

Mobilnet configuration across all models:

IMAGE_SIZE=224

ARCHITECTURE="mobilenet_1.0_\${IMAGE_SIZE}"

AVERAGE EVALUATION TIME FOUND: 0.1473375 seconds

Model #1: 500 training steps and default learning_rate value of 0.01

When given images of lungs with a tumor:

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph.pb      --image=/home/cc/TESTING/test_pos1.jpg
Evaluation time (1-image): 0.149s
positive (score=1.00000)
negative (score=0.00000)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph.pb      --image=/home/cc/TESTING/test_pos2.jpg
Evaluation time (1-image): 0.148s
negative (score=0.99448)
positive (score=0.00552)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph.pb      --image=/home/cc/TESTING/test_pos3.jpg
Evaluation time (1-image): 0.145s
positive (score=0.98728)
negative (score=0.01272)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph.pb      --image=/home/cc/TESTING/test_pos4.jpg
Evaluation time (1-image): 0.155s
positive (score=1.00000)
negative (score=0.00000)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph.pb      --image=/home/cc/TESTING/test_pos5.jpg
Evaluation time (1-image): 0.147s
positive (score=0.80053)
negative (score=0.19947)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph.pb      --image=/home/cc/TESTING/test_pos6.jpg
Evaluation time (1-image): 0.146s
positive (score=0.99999)
negative (score=0.00001)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph.pb      --image=/home/cc/TESTING/test_pos7.jpg
Evaluation time (1-image): 0.146s
negative (score=0.99808)
positive (score=0.00192)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph.pb      --image=/home/cc/TESTING/test_pos8.jpg
Evaluation time (1-image): 0.149s
positive (score=1.00000)
negative (score=0.00000)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph.pb --image=/home/cc/TESTING/test_pos9.jpg
Evaluation time (1-image): 0.147s
positive (score=0.99997)
negative (score=0.00003)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph.pb --image=/home/cc/TESTING/test_pos10.jpg
Evaluation time (1-image): 0.148s
positive (score=1.00000)
negative (score=0.00000)
```

When given images of “healthy” lungs:

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph.pb --image=/home/cc/TESTING/test_neg1.jpg
Evaluation time (1-image): 0.145s
negative (score=0.80471)
positive (score=0.19529)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph.pb --image=/home/cc/TESTING/test_neg2.jpg
Evaluation time (1-image): 0.146s
positive (score=0.95711)
negative (score=0.04289)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph.pb --image=/home/cc/TESTING/test_neg3.jpg
Evaluation time (1-image): 0.145s
positive (score=1.00000)
negative (score=0.00000)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph.pb --image=/home/cc/TESTING/test_neg4.jpg
Evaluation time (1-image): 0.150s
positive (score=0.99994)
negative (score=0.00006)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph.pb --image=/home/cc/TESTING/test_neg5.jpg
Evaluation time (1-image): 0.149s
positive (score=1.00000)
negative (score=0.00000)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph.pb --image=/home/cc/TESTING/test_neg6.jpg
Evaluation time (1-image): 0.147s
positive (score=1.00000)
negative (score=0.00000)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph.pb --image=/home/cc/TESTING/test_neg7.jpg
Evaluation time (1-image): 0.150s
positive (score=1.00000)
negative (score=0.00000)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph.pb --image=/home/cc/TESTING/test_neg8.jpg
Evaluation time (1-image): 0.144s
positive (score=0.99996)
negative (score=0.00004)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph.pb --image=/home/cc/TESTING/test_neg9.jpg
Evaluation time (1-image): 0.149s
positive (score=1.00000)
negative (score=0.00000)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph.pb --image=/home/cc/TESTING/test_neg10.jpg
Evaluation time (1-image): 0.174s
negative (score=0.90227)
positive (score=0.09773)
```

Model #2: Added testing% of 10% and validation% of 20%, changed learning rate to 0.001

When given images of lungs with a tumor:

