loss: 0.599	Train Acc: 68.00%	Error Rate: 32.00%	
Test Loss: 0.598	Test Acc: 69.60%	Error Rate: 30.40%	
[Epoch 3, mb 200]	Avg.Loss = 0.513		
Train Loss: 0.589	Train Acc: 68.67%	Error Rate: 31.33%	
Test Loss: 0.588	Test Acc: 70.55%	Error Rate: 29.45%	
[Epoch 4, mb 200]	Avg.Loss = 0.502		

Train Loss: 0.580	Train Acc: 69.42%	Error Rate: 30.58%
Test Loss: 0.580	Test Acc: 71.05%	Error Rate: 28.95%
[Epoch 5, mb 200]	Avg.Loss = 0.496	
Train Loss: 0.570	Train Acc: 70.38%	Error Rate: 29.62%
Test Loss: 0.573	Test Acc: 71.35%	Error Rate: 28.65%
[Epoch 6, mb 200]	Avg.Loss = 0.489	
Train Loss: 0.560	Train Acc: 71.45%	Error Rate: 28.55%
Test Loss: 0.565	Test Acc: 72.30%	Error Rate: 27.70%
[Epoch 7, mb 200]	Avg.Loss = 0.480	
Train Loss: 0.549	Train Acc: 72.45%	Error Rate: 27.55%
Test Loss: 0.557	Test Acc: 72.60%	Error Rate: 27.40%
[Epoch 8, mb 200]	Avg.Loss = 0.471	
Train Loss: 0.538	Train Acc: 73.04%	Error Rate: 26.96%
Test Loss: 0.548	Test Acc: 73.05%	Error Rate: 26.95%
[Epoch 9, mb 200]	Avg.Loss = 0.461	
Train Loss: 0.528	Train Acc: 73.78%	Error Rate: 26.22%
Test Loss: 0.539	Test Acc: 73.75%	Error Rate: 26.25%
[Epoch 10, mb 200]	Avg.Loss = 0.453	
Train Loss: 0.519	Train Acc: 74.31%	Error Rate: 25.69%
Test Loss: 0.532	Test Acc: 74.20%	Error Rate: 25.80%
[Epoch 11, mb 200]	Avg.Loss = 0.446	
Train Loss: 0.512	Train Acc: 75.03%	Error Rate: 24.97%
Test Loss: 0.525	Test Acc: 75.25%	Error Rate: 24.75%
[Epoch 12, mb 200]	Avg.Loss = 0.439	
Train Loss: 0.505	Train Acc: 75.73%	Error Rate: 24.27%
Test Loss: 0.519	Test Acc: 75.75%	Error Rate: 24.25%
[Epoch 13, mb 200]	Avg.Loss = 0.433	
Train Loss: 0.499	Train Acc: 76.21%	Error Rate: 23.79%
Test Loss: 0.514	Test Acc: 76.00%	Error Rate: 24.00%
[Epoch 14, mb 200]	Avg.Loss = 0.427	
Train Loss: 0.493	Train Acc: 76.53%	Error Rate: 23.47%
Test Loss: 0.509	Test Acc: 75.95%	Error Rate: 24.05%
[Epoch 15, mb 200]	Avg.Loss = 0.421	
Train Loss: 0.488	Train Acc: 76.96%	Error Rate: 23.04%
Test Loss: 0.505	Test Acc: 76.60%	Error Rate: 23.40%
[Epoch 16, mb 200]	Avg.Loss = 0.415	
Train Loss: 0.483	Train Acc: 77.18%	Error Rate: 22.82%
Test Loss: 0.501	Test Acc: 76.60%	Error Rate: 23.40%
[Epoch 17, mb 200]	Avg.Loss = 0.409	
Train Loss: 0.479	Train Acc: 77.51%	Error Rate: 22.49%
Test Loss: 0.497	Test Acc: 76.85%	Error Rate: 23.15%
[Epoch 18, mb 200]	Avg.Loss = 0.403	
Train Loss: 0.475	Train Acc: 77.80%	Error Rate: 22.20%
Test Loss: 0.494	Test Acc: 76.85%	Error Rate: 23.15%
[Epoch 19, mb 200]	Avg.Loss = 0.398	
Train Loss: 0.471	Train Acc: 77.95%	Error Rate: 22.05%
Test Loss: 0.491	Test Acc: 77.05%	Error Rate: 22.95%
[Epoch 20, mb 200]	Avg.Loss = 0.394	
Train Loss: 0.467	Train Acc: 78.07%	Error Rate: 21.93%
Test Loss: 0.489	Test Acc: 77.05%	Error Rate: 22.95%

[Epoch 21, mb 200]	Avg.Loss = 0.389		
Train Loss: 0.463	Train Acc: 78.28%	Error Rate: 21.72%	
Test Loss: 0.486	Test Acc: 77.20%	Error Rate: 22.80%	
[Epoch 22, mb 200]	Avg.Loss = 0.385		
Train Loss: 0.460	Train Acc: 78.38%	Error Rate: 21.62%	
Test Loss: 0.484	Test Acc: 77.35%	Error Rate: 22.65%	
[Epoch 23, mb 200]	Avg.Loss = 0.380		
Train Loss: 0.457	Train Acc: 78.52%	Error Rate: 21.48%	
Test Loss: 0.482	Test Acc: 77.40%	Error Rate: 22.60%	
[Epoch 24, mb 200]	Avg.Loss = 0.376		
Train Loss: 0.454	Train Acc: 78.88%	Error Rate: 21.12%	
Test Loss: 0.480	Test Acc: 77.15%	Error Rate: 22.85%	
[Epoch 25, mb 200]	Avg.Loss = 0.373		
Train Loss: 0.451	Train Acc: 79.04%	Error Rate: 20.96%	
Test Loss: 0.479	Test Acc: 77.15%	Error Rate: 22.85%	
[Epoch 26, mb 200]	Avg.Loss = 0.369		
Train Loss: 0.448	Train Acc: 79.08%	Error Rate: 20.92%	
Test Loss: 0.477	Test Acc: 77.45%	Error Rate: 22.55%	
[Epoch 27, mb 200]	Avg.Loss = 0.366		
Train Loss: 0.445	Train Acc: 79.17%	Error Rate: 20.83%	
Test Loss: 0.476	Test Acc: 77.55%	Error Rate: 22.45%	
[Epoch 28, mb 200]	Avg.Loss = 0.362		
Train Loss: 0.443	Train Acc: 79.44%	Error Rate: 20.56%	
Test Loss: 0.474	Test Acc: 77.85%	Error Rate: 22.15%	
[Epoch 29, mb 200]	Avg.Loss = 0.358		
Train Loss: 0.440	Train Acc: 79.51%	Error Rate: 20.49%	
Test Loss: 0.473	Test Acc: 78.00%	Error Rate: 22.00%	
[Epoch 30, mb 200]	Avg.Loss = 0.354		
Train Loss: 0.438	Train Acc: 79.66%	Error Rate: 20.34%	
Test Loss: 0.472	Test Acc: 78.20%	Error Rate: 21.80%	
[Epoch 31, mb 200]	Avg.Loss = 0.351		
Train Loss: 0.435	Train Acc: 79.78%	Error Rate: 20.22%	
Test Loss: 0.471	Test Acc: 78.35%	Error Rate: 21.65%	
[Epoch 32, mb 200]	Avg.Loss = 0.348		
Train Loss: 0.433	Train Acc: 79.94%	Error Rate: 20.06%	
Test Loss: 0.470	Test Acc: 78.40%	Error Rate: 21.60%	
[Epoch 33, mb 200]	Avg.Loss = 0.345		
Train Loss: 0.431	Train Acc: 80.02%	Error Rate: 19.98%	
Test Loss: 0.469	Test Acc: 78.30%	Error Rate: 21.70%	
[Epoch 34, mb 200]	Avg.Loss = 0.343		
Train Loss: 0.429	Train Acc: 80.20%	Error Rate: 19.80%	
Test Loss: 0.468	Test Acc: 78.45%	Error Rate: 21.55%	
[Epoch 35, mb 200]	Avg.Loss = 0.341		
Train Loss: 0.427	Train Acc: 80.30%	Error Rate: 19.70%	
Test Loss: 0.467	Test Acc: 78.55%	Error Rate: 21.45%	
[Epoch 36, mb 200]	Avg.Loss = 0.338		
Train Loss: 0.425	Train Acc: 80.40%	Error Rate: 19.60%	
Test Loss: 0.467	Test Acc: 78.35%	Error Rate: 21.65%	
[Epoch 37, mb 200]	Avg.Loss = 0.336		
Train Loss: 0.423	Train Acc: 80.56%	Error Rate: 19.44%	

