

```
C:\Users\chris\anaconda3\python.exe "C:\Program Files\
JetBrains\PyCharm 2020.3.5\plugins\python\helpers\pydev
\pydevconsole.py" --mode=client --port=55939
```

```
import sys; print('Python %s on %s' % (sys.version, sys
.platform))
sys.path.extend(['C:\\Users\\chris\\PycharmProjects\\
NAI', 'C:/Users/chris/PycharmProjects/NAI'])
```

```
Python 3.8.8 (default, Feb 24 2021, 15:54:32) [MSC v.
1928 64 bit (AMD64)]
```

```
Type 'copyright', 'credits' or 'license' for more
information
```

```
IPython 7.21.0 -- An enhanced Interactive Python. Type
'?' for help.
```

```
PyDev console: using IPython 7.21.0
```

```
Python 3.8.8 (default, Feb 24 2021, 15:54:32) [MSC v.
1928 64 bit (AMD64)] on win32
```

```
In[2]: runfile('C:/Users/chris/PycharmProjects/NAI/LAB5
/neural_network_CIFAR10.py', wdir='C:/Users/chris/
PycharmProjects/NAI/LAB5')
```

```
2021-12-16 21:15:00.360441: W tensorflow/
stream_executor/platform/default/dso_loader.cc:64]
```

```
Could not load dynamic library 'cudart64_110.dll';
```

```
dlerror: cudart64_110.dll not found
```

```
2021-12-16 21:15:00.361397: I tensorflow/
```

```
stream_executor/cuda/cudart_stub.cc:29] Ignore above
cudart dlerror if you do not have a GPU set up on your
machine.
```

```
Iteration 1, loss = 1.92733770
```

```
Iteration 2, loss = 1.71744039
```

```
Iteration 3, loss = 1.63148550
```

```
Iteration 4, loss = 1.56961267
```

```
Iteration 5, loss = 1.52468502
```

```
Iteration 6, loss = 1.49940839
```

```
Iteration 7, loss = 1.46645520
```

```
Iteration 8, loss = 1.43652444
```

```
Iteration 9, loss = 1.41571434
```

```
Iteration 10, loss = 1.39875902
```

```
Iteration 11, loss = 1.37312074
```

```
Iteration 12, loss = 1.36170535
```

Iteration 13, loss = 1.35633019  
Iteration 14, loss = 1.33242745  
Iteration 15, loss = 1.31434044  
Iteration 16, loss = 1.30435125  
Iteration 17, loss = 1.28786125  
Iteration 18, loss = 1.27998640  
Iteration 19, loss = 1.25664041  
Iteration 20, loss = 1.24495824  
Iteration 21, loss = 1.24180440  
Iteration 22, loss = 1.22561425  
Iteration 23, loss = 1.21416190  
Iteration 24, loss = 1.19889923  
Iteration 25, loss = 1.19376071  
Iteration 26, loss = 1.18146609  
Iteration 27, loss = 1.17242593  
Iteration 28, loss = 1.16912368  
Iteration 29, loss = 1.15722657  
Iteration 30, loss = 1.14683653  
Iteration 31, loss = 1.13771454  
Iteration 32, loss = 1.12612345  
Iteration 33, loss = 1.11492481  
Iteration 34, loss = 1.12067790  
Iteration 35, loss = 1.10844529  
Iteration 36, loss = 1.09508639  
Iteration 37, loss = 1.09133385  
Iteration 38, loss = 1.08204793  
Iteration 39, loss = 1.07291106  
Iteration 40, loss = 1.06958487  
Iteration 41, loss = 1.06531370  
Iteration 42, loss = 1.05806890  
Iteration 43, loss = 1.05825549  
Iteration 44, loss = 1.04295503  
Iteration 45, loss = 1.04077225  
Iteration 46, loss = 1.03404065  
Iteration 47, loss = 1.02831230  
Iteration 48, loss = 1.01243517  
Iteration 49, loss = 1.01681220  
Iteration 50, loss = 1.01084829  
Iteration 51, loss = 1.00585840  
Iteration 52, loss = 1.00335689  
Iteration 53, loss = 0.99506804  
Iteration 54, loss = 0.98381012

Iteration 55, loss = 0.98398857  
Iteration 56, loss = 0.98187301  
Iteration 57, loss = 0.98106011  
Iteration 58, loss = 0.97088566  
Iteration 59, loss = 0.96900059  
Iteration 60, loss = 0.95944585  
Iteration 61, loss = 0.94883251  
Iteration 62, loss = 0.95261053  
Iteration 63, loss = 0.94378465  
Iteration 64, loss = 0.95033255  
Iteration 65, loss = 0.93072532  
Iteration 66, loss = 0.92767803  
Iteration 67, loss = 0.92457599  
Iteration 68, loss = 0.92623173  
Iteration 69, loss = 0.92690632  
Iteration 70, loss = 0.91894394  
Iteration 71, loss = 0.90313065  
Iteration 72, loss = 0.90079660  
Iteration 73, loss = 0.89922030  
Iteration 74, loss = 0.89918238  
Iteration 75, loss = 0.88821080  
Iteration 76, loss = 0.89014932  
Iteration 77, loss = 0.89379307  
Iteration 78, loss = 0.88925518  
Iteration 79, loss = 0.88100699  
Iteration 80, loss = 0.87518201  
Iteration 81, loss = 0.87125484  
Iteration 82, loss = 0.86871288  
Iteration 83, loss = 0.86290136  
Iteration 84, loss = 0.86280954  
Iteration 85, loss = 0.85218385  
Iteration 86, loss = 0.84989659  
Iteration 87, loss = 0.84708702  
Iteration 88, loss = 0.84175386  
Iteration 89, loss = 0.84076311  
Iteration 90, loss = 0.83310782  
Iteration 91, loss = 0.83543359  
Iteration 92, loss = 0.83272173  
Iteration 93, loss = 0.82852205  
Iteration 94, loss = 0.83435322  
Iteration 95, loss = 0.81915861  
Iteration 96, loss = 0.81715670

Iteration 97, loss = 0.82245304  
 Iteration 98, loss = 0.81505174  
 Iteration 99, loss = 0.80385273  
 Iteration 100, loss = 0.80219209  
 Training set score: 72.98%  
 Test set score: 51.30%

-----SVM Report-----

F1 score: 50.82%

Accuracy score: 51.30%

Confusion matrix:

```

[[572  26  54  14  36  15  28  38 146  71]
 [ 48 594  21  17  17  10  20  23  60 190]
 [ 74  12 361  79 138  71 106  96  21  42]
 [ 33  22  73 278  68 212 142  81  29  62]
 [ 55   6 110  45 458  56 124  99  28  19]
 [ 31   4  63 190  65 404  88  89  21  45]
 [ 16  19  63  72 101  58 601  27  14  29]
 [ 51  12  27  53  72  86  24 596  23  56]
 [ 89  80  16  25  25  14   7  20 658  66]
 [ 56 154   9   9  12  17  23  50  62 608]]
  
```

Plotting confusion matrix

	precision	recall	f1-score	support
0	0.56	0.57	0.56	1000
1	0.64	0.59	0.62	1000
2	0.45	0.36	0.40	1000
3	0.36	0.28	0.31	1000
4	0.46	0.46	0.46	1000
5	0.43	0.40	0.42	1000
6	0.52	0.60	0.56	1000
7	0.53	0.60	0.56	1000
8	0.62	0.66	0.64	1000
9	0.51	0.61	0.56	1000
accuracy			0.51	10000
macro avg	0.51	0.51	0.51	10000
weighted avg	0.51	0.51	0.51	10000