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph1.pb --image=/home/cc/TESTING/test_pos1.jpg
Evaluation time (1-image): 0.150s
positive (score=0.97741)
negative (score=0.02259)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph1.pb --image=/home/cc/TESTING/test_pos2.jpg
Evaluation time (1-image): 0.146s
negative (score=0.85657)
positive (score=0.14343)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph1.pb --image=/home/cc/TESTING/test_pos3.jpg
Evaluation time (1-image): 0.149s
positive (score=0.53146)
negative (score=0.46854)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph1.pb --image=/home/cc/TESTING/test_pos4.jpg
Evaluation time (1-image): 0.142s
positive (score=0.95638)
negative (score=0.04362)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph1.pb --image=/home/cc/TESTING/test_pos5.jpg
Evaluation time (1-image): 0.147s
negative (score=0.50542)
positive (score=0.49458)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph1.pb --image=/home/cc/TESTING/test_pos6.jpg
Evaluation time (1-image): 0.147s
positive (score=0.92567)
negative (score=0.07433)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph1.pb --image=/home/cc/TESTING/test_pos7.jpg
Evaluation time (1-image): 0.148s
negative (score=0.95374)
positive (score=0.04626)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph1.pb --image=/home/cc/TESTING/test_pos8.jpg
Evaluation time (1-image): 0.145s
positive (score=0.99288)
negative (score=0.00712)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph1.pb --image=/home/cc/TESTING/test_pos9.jpg
Evaluation time (1-image): 0.150s
positive (score=0.93296)
negative (score=0.06704)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph1.pb --image=/home/cc/TESTING/test_pos10.jpg
Evaluation time (1-image): 0.144s
positive (score=0.98853)
negative (score=0.01147)
```

When given images of “healthy” lungs:

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph1.pb --image=/home/cc/TESTING/test_neg1.jpg
Evaluation time (1-image): 0.145s
negative (score=0.83092)
positive (score=0.16908)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph1.pb --image=/home/cc/TESTING/test_neg2.jpg
Evaluation time (1-image): 0.144s
negative (score=0.56584)
positive (score=0.43416)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph1.pb --image=/home/cc/TESTING/test_neg3.jpg
Evaluation time (1-image): 0.147s
positive (score=0.99877)
negative (score=0.00123)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph1.pb --image=/home/cc/TESTING/test_neg4.jpg
Evaluation time (1-image): 0.150s
positive (score=0.92879)
negative (score=0.07121)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph1.pb --image=/home/cc/TESTING/test_neg5.jpg
Evaluation time (1-image): 0.149s
positive (score=0.99591)
negative (score=0.00409)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph1.pb --image=/home/cc/TESTING/test_neg6.jpg
Evaluation time (1-image): 0.147s
positive (score=0.99952)
negative (score=0.00048)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph1.pb --image=/home/cc/TESTING/test_neg7.jpg
Evaluation time (1-image): 0.146s
positive (score=0.99866)
negative (score=0.00134)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph1.pb --image=/home/cc/TESTING/test_neg8.jpg
Evaluation time (1-image): 0.144s
positive (score=0.85149)
negative (score=0.14851)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph1.pb --image=/home/cc/TESTING/test_neg9.jpg
Evaluation time (1-image): 0.144s
positive (score=0.99997)
negative (score=0.00003)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph1.pb --image=/home/cc/TESTING/test_neg10.jpg
Evaluation time (1-image): 0.144s
negative (score=0.92456)
positive (score=0.07544)
```

Model #3: Increased the number of images in each training directory by 1675 (added 1675 positive and 1675 negative scans) for a total of 2621 Scans per classification

When given images of lungs with a tumor:

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph2.pb --image=/home/cc/TESTING/test_pos1.jpg
Evaluation time (1-image): 0.147s
positive (score=0.97839)
negative (score=0.02161)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph2.pb --image=/home/cc/TESTING/test_pos2.jpg
Evaluation time (1-image): 0.144s
negative (score=0.98081)
positive (score=0.01919)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph2.pb --image=/home/cc/TESTING/test_pos3.jpg
Evaluation time (1-image): 0.144s
positive (score=0.74929)
negative (score=0.25071)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph2.pb --image=/home/cc/TESTING/test_pos4.jpg
Evaluation time (1-image): 0.146s
positive (score=0.85146)
negative (score=0.14854)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph2.pb --image=/home/cc/TESTING/test_pos5.jpg
Evaluation time (1-image): 0.145s
negative (score=0.52091)
positive (score=0.47909)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph2.pb --image=/home/cc/TESTING/test_pos6.jpg
Evaluation time (1-image): 0.145s
positive (score=0.61287)
negative (score=0.38713)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph2.pb --image=/home/cc/TESTING/test_pos7.jpg
Evaluation time (1-image): 0.146s
negative (score=0.91896)
positive (score=0.08104)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph2.pb --image=/home/cc/TESTING/test_pos8.jpg
Evaluation time (1-image): 0.146s
positive (score=0.99902)
negative (score=0.00098)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph2.pb --image=/home/cc/TESTING/test_pos9.jpg
Evaluation time (1-image): 0.148s
positive (score=0.81747)
negative (score=0.18253)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph2.pb --image=/home/cc/TESTING/test_pos10.jpg
Evaluation time (1-image): 0.147s
positive (score=0.96219)
negative (score=0.03781)
```

When given images of “healthy” lungs:

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph2.pb --image=/home/cc/TESTING/test_neg1.jpg
Evaluation time (1-image): 0.146s
negative (score=0.85116)
positive (score=0.14884)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph2.pb --image=/home/cc/TESTING/test_neg2.jpg
Evaluation time (1-image): 0.148s
negative (score=0.53990)
positive (score=0.46010)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph2.pb --image=/home/cc/TESTING/test_neg3.jpg
Evaluation time (1-image): 0.149s
positive (score=0.99891)
negative (score=0.00109)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph2.pb --image=/home/cc/TESTING/test_neg4.jpg
Evaluation time (1-image): 0.145s
positive (score=0.81535)
negative (score=0.18465)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph2.pb --image=/home/cc/TESTING/test_neg5.jpg
Evaluation time (1-image): 0.147s
positive (score=0.99917)
negative (score=0.00083)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph2.pb --image=/home/cc/TESTING/test_neg6.jpg
Evaluation time (1-image): 0.145s
positive (score=0.99970)
negative (score=0.00030)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph2.pb --image=/home/cc/TESTING/test_neg7.jpg
Evaluation time (1-image): 0.145s
positive (score=0.99325)
negative (score=0.00675)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph2.pb --image=/home/cc/TESTING/test_neg8.jpg
Evaluation time (1-image): 0.148s
positive (score=0.92163)
negative (score=0.07837)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph2.pb --image=/home/cc/TESTING/test_neg9.jpg
Evaluation time (1-image): 0.147s
positive (score=0.99941)
negative (score=0.00059)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph2.pb --image=/home/cc/TESTING/test_neg10.jpg
Evaluation time (1-image): 0.149s
negative (score=0.97056)
positive (score=0.02944)
```