Test Loss: 0.466	Test Acc: 78.35%	Error Rate: 21.65%
[Epoch 38, mb 200]	Avg.Loss = 0.335	
Train Loss: 0.421	Train Acc: 80.63%	Error Rate: 19.37%
Test Loss: 0.465	Test Acc: 78.50%	Error Rate: 21.50%
[Epoch 39, mb 200]	Avg.Loss = 0.333	
Train Loss: 0.419	Train Acc: 80.68%	Error Rate: 19.32%
Test Loss: 0.464	Test Acc: 78.65%	Error Rate: 21.35%
[Epoch 40, mb 200]	Avg.Loss = 0.331	
Train Loss: 0.417	Train Acc: 80.81%	Error Rate: 19.19%
Test Loss: 0.464	Test Acc: 78.75%	Error Rate: 21.25%

hidden units: 10, size_batch: 50, learning rate: 0.0050, momentum: 0.8
Running time is 152.1622 s.

size_batch: 50

hidden_units: 100

lr: 0.005

[Epoch 1, mb 200]	Avg.Loss = 0.534	
Train Loss: 0.626	Train Acc: 68.86%	Error Rate: 31.14%
Test Loss: 0.639	Test Acc: 69.05%	Error Rate: 30.95%
[Epoch 2, mb 200]	Avg.Loss = 0.467	
Train Loss: 0.561	Train Acc: 71.55%	Error Rate: 28.45%
Test Loss: 0.576	Test Acc: 71.35%	Error Rate: 28.65%
[Epoch 3, mb 200]	Avg.Loss = 0.436	
Train Loss: 0.533	Train Acc: 73.01%	Error Rate: 26.99%
Test Loss: 0.550	Test Acc: 72.70%	Error Rate: 27.30%
[Epoch 4, mb 200]	Avg.Loss = 0.418	
Train Loss: 0.517	Train Acc: 74.27%	Error Rate: 25.73%
Test Loss: 0.535	Test Acc: 73.20%	Error Rate: 26.80%
[Epoch 5, mb 200]	Avg.Loss = 0.404	
Train Loss: 0.504	Train Acc: 75.27%	Error Rate: 24.73%
Test Loss: 0.526	Test Acc: 73.50%	Error Rate: 26.50%
[Epoch 6, mb 200]	Avg.Loss = 0.391	
Train Loss: 0.493	Train Acc: 76.12%	Error Rate: 23.88%
Test Loss: 0.518	Test Acc: 73.95%	Error Rate: 26.05%
[Epoch 7, mb 200]	Avg.Loss = 0.380	
Train Loss: 0.484	Train Acc: 76.73%	Error Rate: 23.27%
Test Loss: 0.512	Test Acc: 74.85%	Error Rate: 25.15%
[Epoch 8, mb 200]	Avg.Loss = 0.370	
Train Loss: 0.476	Train Acc: 77.24%	Error Rate: 22.76%
Test Loss: 0.507	Test Acc: 75.50%	Error Rate: 24.50%
[Epoch 9, mb 200]	Avg.Loss = 0.362	
Train Loss: 0.469	Train Acc: 77.70%	Error Rate: 22.30%
Test Loss: 0.503	Test Acc: 76.15%	Error Rate: 23.85%
[Epoch 10, mb 200]	Avg.Loss = 0.355	
Train Loss: 0.462	Train Acc: 78.28%	Error Rate: 21.72%
Test Loss: 0.499	Test Acc: 76.55%	Error Rate: 23.45%
[Epoch 11, mb 200]	Avg.Loss = 0.348	
Train Loss: 0.456	Train Acc: 78.54%	Error Rate: 21.46%
Test Loss: 0.496	Test Acc: 76.75%	Error Rate: 23.25%
[Epoch 12, mb 200]	Avg.Loss = 0.342	

Train Loss: 0.450	Train Acc: 78.87%	Error Rate: 21.13%
Test Loss: 0.494	Test Acc: 76.80%	Error Rate: 23.20%
[Epoch 13, mb 200]	Avg.Loss = 0.336	
Train Loss: 0.444	Train Acc: 79.11%	Error Rate: 20.89%
Test Loss: 0.491	Test Acc: 76.95%	Error Rate: 23.05%
[Epoch 14, mb 200]	Avg.Loss = 0.330	
Train Loss: 0.439	Train Acc: 79.47%	Error Rate: 20.53%
Test Loss: 0.490	Test Acc: 77.25%	Error Rate: 22.75%
[Epoch 15, mb 200]	Avg.Loss = 0.325	
Train Loss: 0.434	Train Acc: 79.61%	Error Rate: 20.39%
Test Loss: 0.488	Test Acc: 77.40%	Error Rate: 22.60%
[Epoch 16, mb 200]	Avg.Loss = 0.321	
Train Loss: 0.429	Train Acc: 80.09%	Error Rate: 19.91%
Test Loss: 0.486	Test Acc: 77.80%	Error Rate: 22.20%
[Epoch 17, mb 200]	Avg.Loss = 0.317	
Train Loss: 0.424	Train Acc: 80.36%	Error Rate: 19.64%
Test Loss: 0.485	Test Acc: 77.95%	Error Rate: 22.05%
[Epoch 18, mb 200]	Avg.Loss = 0.313	
Train Loss: 0.419	Train Acc: 80.65%	Error Rate: 19.35%
Test Loss: 0.484	Test Acc: 78.20%	Error Rate: 21.80%
[Epoch 19, mb 200]	Avg.Loss = 0.310	
Train Loss: 0.415	Train Acc: 80.94%	Error Rate: 19.06%
Test Loss: 0.483	Test Acc: 78.00%	Error Rate: 22.00%
[Epoch 20, mb 200]	Avg.Loss = 0.307	
Train Loss: 0.410	Train Acc: 81.18%	Error Rate: 18.82%
Test Loss: 0.482	Test Acc: 77.90%	Error Rate: 22.10%
[Epoch 21, mb 200]	Avg.Loss = 0.304	
Train Loss: 0.406	Train Acc: 81.47%	Error Rate: 18.53%
Test Loss: 0.481	Test Acc: 78.05%	Error Rate: 21.95%
[Epoch 22, mb 200]	Avg.Loss = 0.301	
Train Loss: 0.402	Train Acc: 81.73%	Error Rate: 18.27%
Test Loss: 0.480	Test Acc: 78.15%	Error Rate: 21.85%
[Epoch 23, mb 200]	Avg.Loss = 0.298	
Train Loss: 0.398	Train Acc: 82.00%	Error Rate: 18.00%
Test Loss: 0.480	Test Acc: 78.35%	Error Rate: 21.65%
[Epoch 24, mb 200]	Avg.Loss = 0.296	
Train Loss: 0.394	Train Acc: 82.27%	Error Rate: 17.73%
Test Loss: 0.479	Test Acc: 78.60%	Error Rate: 21.40%
[Epoch 25, mb 200]	Avg.Loss = 0.293	
Train Loss: 0.390	Train Acc: 82.35%	Error Rate: 17.65%
Test Loss: 0.479	Test Acc: 78.85%	Error Rate: 21.15%
[Epoch 26, mb 200]	Avg.Loss = 0.290	
Train Loss: 0.386	Train Acc: 82.59%	Error Rate: 17.41%
Test Loss: 0.479	Test Acc: 78.95%	Error Rate: 21.05%
[Epoch 27, mb 200]	Avg.Loss = 0.287	
Train Loss: 0.382	Train Acc: 82.80%	Error Rate: 17.20%
Test Loss: 0.478	Test Acc: 78.80%	Error Rate: 21.20%
[Epoch 28, mb 200]	Avg.Loss = 0.285	
Train Loss: 0.378	Train Acc: 82.90%	Error Rate: 17.10%
Test Loss: 0.478	Test Acc: 79.05%	Error Rate: 20.95%

