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Ubuntu 14.04 64位机上用Caffe+MNIST训练Lenet网络操作步骤

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来源: Linux社区 作者: fengbingchun

[字体: 大 中 小]

Ubuntu 14.04 64位机上用Caffe+MNIST训练Lenet网络操作步骤

1. 将终端定位到Caffe根目录;
2. 下载MNIST数据库并解压缩: `$./data/mnist/get_mnist.sh`
3. 将其转换成Lmdb数据库格式: `$./examples/mnist/create_mnist.sh`

执行完此shell脚本后, 会在./examples/mnist下增加两个新目录, mnist_test_lmdb和mnist_train_lmdb

4. train model: `$./examples/mnist/train_lenet.sh`

- (1)、使用LeNet网络(《Gradient-Based Learning Applied to Document Recognition》);
- (2)、使用./examples/mnist/lenet_train_test.prototxtmodel;
- (3)、使用./examples/mnist/lenet_solver.prototxtmodel;
- (4)、执行train_lenet.sh脚本, 会调用./build/tools目录下的caffe执行文件, 此执行文件的实现是./tools目录下的caffe.cpp文件;
- (5)、执行此脚本后, 会生成几个文件, 其中./examples/mnist/lenet_iter_10000.caffemodel则是最终训练生成的model文件;
- (6)、以上默认的是在GPU模式下运行, 如果想让其在CPU模式下运行, 只需将lenet_solver.prototxt文件中的solver_mode字段值由原来的GPU改为CPU即可;

运行结果如下图:

```
11103 11:59:08.818309 4086 solver.cpp:238] Train net output #0: loss = 0.0148156 (* 1 = 0.0148156 loss)
11103 11:59:08.818323 4086 solver.cpp:517] Iteration 9000, lr = 0.00617924
11103 11:59:10.228211 4086 solver.cpp:222] Iteration 9100, loss = 0.00711829
11103 11:59:10.228243 4086 solver.cpp:238] Train net output #0: loss = 0.00711817 (* 1 = 0.00711817 loss)
11103 11:59:10.228255 4086 solver.cpp:517] Iteration 9200, lr = 0.00615496
11103 11:59:11.630895 4086 solver.cpp:222] Iteration 9300, loss = 0.00271872
11103 11:59:11.630917 4086 solver.cpp:238] Train net output #0: loss = 0.0027186 (* 1 = 0.0027186 loss)
11103 11:59:11.630937 4086 solver.cpp:517] Iteration 9400, lr = 0.0061309
11103 11:59:13.041746 4086 solver.cpp:222] Iteration 9500, loss = 0.00829436
11103 11:59:13.041779 4086 solver.cpp:238] Train net output #0: loss = 0.00829425 (* 1 = 0.00829425 loss)
11103 11:59:13.041799 4086 solver.cpp:517] Iteration 9600, lr = 0.00610706
11103 11:59:14.459508 4086 solver.cpp:222] Iteration 9700, loss = 0.0276362
11103 11:59:14.459542 4086 solver.cpp:238] Train net output #0: loss = 0.0276361 (* 1 = 0.0276361 loss)
11103 11:59:14.459553 4086 solver.cpp:517] Iteration 9800, lr = 0.00608343
11103 11:59:15.855746 4086 solver.cpp:310] Iteration 9900, Testing net (#0)
11103 11:59:16.873646 4086 solver.cpp:359] Test net output #0: accuracy = 0.9885
11103 11:59:16.873708 4086 solver.cpp:359] Test net output #1: loss = 0.038275 (* 1 = 0.038275 loss)
11103 11:59:16.881302 4086 solver.cpp:222] Iteration 9500, loss = 0.00384252
11103 11:59:16.881322 4086 solver.cpp:238] Train net output #0: loss = 0.0038424 (* 1 = 0.0038424 loss)
11103 11:59:16.881336 4086 solver.cpp:517] Iteration 9500, lr = 0.00606002
11103 11:59:18.291260 4086 solver.cpp:222] Iteration 9600, loss = 0.00218674
11103 11:59:18.291291 4086 solver.cpp:238] Train net output #0: loss = 0.00218662 (* 1 = 0.00218662 loss)
11103 11:59:18.291303 4086 solver.cpp:517] Iteration 9600, lr = 0.00603682
11103 11:59:19.701074 4086 solver.cpp:222] Iteration 9700, loss = 0.00314287
11103 11:59:19.701107 4086 solver.cpp:238] Train net output #0: loss = 0.00314275 (* 1 = 0.00314275 loss)
11103 11:59:19.701117 4086 solver.cpp:517] Iteration 9700, lr = 0.00601382
11103 11:59:21.110854 4086 solver.cpp:222] Iteration 9800, loss = 0.00982939
11103 11:59:21.110885 4086 solver.cpp:238] Train net output #0: loss = 0.00982927 (* 1 = 0.00982927 loss)
11103 11:59:21.110898 4086 solver.cpp:517] Iteration 9800, lr = 0.00599102
11103 11:59:22.520659 4086 solver.cpp:222] Iteration 9900, loss = 0.00512025
11103 11:59:22.520690 4086 solver.cpp:238] Train net output #0: loss = 0.00512013 (* 1 = 0.00512013 loss)
11103 11:59:22.520701 4086 solver.cpp:517] Iteration 9900, lr = 0.00596843
11103 11:59:23.916213 4086 solver.cpp:395] Snapshotting to binary proto file examples/mnist/lenet_iter_10000.caffemodel
11103 11:59:23.916218 4086 solver.cpp:680] Snapshotting solver state to binary proto file examples/mnist/lenet_iter_10000.solverstate
11103 11:59:23.934665 4086 solver.cpp:291] Iteration 10000, loss = 0.00259606
11103 11:59:23.934689 4086 solver.cpp:310] Iteration 10000, Testing net (#0)
11103 11:59:24.945322 4086 solver.cpp:359] Test net output #0: accuracy = 0.9921
11103 11:59:24.945353 4086 solver.cpp:359] Test net output #1: loss = 0.0268828 (* 1 = 0.0268828 loss)
11103 11:59:24.945363 4086 solver.cpp:296] Optimization Done.
11103 11:59:24.945370 4086 caffe.cpp:184] Optimization Done.
spring@spring-MS-7850:~/Caffe/caffe$
```

参考文献: <http://caffe.berkeleyvision.org/gathered/examples/mnist.html>

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