Model #4: Used the DEFAULT number of training steps (4000)

When given images of lungs with a tumor:

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph3.pb --image=/home/cc/TESTING/test_pos1.jpg
Evaluation time (1-image): 0.149s
positive (score=0.81251)
negative (score=0.18749)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph3.pb --image=/home/cc/TESTING/test_pos2.jpg
Evaluation time (1-image): 0.144s
negative (score=0.99957)
positive (score=0.00043)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph3.pb --image=/home/cc/TESTING/test_pos3.jpg
Evaluation time (1-image): 0.146s
negative (score=0.62716)
positive (score=0.37284)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph3.pb --image=/home/cc/TESTING/test_pos4.jpg
Evaluation time (1-image): 0.150s
positive (score=0.90064)
negative (score=0.09936)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph3.pb --image=/home/cc/TESTING/test_pos5.jpg
Evaluation time (1-image): 0.152s
negative (score=0.95025)
positive (score=0.04975)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph3.pb --image=/home/cc/TESTING/test_pos6.jpg
Evaluation time (1-image): 0.149s
negative (score=0.54599)
positive (score=0.45401)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph3.pb --image=/home/cc/TESTING/test_pos7.jpg
Evaluation time (1-image): 0.144s
negative (score=0.99340)
positive (score=0.00660)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph3.pb --image=/home/cc/TESTING/test_pos8.jpg
Evaluation time (1-image): 0.145s
positive (score=0.99998)
negative (score=0.00002)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph3.pb --image=/home/cc/TESTING/test_pos9.jpg
Evaluation time (1-image): 0.150s
positive (score=0.58866)
negative (score=0.41134)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph3.pb --image=/home/cc/TESTING/test_pos10.jpg
Evaluation time (1-image): 0.144s
positive (score=0.98545)
negative (score=0.01455)
```

When given images of “healthy” lungs

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph3.pb --image=/home/cc/TESTING/test_neg1.jpg
Evaluation time (1-image): 0.149s
negative (score=0.93679)
positive (score=0.06321)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph3.pb --image=/home/cc/TESTING/test_neg2.jpg
Evaluation time (1-image): 0.147s
negative (score=0.70595)
positive (score=0.29405)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph3.pb --image=/home/cc/TESTING/test_neg3.jpg
Evaluation time (1-image): 0.145s
positive (score=0.99998)
negative (score=0.00002)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph3.pb --image=/home/cc/TESTING/test_neg4.jpg
Evaluation time (1-image): 0.147s
positive (score=0.87777)
negative (score=0.12223)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph3.pb --image=/home/cc/TESTING/test_neg5.jpg
Evaluation time (1-image): 0.152s
positive (score=0.99994)
negative (score=0.00006)
```



```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph3.pb    --image=/home/cc/TESTING/test_neg6.jpg
Evaluation time (1-image): 0.147s
positive (score=1.00000)
negative (score=0.00000)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph3.pb    --image=/home/cc/TESTING/test_neg7.jpg
Evaluation time (1-image): 0.147s
positive (score=0.99928)
negative (score=0.00072)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph3.pb    --image=/home/cc/TESTING/test_neg8.jpg
Evaluation time (1-image): 0.152s
positive (score=0.96664)
negative (score=0.03336)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph3.pb    --image=/home/cc/TESTING/test_neg9.jpg
Evaluation time (1-image): 0.148s
positive (score=0.99998)
negative (score=0.00002)
```

```
[cc@jcurr-project tensorflow-for-poets-2]$ python -m scripts.label_image
--graph=tf_files/retrained_graph3.pb    --image=/home/cc/TESTING/test_neg10.jpg
Evaluation time (1-image): 0.146s
negative (score=0.99883)
positive (score=0.00117)
```