1. Replicate some results from the original paper and tune parameters

λu = 1 ?

η = 0.03 studied by paper

β = 0.9 studied by paper

nesterov momentum has no difference with standard

τ = 0.95 studied by paper

μ = 7 studied by paper

B = 64

K = 2^20

Weight decay: 0.0005 studied by paper

* Try different EMA decay factor, and compare with no decay

Default:0.999, experiment no ema 0.75, 0.9, 0.99, 0.9999 code running

* Try different models – Resnext with batch size 32 and wide resnet 28

Default: wide resnet 28-2, experiment resnext 28-4, wide resnet 22-2 code running

* Try different batch sizes

Default: 64, experiment 32, 128

* Try different learning rate decay functions

Default: no warm up cosine decay, experiment ABEL with 0.99perbatch, cosine decay with different warm ups code running

* Try dropout (if overfitting detected)

Default: no dropout

* Try different data augmentation: GridMask

1. Apply FixMatch to dog breed classification dataset

**My Experiments**

1. Paper original wide 28-2

Code file: celiali-wideresnet-120epochs-64batch.ipynb

Test accuracy: 95.03 (95.0 after repeating)

Total params: 1.47M

1. Resnext28-4-cardinality4– 32batch

Code file: celiali-resnext-120epochs-32batch.ipynb

Test accuracy: 92.23

Total params: 1.02M

1. Resnext28-4-cardinality8– 32batch

Code file: celiali-resnext28-4-cadinality8.ipynb

Test accuracy: 93.84

Total params: 1.34M

1. Resnext32-4-cardinality10-32batch

Code file: celiali-resnext32-4-10.ipynb

Test accuracy: 94.12

Total params: 1.51M

1. Wide Resnet 22-2

Code file: celiali-wideresnet-120epochs-64batch-abel

Test accuracy: 94.44

Total params: 1.08M

1. No EMA

Code file: celiali-resnext-120epochs-32batch.ipynb

Test accuracy: 94.19

1. EMA = 0.99

Code file: celiali-wideresnet-120epochs-64batch.ipynb

Test accuracy: 94.57

1. EMA = 0.75

Test accuracy: 93.98

1. EMA = 0.5

Code file: celiali-ema05.ipynb

Test accuracy: 93.89

1. EMA = 0.75 try
2. ABEL 0.99 per batch

Code file: celiali-wideresnet-120epochs-64batch-abel

Test accuracy: 94.9

1. Gridmask

Code file: celiali\_gridmask.ipynb

Test accuracy: 94.8

1. Lambda = 0.5

Code file: celiali-lambda05.ipynb

Test accuracy: 94.87

1. Lambda = 2

Code file: celiali-lambda2.ipynb

Test accuracy: 95.04

1. Lambda = 3

Code file: celiali-lambda3.ipynb

Test accuracy: 95.02

1. Lambda = 4

Code file: celiali-lambda4.ipynb

Test accuracy: 95.15

1. Lambda = 5

Code file: celiali-lambda5.ipynb

Test accuracy: 95.25

1. Lambda = 6

Code file: celiali-lambda6.ipynb

Test accuracy: 94.91

1. Lambda = 7

Code file: celiali-lambda7.ipynb

Test accuracy: 94.95

1. Lambda = 8

Test accuracy: 94.95

1. Lambda = 9

Code file: celiali-labmda9.ipynb

Test accuracy: 94.75

1. Lambda = 10

Test accuracy: 94.83

1. Dropout = 0.2

Code file: celiali-dropout0.2.ipynb

Test accuracy: 94.04

Reimplementation paper review

Balanced-Class (BC) batch to address confirmation error, but does not improve accuracy greatly

Things to write on report

<https://github.com/bwconrad/CIFAR>

Autoaug has better accuracy than Randaug on CIFAR but does not generalize well so we don’t pursue