[Epoch 29, mb 200]	Avg.Loss = 0.283		
Train Loss: 0.374	Train Acc: 83.04%	Error Rate: 16.96%	
Test Loss: 0.478	Test Acc: 79.25%	Error Rate: 20.75%	
[Epoch 30, mb 200]	Avg.Loss = 0.281		
Train Loss: 0.370	Train Acc: 83.22%	Error Rate: 16.78%	
Test Loss: 0.478	Test Acc: 79.30%	Error Rate: 20.70%	
[Epoch 31, mb 200]	Avg.Loss = 0.279		
Train Loss: 0.366	Train Acc: 83.45%	Error Rate: 16.55%	
Test Loss: 0.478	Test Acc: 79.35%	Error Rate: 20.65%	
[Epoch 32, mb 200]	Avg.Loss = 0.277		
Train Loss: 0.363	Train Acc: 83.68%	Error Rate: 16.32%	
Test Loss: 0.478	Test Acc: 79.45%	Error Rate: 20.55%	
[Epoch 33, mb 200]	Avg.Loss = 0.275		
Train Loss: 0.359	Train Acc: 83.86%	Error Rate: 16.14%	
Test Loss: 0.479	Test Acc: 79.45%	Error Rate: 20.55%	
[Epoch 34, mb 200]	Avg.Loss = 0.273		
Train Loss: 0.355	Train Acc: 84.10%	Error Rate: 15.90%	
Test Loss: 0.479	Test Acc: 79.80%	Error Rate: 20.20%	
[Epoch 35, mb 200]	Avg.Loss = 0.270		
Train Loss: 0.351	Train Acc: 84.36%	Error Rate: 15.64%	
Test Loss: 0.479	Test Acc: 79.75%	Error Rate: 20.25%	
[Epoch 36, mb 200]	Avg.Loss = 0.267		
Train Loss: 0.348	Train Acc: 84.68%	Error Rate: 15.32%	
Test Loss: 0.480	Test Acc: 79.80%	Error Rate: 20.20%	
[Epoch 37, mb 200]	Avg.Loss = 0.264		
Train Loss: 0.344	Train Acc: 84.95%	Error Rate: 15.05%	
Test Loss: 0.480	Test Acc: 79.80%	Error Rate: 20.20%	
[Epoch 38, mb 200]	Avg.Loss = 0.261		
Train Loss: 0.340	Train Acc: 85.19%	Error Rate: 14.81%	
Test Loss: 0.480	Test Acc: 79.65%	Error Rate: 20.35%	
[Epoch 39, mb 200]	Avg.Loss = 0.258		
Train Loss: 0.336	Train Acc: 85.35%	Error Rate: 14.65%	
Test Loss: 0.481	Test Acc: 79.55%	Error Rate: 20.45%	
[Epoch 40, mb 200]	Avg.Loss = 0.255		
Train Loss: 0.333	Train Acc: 85.60%	Error Rate: 14.40%	
Test Loss: 0.481	Test Acc: 79.45%	Error Rate: 20.55%	

hidden units: 100, size_batch: 50, learning rate: 0.0050, momentum: 0.8

Running time is 1154.2792 s.

size_batch: 50

hidden_units: 200

lr: 0.005

[Epoch 1, mb 200]	Avg.Loss = 0.509		
Train Loss: 0.650	Train Acc: 69.90%	Error Rate: 30.10%	
Test Loss: 0.669	Test Acc: 70.60%	Error Rate: 29.40%	
[Epoch 2, mb 200]	Avg.Loss = 0.432		
Train Loss: 0.556	Train Acc: 73.72%	Error Rate: 26.28%	
Test Loss: 0.572	Test Acc: 73.60%	Error Rate: 26.40%	
[Epoch 3, mb 200]	Avg.Loss = 0.411		

Train Loss: 0.517	Train Acc: 75.35%	Error Rate: 24.65%
Test Loss: 0.533	Test Acc: 74.55%	Error Rate: 25.45%
[Epoch 4, mb 200]	Avg.Loss = 0.403	
Train Loss: 0.495	Train Acc: 76.48%	Error Rate: 23.52%
Test Loss: 0.512	Test Acc: 75.10%	Error Rate: 24.90%
[Epoch 5, mb 200]	Avg.Loss = 0.396	
Train Loss: 0.480	Train Acc: 77.27%	Error Rate: 22.73%
Test Loss: 0.500	Test Acc: 75.85%	Error Rate: 24.15%
[Epoch 6, mb 200]	Avg.Loss = 0.390	
Train Loss: 0.469	Train Acc: 78.04%	Error Rate: 21.96%
Test Loss: 0.492	Test Acc: 76.00%	Error Rate: 24.00%
[Epoch 7, mb 200]	Avg.Loss = 0.384	
Train Loss: 0.459	Train Acc: 78.32%	Error Rate: 21.68%
Test Loss: 0.485	Test Acc: 76.80%	Error Rate: 23.20%
[Epoch 8, mb 200]	Avg.Loss = 0.378	
Train Loss: 0.450	Train Acc: 78.87%	Error Rate: 21.13%
Test Loss: 0.480	Test Acc: 76.90%	Error Rate: 23.10%
[Epoch 9, mb 200]	Avg.Loss = 0.372	
Train Loss: 0.442	Train Acc: 79.48%	Error Rate: 20.52%
Test Loss: 0.475	Test Acc: 77.10%	Error Rate: 22.90%
[Epoch 10, mb 200]	Avg.Loss = 0.365	
Train Loss: 0.435	Train Acc: 80.04%	Error Rate: 19.96%
Test Loss: 0.471	Test Acc: 77.20%	Error Rate: 22.80%
[Epoch 11, mb 200]	Avg.Loss = 0.358	
Train Loss: 0.427	Train Acc: 80.51%	Error Rate: 19.49%
Test Loss: 0.468	Test Acc: 77.40%	Error Rate: 22.60%
[Epoch 12, mb 200]	Avg.Loss = 0.351	
Train Loss: 0.420	Train Acc: 80.81%	Error Rate: 19.19%
Test Loss: 0.465	Test Acc: 77.55%	Error Rate: 22.45%
[Epoch 13, mb 200]	Avg.Loss = 0.344	
Train Loss: 0.414	Train Acc: 81.18%	Error Rate: 18.82%
Test Loss: 0.463	Test Acc: 77.80%	Error Rate: 22.20%
[Epoch 14, mb 200]	Avg.Loss = 0.337	
Train Loss: 0.408	Train Acc: 81.58%	Error Rate: 18.42%
Test Loss: 0.461	Test Acc: 78.10%	Error Rate: 21.90%
[Epoch 15, mb 200]	Avg.Loss = 0.330	
Train Loss: 0.402	Train Acc: 81.87%	Error Rate: 18.13%
Test Loss: 0.459	Test Acc: 78.15%	Error Rate: 21.85%
[Epoch 16, mb 200]	Avg.Loss = 0.323	
Train Loss: 0.396	Train Acc: 82.15%	Error Rate: 17.85%
Test Loss: 0.458	Test Acc: 78.45%	Error Rate: 21.55%
[Epoch 17, mb 200]	Avg.Loss = 0.316	
Train Loss: 0.390	Train Acc: 82.46%	Error Rate: 17.54%
Test Loss: 0.457	Test Acc: 78.45%	Error Rate: 21.55%
[Epoch 18, mb 200]	Avg.Loss = 0.310	
Train Loss: 0.385	Train Acc: 82.80%	Error Rate: 17.20%
Test Loss: 0.456	Test Acc: 78.55%	Error Rate: 21.45%
[Epoch 19, mb 200]	Avg.Loss = 0.303	
Train Loss: 0.379	Train Acc: 83.11%	Error Rate: 16.89%
Test Loss: 0.456	Test Acc: 78.80%	Error Rate: 21.20%

