Report of CVML Test: Noisy Label

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Code repository: https://github.com/1170500804/NoisyLabelTest.git

1. Introduction

The language and framework that I use to implement this model is Python3 and Pytorch. The whole project is composited with 6 python files: `backbone.py, data.py, evaluate.py, loss.py, main.py, settle_datset.py`. The following of this section is the description of these files and their functions.

main.py

Run this file to train the model. To run the improved model,

```
python3 main.py -a 0.1 -b 1 --eta 0.6 --lr 0.1 --batch-size 512 --aug
```

To run the baseline:

```
python3 main.py --baseline --eta 0.6 --lr 0.1 --batch-size 512 --aug
```

To evaluate the trained model:

```
python3 main.py --eval --resume [path to saved model]
```

Backbone.py

This file implements the backbone, which is an 8-layer neural network, specified in the problem description. Kaiming normal Initialization is used in the implementation.

Data.py

This file implements the interface that loads data during training phase. The data augmentation I use is *Random Crop* and *Random Horizontal Flip.*

evaluate.py

This file implements the evaluate method.

loss.py

This file implements the reversed cross entropy with log0=-4

settle_dataset.py

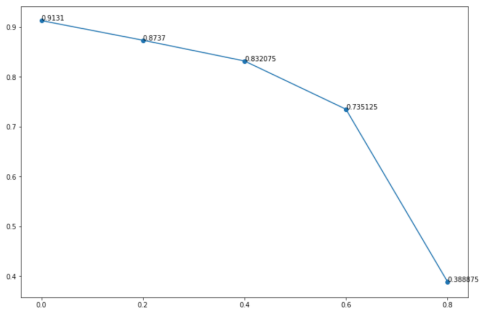
This file transfers format of the cifar-10: pickle object to jpg files.

2. Result

2.1 noise rate=0.6, alpha=0.1, beta=1

CES	Baseline
73.5125±0.34	36.3±12.32

2.2 vary noise rate, alpha=0.1, beta=1



2.3 Observations

- Comparing the baseline to CES, it is obvious that the latter one is far more robust to perturbations in the case of noise rate being 0.6.
- The varying noise rate result shows that CES could perform well when the noise rate is less than or equal to 0.4.
- There are performance gaps when the noise rate goes from 0.4 to 0.6 and 0.6 to 0.8. In these two cases, the dataset is noisy to a large extent and it is expectable that the model couldn't perform well.