[Epoch 20, mb 200]	Avg.Loss = 0.297	
Train Loss: 0.374	Train Acc: 83.36%	Error Rate: 16.64%
Test Loss: 0.455	Test Acc: 78.60%	Error Rate: 21.40%
[Epoch 21, mb 200]	Avg.Loss = 0.291	
Train Loss: 0.369	Train Acc: 83.58%	Error Rate: 16.42%
Test Loss: 0.455	Test Acc: 78.70%	Error Rate: 21.30%
[Epoch 22, mb 200]	Avg.Loss = 0.286	
Train Loss: 0.364	Train Acc: 83.83%	Error Rate: 16.17%
Test Loss: 0.455	Test Acc: 78.85%	Error Rate: 21.15%
[Epoch 23, mb 200]	Avg.Loss = 0.280	
Train Loss: 0.359	Train Acc: 84.07%	Error Rate: 15.93%
Test Loss: 0.455	Test Acc: 78.80%	Error Rate: 21.20%
[Epoch 24, mb 200]	Avg.Loss = 0.275	
Train Loss: 0.354	Train Acc: 84.33%	Error Rate: 15.67%
Test Loss: 0.455	Test Acc: 78.75%	Error Rate: 21.25%
[Epoch 25, mb 200]	Avg.Loss = 0.269	
Train Loss: 0.349	Train Acc: 84.62%	Error Rate: 15.38%
Test Loss: 0.455	Test Acc: 78.80%	Error Rate: 21.20%
[Epoch 26, mb 200]	Avg.Loss = 0.263	
Train Loss: 0.344	Train Acc: 84.92%	Error Rate: 15.08%
Test Loss: 0.456	Test Acc: 78.80%	Error Rate: 21.20%
[Epoch 27, mb 200]	Avg.Loss = 0.258	
Train Loss: 0.339	Train Acc: 85.16%	Error Rate: 14.84%
Test Loss: 0.457	Test Acc: 78.95%	Error Rate: 21.05%
[Epoch 28, mb 200]	Avg.Loss = 0.253	
Train Loss: 0.334	Train Acc: 85.41%	Error Rate: 14.59%
Test Loss: 0.457	Test Acc: 78.95%	Error Rate: 21.05%
[Epoch 29, mb 200]	Avg.Loss = 0.248	
Train Loss: 0.329	Train Acc: 85.55%	Error Rate: 14.45%
Test Loss: 0.458	Test Acc: 79.00%	Error Rate: 21.00%
[Epoch 30, mb 200]	Avg.Loss = 0.243	
Train Loss: 0.325	Train Acc: 85.74%	Error Rate: 14.26%
Test Loss: 0.459	Test Acc: 79.00%	Error Rate: 21.00%
[Epoch 31, mb 200]	Avg.Loss = 0.238	
Train Loss: 0.320	Train Acc: 86.04%	Error Rate: 13.96%
Test Loss: 0.460	Test Acc: 79.00%	Error Rate: 21.00%
[Epoch 32, mb 200]	Avg.Loss = 0.234	
Train Loss: 0.315	Train Acc: 86.30%	Error Rate: 13.70%
Test Loss: 0.462	Test Acc: 79.00%	Error Rate: 21.00%
[Epoch 33, mb 200]	Avg.Loss = 0.229	
Train Loss: 0.310	Train Acc: 86.57%	Error Rate: 13.43%
Test Loss: 0.463	Test Acc: 79.05%	Error Rate: 20.95%
[Epoch 34, mb 200]	Avg.Loss = 0.225	
Train Loss: 0.306	Train Acc: 86.80%	Error Rate: 13.20%
Test Loss: 0.464	Test Acc: 79.20%	Error Rate: 20.80%
[Epoch 35, mb 200]	Avg.Loss = 0.220	
Train Loss: 0.301	Train Acc: 86.95%	Error Rate: 13.05%
Test Loss: 0.466	Test Acc: 79.05%	Error Rate: 20.95%
[Epoch 36, mb 200]	Avg.Loss = 0.216	
Train Loss: 0.297	Train Acc: 87.24%	Error Rate: 12.76%

Test Loss: 0.467	Test Acc: 79.00%	Error Rate: 21.00%
[Epoch 37, mb 200]	Avg.Loss = 0.211	
Train Loss: 0.292	Train Acc: 87.52%	Error Rate: 12.48%
Test Loss: 0.469	Test Acc: 79.10%	Error Rate: 20.90%
[Epoch 38, mb 200]	Avg.Loss = 0.206	
Train Loss: 0.288	Train Acc: 87.72%	Error Rate: 12.28%
Test Loss: 0.471	Test Acc: 79.20%	Error Rate: 20.80%
[Epoch 39, mb 200]	Avg.Loss = 0.201	
Train Loss: 0.283	Train Acc: 88.02%	Error Rate: 11.98%
Test Loss: 0.473	Test Acc: 79.05%	Error Rate: 20.95%
[Epoch 40, mb 200]	Avg.Loss = 0.198	
Train Loss: 0.279	Train Acc: 88.28%	Error Rate: 11.72%
Test Loss: 0.474	Test Acc: 79.20%	Error Rate: 20.80%

hidden units: 200, size_batch: 50, learning rate: 0.0050, momentum: 0.8
Running time is 1365.3317 s.

Time for tuning hidden units is 2671.7732 s.

*****change the batch size(50,200,1000)

size_batch: 50

hidden_units: 100

lr: 0.005

[Epoch 1, mb 200]	Avg.Loss = 0.573	
Train Loss: 0.631	Train Acc: 69.28%	Error Rate: 30.72%
Test Loss: 0.625	Test Acc: 70.20%	Error Rate: 29.80%
[Epoch 2, mb 200]	Avg.Loss = 0.529	
Train Loss: 0.568	Train Acc: 71.84%	Error Rate: 28.16%
Test Loss: 0.566	Test Acc: 72.45%	Error Rate: 27.55%
[Epoch 3, mb 200]	Avg.Loss = 0.507	
Train Loss: 0.540	Train Acc: 73.25%	Error Rate: 26.75%
Test Loss: 0.540	Test Acc: 73.70%	Error Rate: 26.30%
[Epoch 4, mb 200]	Avg.Loss = 0.491	
Train Loss: 0.523	Train Acc: 74.30%	Error Rate: 25.70%
Test Loss: 0.526	Test Acc: 74.75%	Error Rate: 25.25%
[Epoch 5, mb 200]	Avg.Loss = 0.476	
Train Loss: 0.510	Train Acc: 75.08%	Error Rate: 24.92%
Test Loss: 0.516	Test Acc: 75.40%	Error Rate: 24.60%
[Epoch 6, mb 200]	Avg.Loss = 0.463	
Train Loss: 0.499	Train Acc: 75.77%	Error Rate: 24.23%
Test Loss: 0.508	Test Acc: 76.15%	Error Rate: 23.85%
[Epoch 7, mb 200]	Avg.Loss = 0.450	
Train Loss: 0.489	Train Acc: 76.38%	Error Rate: 23.62%
Test Loss: 0.502	Test Acc: 76.80%	Error Rate: 23.20%
[Epoch 8, mb 200]	Avg.Loss = 0.439	
Train Loss: 0.481	Train Acc: 76.90%	Error Rate: 23.10%
Test Loss: 0.497	Test Acc: 76.80%	Error Rate: 23.20%
[Epoch 9, mb 200]	Avg.Loss = 0.428	
Train Loss: 0.473	Train Acc: 77.42%	Error Rate: 22.58%

Test Loss: 0.492	Test Acc: 77.15%	Error Rate: 22.85%
[Epoch 10, mb 200]	Avg.Loss = 0.418	
Train Loss: 0.466	Train Acc: 77.89%	Error Rate: 22.11%
Test Loss: 0.488	Test Acc: 77.50%	Error Rate: 22.50%
[Epoch 11, mb 200]	Avg.Loss = 0.410	
Train Loss: 0.460	Train Acc: 78.18%	Error Rate: 21.82%
Test Loss: 0.484	Test Acc: 77.60%	Error Rate: 22.40%
[Epoch 12, mb 200]	Avg.Loss = 0.401	
Train Loss: 0.454	Train Acc: 78.44%	Error Rate: 21.56%
Test Loss: 0.481	Test Acc: 77.70%	Error Rate: 22.30%
[Epoch 13, mb 200]	Avg.Loss = 0.395	
Train Loss: 0.448	Train Acc: 78.94%	Error Rate: 21.06%
Test Loss: 0.479	Test Acc: 77.85%	Error Rate: 22.15%
[Epoch 14, mb 200]	Avg.Loss = 0.388	
Train Loss: 0.443	Train Acc: 79.26%	Error Rate: 20.74%
Test Loss: 0.476	Test Acc: 78.05%	Error Rate: 21.95%
[Epoch 15, mb 200]	Avg.Loss = 0.383	
Train Loss: 0.437	Train Acc: 79.57%	Error Rate: 20.43%
Test Loss: 0.474	Test Acc: 78.00%	Error Rate: 22.00%
[Epoch 16, mb 200]	Avg.Loss = 0.377	
Train Loss: 0.432	Train Acc: 79.89%	Error Rate: 20.11%
Test Loss: 0.472	Test Acc: 78.20%	Error Rate: 21.80%
[Epoch 17, mb 200]	Avg.Loss = 0.372	
Train Loss: 0.428	Train Acc: 80.36%	Error Rate: 19.64%
Test Loss: 0.470	Test Acc: 78.30%	Error Rate: 21.70%
[Epoch 18, mb 200]	Avg.Loss = 0.367	
Train Loss: 0.423	Train Acc: 80.66%	Error Rate: 19.34%
Test Loss: 0.468	Test Acc: 78.50%	Error Rate: 21.50%
[Epoch 19, mb 200]	Avg.Loss = 0.363	
Train Loss: 0.419	Train Acc: 80.98%	Error Rate: 19.02%
Test Loss: 0.467	Test Acc: 78.75%	Error Rate: 21.25%
[Epoch 20, mb 200]	Avg.Loss = 0.359	
Train Loss: 0.414	Train Acc: 81.19%	Error Rate: 18.81%
Test Loss: 0.465	Test Acc: 78.65%	Error Rate: 21.35%
[Epoch 21, mb 200]	Avg.Loss = 0.355	
Train Loss: 0.410	Train Acc: 81.33%	Error Rate: 18.67%
Test Loss: 0.464	Test Acc: 78.90%	Error Rate: 21.10%
[Epoch 22, mb 200]	Avg.Loss = 0.351	
Train Loss: 0.406	Train Acc: 81.60%	Error Rate: 18.40%
Test Loss: 0.463	Test Acc: 78.70%	Error Rate: 21.30%
[Epoch 23, mb 200]	Avg.Loss = 0.347	
Train Loss: 0.402	Train Acc: 81.95%	Error Rate: 18.05%
Test Loss: 0.462	Test Acc: 78.65%	Error Rate: 21.35%
[Epoch 24, mb 200]	Avg.Loss = 0.343	
Train Loss: 0.398	Train Acc: 82.12%	Error Rate: 17.88%
Test Loss: 0.461	Test Acc: 78.65%	Error Rate: 21.35%
[Epoch 25, mb 200]	Avg.Loss = 0.338	
Train Loss: 0.394	Train Acc: 82.27%	Error Rate: 17.73%
Test Loss: 0.461	Test Acc: 78.65%	Error Rate: 21.35%
[Epoch 26, mb 200]	Avg.Loss = 0.334	

Train Loss: 0.390	Train Acc: 82.55%	Error Rate: 17.45%
Test Loss: 0.460	Test Acc: 78.75%	Error Rate: 21.25%
[Epoch 27, mb 200]	Avg.Loss = 0.330	
Train Loss: 0.386	Train Acc: 82.71%	Error Rate: 17.29%
Test Loss: 0.460	Test Acc: 78.95%	Error Rate: 21.05%
[Epoch 28, mb 200]	Avg.Loss = 0.326	
Train Loss: 0.382	Train Acc: 82.97%	Error Rate: 17.03%
Test Loss: 0.460	Test Acc: 79.25%	Error Rate: 20.75%
[Epoch 29, mb 200]	Avg.Loss = 0.322	
Train Loss: 0.379	Train Acc: 83.14%	Error Rate: 16.86%
Test Loss: 0.459	Test Acc: 79.35%	Error Rate: 20.65%
[Epoch 30, mb 200]	Avg.Loss = 0.318	
Train Loss: 0.375	Train Acc: 83.33%	Error Rate: 16.67%
Test Loss: 0.459	Test Acc: 79.50%	Error Rate: 20.50%
[Epoch 31, mb 200]	Avg.Loss = 0.312	
Train Loss: 0.371	Train Acc: 83.50%	Error Rate: 16.50%
Test Loss: 0.458	Test Acc: 79.70%	Error Rate: 20.30%
[Epoch 32, mb 200]	Avg.Loss = 0.307	
Train Loss: 0.367	Train Acc: 83.75%	Error Rate: 16.25%
Test Loss: 0.458	Test Acc: 79.90%	Error Rate: 20.10%
[Epoch 33, mb 200]	Avg.Loss = 0.302	
Train Loss: 0.364	Train Acc: 83.92%	Error Rate: 16.08%
Test Loss: 0.458	Test Acc: 79.85%	Error Rate: 20.15%
[Epoch 34, mb 200]	Avg.Loss = 0.297	
Train Loss: 0.360	Train Acc: 84.15%	Error Rate: 15.85%
Test Loss: 0.458	Test Acc: 79.90%	Error Rate: 20.10%
[Epoch 35, mb 200]	Avg.Loss = 0.292	
Train Loss: 0.356	Train Acc: 84.29%	Error Rate: 15.71%
Test Loss: 0.458	Test Acc: 79.90%	Error Rate: 20.10%
[Epoch 36, mb 200]	Avg.Loss = 0.287	
Train Loss: 0.353	Train Acc: 84.53%	Error Rate: 15.47%
Test Loss: 0.458	Test Acc: 80.00%	Error Rate: 20.00%
[Epoch 37, mb 200]	Avg.Loss = 0.282	
Train Loss: 0.349	Train Acc: 84.76%	Error Rate: 15.24%
Test Loss: 0.458	Test Acc: 80.30%	Error Rate: 19.70%
[Epoch 38, mb 200]	Avg.Loss = 0.277	
Train Loss: 0.345	Train Acc: 84.96%	Error Rate: 15.04%
Test Loss: 0.458	Test Acc: 80.45%	Error Rate: 19.55%
[Epoch 39, mb 200]	Avg.Loss = 0.273	
Train Loss: 0.342	Train Acc: 85.15%	Error Rate: 14.85%
Test Loss: 0.459	Test Acc: 80.75%	Error Rate: 19.25%
[Epoch 40, mb 200]	Avg.Loss = 0.268	
Train Loss: 0.338	Train Acc: 85.31%	Error Rate: 14.69%
Test Loss: 0.459	Test Acc: 80.70%	Error Rate: 19.30%

hidden units: 100, size_batch: 50, learning rate: 0.0050, momentum: 0.8

Running time is 572.9420 s.

size_batch: 200
hidden_units: 100

lr: 0.005

[Epoch 1, mb 200]	Avg.Loss = 0.652		
Train Loss: 0.606	Train Acc: 69.40%	Error Rate: 30.60%	
Test Loss: 0.595	Test Acc: 71.20%	Error Rate: 28.80%	
[Epoch 2, mb 200]	Avg.Loss = 0.571		
Train Loss: 0.550	Train Acc: 72.59%	Error Rate: 27.41%	
Test Loss: 0.545	Test Acc: 74.50%	Error Rate: 25.50%	
[Epoch 3, mb 200]	Avg.Loss = 0.531		
Train Loss: 0.526	Train Acc: 74.18%	Error Rate: 25.82%	
Test Loss: 0.523	Test Acc: 75.30%	Error Rate: 24.70%	
[Epoch 4, mb 200]	Avg.Loss = 0.503		
Train Loss: 0.510	Train Acc: 75.23%	Error Rate: 24.77%	
Test Loss: 0.510	Test Acc: 76.00%	Error Rate: 24.00%	
[Epoch 5, mb 200]	Avg.Loss = 0.482		
Train Loss: 0.497	Train Acc: 75.72%	Error Rate: 24.28%	
Test Loss: 0.499	Test Acc: 76.75%	Error Rate: 23.25%	
[Epoch 6, mb 200]	Avg.Loss = 0.465		
Train Loss: 0.487	Train Acc: 76.38%	Error Rate: 23.62%	
Test Loss: 0.491	Test Acc: 77.20%	Error Rate: 22.80%	
[Epoch 7, mb 200]	Avg.Loss = 0.450		
Train Loss: 0.478	Train Acc: 76.94%	Error Rate: 23.06%	
Test Loss: 0.485	Test Acc: 77.25%	Error Rate: 22.75%	
[Epoch 8, mb 200]	Avg.Loss = 0.438		
Train Loss: 0.470	Train Acc: 77.49%	Error Rate: 22.51%	
Test Loss: 0.479	Test Acc: 77.95%	Error Rate: 22.05%	
[Epoch 9, mb 200]	Avg.Loss = 0.427		
Train Loss: 0.462	Train Acc: 77.97%	Error Rate: 22.03%	
Test Loss: 0.475	Test Acc: 77.90%	Error Rate: 22.10%	
[Epoch 10, mb 200]	Avg.Loss = 0.419		
Train Loss: 0.456	Train Acc: 78.46%	Error Rate: 21.54%	
Test Loss: 0.471	Test Acc: 78.25%	Error Rate: 21.75%	
[Epoch 11, mb 200]	Avg.Loss = 0.413		
Train Loss: 0.449	Train Acc: 78.78%	Error Rate: 21.22%	
Test Loss: 0.467	Test Acc: 78.65%	Error Rate: 21.35%	
[Epoch 12, mb 200]	Avg.Loss = 0.408		
Train Loss: 0.443	Train Acc: 79.31%	Error Rate: 20.69%	
Test Loss: 0.464	Test Acc: 78.65%	Error Rate: 21.35%	
[Epoch 13, mb 200]	Avg.Loss = 0.404		
Train Loss: 0.438	Train Acc: 79.68%	Error Rate: 20.32%	
Test Loss: 0.462	Test Acc: 78.65%	Error Rate: 21.35%	
[Epoch 14, mb 200]	Avg.Loss = 0.399		
Train Loss: 0.432	Train Acc: 80.17%	Error Rate: 19.83%	
Test Loss: 0.460	Test Acc: 78.85%	Error Rate: 21.15%	
[Epoch 15, mb 200]	Avg.Loss = 0.394		
Train Loss: 0.427	Train Acc: 80.53%	Error Rate: 19.47%	
Test Loss: 0.458	Test Acc: 79.20%	Error Rate: 20.80%	
[Epoch 16, mb 200]	Avg.Loss = 0.390		
Train Loss: 0.422	Train Acc: 80.85%	Error Rate: 19.15%	
Test Loss: 0.456	Test Acc: 79.45%	Error Rate: 20.55%	
[Epoch 17, mb 200]	Avg.Loss = 0.385		

Train Loss: 0.418	Train Acc: 81.17%	Error Rate: 18.83%
Test Loss: 0.454	Test Acc: 79.25%	Error Rate: 20.75%
[Epoch 18, mb 200]	Avg.Loss = 0.380	
Train Loss: 0.413	Train Acc: 81.45%	Error Rate: 18.55%
Test Loss: 0.452	Test Acc: 79.45%	Error Rate: 20.55%
[Epoch 19, mb 200]	Avg.Loss = 0.375	
Train Loss: 0.409	Train Acc: 81.77%	Error Rate: 18.23%
Test Loss: 0.451	Test Acc: 79.40%	Error Rate: 20.60%
[Epoch 20, mb 200]	Avg.Loss = 0.371	
Train Loss: 0.405	Train Acc: 82.00%	Error Rate: 18.00%
Test Loss: 0.450	Test Acc: 79.35%	Error Rate: 20.65%
[Epoch 21, mb 200]	Avg.Loss = 0.367	
Train Loss: 0.400	Train Acc: 82.27%	Error Rate: 17.73%
Test Loss: 0.449	Test Acc: 79.45%	Error Rate: 20.55%
[Epoch 22, mb 200]	Avg.Loss = 0.362	
Train Loss: 0.396	Train Acc: 82.47%	Error Rate: 17.53%
Test Loss: 0.448	Test Acc: 79.65%	Error Rate: 20.35%
[Epoch 23, mb 200]	Avg.Loss = 0.358	
Train Loss: 0.392	Train Acc: 82.71%	Error Rate: 17.29%
Test Loss: 0.447	Test Acc: 79.70%	Error Rate: 20.30%
[Epoch 24, mb 200]	Avg.Loss = 0.354	
Train Loss: 0.389	Train Acc: 82.85%	Error Rate: 17.15%
Test Loss: 0.446	Test Acc: 79.85%	Error Rate: 20.15%
[Epoch 25, mb 200]	Avg.Loss = 0.350	
Train Loss: 0.385	Train Acc: 82.96%	Error Rate: 17.04%
Test Loss: 0.446	Test Acc: 79.75%	Error Rate: 20.25%
[Epoch 26, mb 200]	Avg.Loss = 0.345	
Train Loss: 0.381	Train Acc: 83.30%	Error Rate: 16.70%
Test Loss: 0.445	Test Acc: 79.70%	Error Rate: 20.30%
[Epoch 27, mb 200]	Avg.Loss = 0.341	
Train Loss: 0.377	Train Acc: 83.52%	Error Rate: 16.48%
Test Loss: 0.445	Test Acc: 79.90%	Error Rate: 20.10%
[Epoch 28, mb 200]	Avg.Loss = 0.336	
Train Loss: 0.374	Train Acc: 83.73%	Error Rate: 16.27%
Test Loss: 0.445	Test Acc: 79.70%	Error Rate: 20.30%
[Epoch 29, mb 200]	Avg.Loss = 0.331	
Train Loss: 0.370	Train Acc: 83.82%	Error Rate: 16.18%
Test Loss: 0.445	Test Acc: 79.80%	Error Rate: 20.20%
[Epoch 30, mb 200]	Avg.Loss = 0.326	
Train Loss: 0.367	Train Acc: 83.93%	Error Rate: 16.07%
Test Loss: 0.445	Test Acc: 80.00%	Error Rate: 20.00%
[Epoch 31, mb 200]	Avg.Loss = 0.321	
Train Loss: 0.363	Train Acc: 84.13%	Error Rate: 15.87%
Test Loss: 0.445	Test Acc: 80.10%	Error Rate: 19.90%
[Epoch 32, mb 200]	Avg.Loss = 0.315	
Train Loss: 0.360	Train Acc: 84.29%	Error Rate: 15.71%
Test Loss: 0.445	Test Acc: 80.40%	Error Rate: 19.60%
[Epoch 33, mb 200]	Avg.Loss = 0.310	
Train Loss: 0.357	Train Acc: 84.43%	Error Rate: 15.57%
Test Loss: 0.445	Test Acc: 80.40%	Error Rate: 19.60%

[Epoch 34, mb 200]	Avg.Loss = 0.305		
Train Loss: 0.353	Train Acc: 84.55%	Error Rate: 15.45%	
Test Loss: 0.446	Test Acc: 80.30%	Error Rate: 19.70%	
[Epoch 35, mb 200]	Avg.Loss = 0.300		
Train Loss: 0.350	Train Acc: 84.74%	Error Rate: 15.26%	
Test Loss: 0.446	Test Acc: 80.25%	Error Rate: 19.75%	
[Epoch 36, mb 200]	Avg.Loss = 0.295		
Train Loss: 0.347	Train Acc: 84.91%	Error Rate: 15.09%	
Test Loss: 0.447	Test Acc: 80.20%	Error Rate: 19.80%	
[Epoch 37, mb 200]	Avg.Loss = 0.290		
Train Loss: 0.343	Train Acc: 85.05%	Error Rate: 14.95%	
Test Loss: 0.448	Test Acc: 80.35%	Error Rate: 19.65%	
[Epoch 38, mb 200]	Avg.Loss = 0.284		
Train Loss: 0.340	Train Acc: 85.16%	Error Rate: 14.84%	
Test Loss: 0.448	Test Acc: 80.35%	Error Rate: 19.65%	
[Epoch 39, mb 200]	Avg.Loss = 0.278		
Train Loss: 0.337	Train Acc: 85.49%	Error Rate: 14.51%	
Test Loss: 0.449	Test Acc: 80.35%	Error Rate: 19.65%	
[Epoch 40, mb 200]	Avg.Loss = 0.274		
Train Loss: 0.334	Train Acc: 85.59%	Error Rate: 14.41%	
Test Loss: 0.450	Test Acc: 80.40%	Error Rate: 19.60%	

hidden units: 100, size_batch: 200, learning rate: 0.0050, momentum: 0.8

Running time is 570.1902 s.

size_batch: 50

hidden_units: 100

lr: 0.005

[Epoch 1, mb 200]	Avg.Loss = 0.589		
Train Loss: 0.606	Train Acc: 71.11%	Error Rate: 28.89%	
Test Loss: 0.612	Test Acc: 71.50%	Error Rate: 28.50%	
[Epoch 2, mb 200]	Avg.Loss = 0.507		
Train Loss: 0.541	Train Acc: 74.04%	Error Rate: 25.96%	
Test Loss: 0.552	Test Acc: 73.55%	Error Rate: 26.45%	
[Epoch 3, mb 200]	Avg.Loss = 0.466		
Train Loss: 0.512	Train Acc: 75.38%	Error Rate: 24.62%	
Test Loss: 0.526	Test Acc: 75.10%	Error Rate: 24.90%	
[Epoch 4, mb 200]	Avg.Loss = 0.442		
Train Loss: 0.494	Train Acc: 76.51%	Error Rate: 23.49%	
Test Loss: 0.511	Test Acc: 75.85%	Error Rate: 24.15%	
[Epoch 5, mb 200]	Avg.Loss = 0.427		
Train Loss: 0.482	Train Acc: 77.45%	Error Rate: 22.55%	
Test Loss: 0.500	Test Acc: 76.60%	Error Rate: 23.40%	
[Epoch 6, mb 200]	Avg.Loss = 0.415		
Train Loss: 0.471	Train Acc: 77.98%	Error Rate: 22.02%	
Test Loss: 0.493	Test Acc: 77.05%	Error Rate: 22.95%	
[Epoch 7, mb 200]	Avg.Loss = 0.404		
Train Loss: 0.463	Train Acc: 78.64%	Error Rate: 21.36%	
Test Loss: 0.487	Test Acc: 77.05%	Error Rate: 22.95%	
[Epoch 8, mb 200]	Avg.Loss = 0.395		

Train Loss: 0.455	Train Acc: 78.91%	Error Rate: 21.09%
Test Loss: 0.482	Test Acc: 76.80%	Error Rate: 23.20%
[Epoch 9, mb 200]	Avg.Loss = 0.387	
Train Loss: 0.449	Train Acc: 79.23%	Error Rate: 20.77%
Test Loss: 0.478	Test Acc: 76.75%	Error Rate: 23.25%
[Epoch 10, mb 200]	Avg.Loss = 0.380	
Train Loss: 0.442	Train Acc: 79.66%	Error Rate: 20.34%
Test Loss: 0.475	Test Acc: 76.85%	Error Rate: 23.15%
[Epoch 11, mb 200]	Avg.Loss = 0.373	
Train Loss: 0.436	Train Acc: 79.91%	Error Rate: 20.09%
Test Loss: 0.472	Test Acc: 77.05%	Error Rate: 22.95%
[Epoch 12, mb 200]	Avg.Loss = 0.367	
Train Loss: 0.431	Train Acc: 80.22%	Error Rate: 19.78%
Test Loss: 0.470	Test Acc: 77.35%	Error Rate: 22.65%
[Epoch 13, mb 200]	Avg.Loss = 0.361	
Train Loss: 0.425	Train Acc: 80.68%	Error Rate: 19.32%
Test Loss: 0.468	Test Acc: 77.75%	Error Rate: 22.25%
[Epoch 14, mb 200]	Avg.Loss = 0.354	
Train Loss: 0.420	Train Acc: 80.96%	Error Rate: 19.04%
Test Loss: 0.466	Test Acc: 77.55%	Error Rate: 22.45%
[Epoch 15, mb 200]	Avg.Loss = 0.348	
Train Loss: 0.415	Train Acc: 81.30%	Error Rate: 18.70%
Test Loss: 0.465	Test Acc: 77.90%	Error Rate: 22.10%
[Epoch 16, mb 200]	Avg.Loss = 0.342	
Train Loss: 0.411	Train Acc: 81.62%	Error Rate: 18.38%
Test Loss: 0.464	Test Acc: 78.00%	Error Rate: 22.00%
[Epoch 17, mb 200]	Avg.Loss = 0.337	
Train Loss: 0.406	Train Acc: 81.86%	Error Rate: 18.14%
Test Loss: 0.463	Test Acc: 77.90%	Error Rate: 22.10%
[Epoch 18, mb 200]	Avg.Loss = 0.331	
Train Loss: 0.401	Train Acc: 82.08%	Error Rate: 17.92%
Test Loss: 0.462	Test Acc: 78.00%	Error Rate: 22.00%
[Epoch 19, mb 200]	Avg.Loss = 0.326	
Train Loss: 0.397	Train Acc: 82.28%	Error Rate: 17.72%
Test Loss: 0.461	Test Acc: 78.00%	Error Rate: 22.00%
[Epoch 20, mb 200]	Avg.Loss = 0.321	
Train Loss: 0.393	Train Acc: 82.47%	Error Rate: 17.53%
Test Loss: 0.461	Test Acc: 78.00%	Error Rate: 22.00%
[Epoch 21, mb 200]	Avg.Loss = 0.316	
Train Loss: 0.388	Train Acc: 82.61%	Error Rate: 17.39%
Test Loss: 0.460	Test Acc: 78.05%	Error Rate: 21.95%
[Epoch 22, mb 200]	Avg.Loss = 0.312	
Train Loss: 0.384	Train Acc: 82.84%	Error Rate: 17.16%
Test Loss: 0.460	Test Acc: 78.20%	Error Rate: 21.80%
[Epoch 23, mb 200]	Avg.Loss = 0.306	
Train Loss: 0.380	Train Acc: 83.10%	Error Rate: 16.90%
Test Loss: 0.460	Test Acc: 78.30%	Error Rate: 21.70%
[Epoch 24, mb 200]	Avg.Loss = 0.302	
Train Loss: 0.376	Train Acc: 83.32%	Error Rate: 16.68%
Test Loss: 0.460	Test Acc: 78.20%	Error Rate: 21.80%

[Epoch 25, mb 200]	Avg.Loss = 0.297	
Train Loss: 0.372	Train Acc: 83.51%	Error Rate: 16.49%
Test Loss: 0.460	Test Acc: 78.25%	Error Rate: 21.75%
[Epoch 26, mb 200]	Avg.Loss = 0.292	
Train Loss: 0.368	Train Acc: 83.79%	Error Rate: 16.21%
Test Loss: 0.460	Test Acc: 78.20%	Error Rate: 21.80%
[Epoch 27, mb 200]	Avg.Loss = 0.287	
Train Loss: 0.364	Train Acc: 83.95%	Error Rate: 16.05%
Test Loss: 0.460	Test Acc: 78.35%	Error Rate: 21.65%
[Epoch 28, mb 200]	Avg.Loss = 0.282	
Train Loss: 0.360	Train Acc: 84.19%	Error Rate: 15.81%
Test Loss: 0.460	Test Acc: 78.65%	Error Rate: 21.35%
[Epoch 29, mb 200]	Avg.Loss = 0.277	
Train Loss: 0.357	Train Acc: 84.48%	Error Rate: 15.52%
Test Loss: 0.460	Test Acc: 78.80%	Error Rate: 21.20%
[Epoch 30, mb 200]	Avg.Loss = 0.272	
Train Loss: 0.353	Train Acc: 84.65%	Error Rate: 15.35%
Test Loss: 0.460	Test Acc: 78.95%	Error Rate: 21.05%
[Epoch 31, mb 200]	Avg.Loss = 0.267	
Train Loss: 0.349	Train Acc: 84.82%	Error Rate: 15.18%
Test Loss: 0.461	Test Acc: 79.00%	Error Rate: 21.00%
[Epoch 32, mb 200]	Avg.Loss = 0.262	
Train Loss: 0.345	Train Acc: 84.99%	Error Rate: 15.01%
Test Loss: 0.461	Test Acc: 79.05%	Error Rate: 20.95%
[Epoch 33, mb 200]	Avg.Loss = 0.258	
Train Loss: 0.342	Train Acc: 85.08%	Error Rate: 14.92%
Test Loss: 0.462	Test Acc: 79.20%	Error Rate: 20.80%
[Epoch 34, mb 200]	Avg.Loss = 0.253	
Train Loss: 0.338	Train Acc: 85.26%	Error Rate: 14.74%
Test Loss: 0.462	Test Acc: 79.20%	Error Rate: 20.80%
[Epoch 35, mb 200]	Avg.Loss = 0.248	
Train Loss: 0.335	Train Acc: 85.49%	Error Rate: 14.51%
Test Loss: 0.463	Test Acc: 79.15%	Error Rate: 20.85%
[Epoch 36, mb 200]	Avg.Loss = 0.243	
Train Loss: 0.331	Train Acc: 85.63%	Error Rate: 14.37%
Test Loss: 0.464	Test Acc: 79.25%	Error Rate: 20.75%
[Epoch 37, mb 200]	Avg.Loss = 0.239	
Train Loss: 0.327	Train Acc: 85.89%	Error Rate: 14.11%
Test Loss: 0.465	Test Acc: 79.10%	Error Rate: 20.90%
[Epoch 38, mb 200]	Avg.Loss = 0.234	
Train Loss: 0.324	Train Acc: 86.09%	Error Rate: 13.91%
Test Loss: 0.466	Test Acc: 79.15%	Error Rate: 20.85%
[Epoch 39, mb 200]	Avg.Loss = 0.229	
Train Loss: 0.320	Train Acc: 86.30%	Error Rate: 13.70%
Test Loss: 0.466	Test Acc: 79.20%	Error Rate: 20.80%
[Epoch 40, mb 200]	Avg.Loss = 0.225	
Train Loss: 0.317	Train Acc: 86.42%	Error Rate: 13.58%
Test Loss: 0.467	Test Acc: 79.35%	Error Rate: 20.65%

hidden units: 100, size_batch: 50, learning rate: 0.0050, momentum: 0.8

Running time is 570.8640 s.

Time for tuning batches is 1713.9963 s.