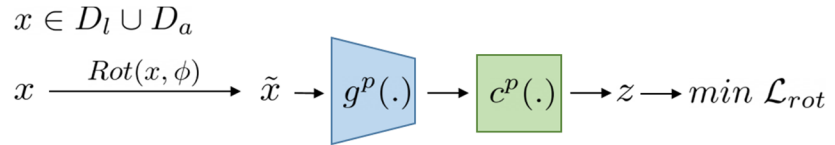


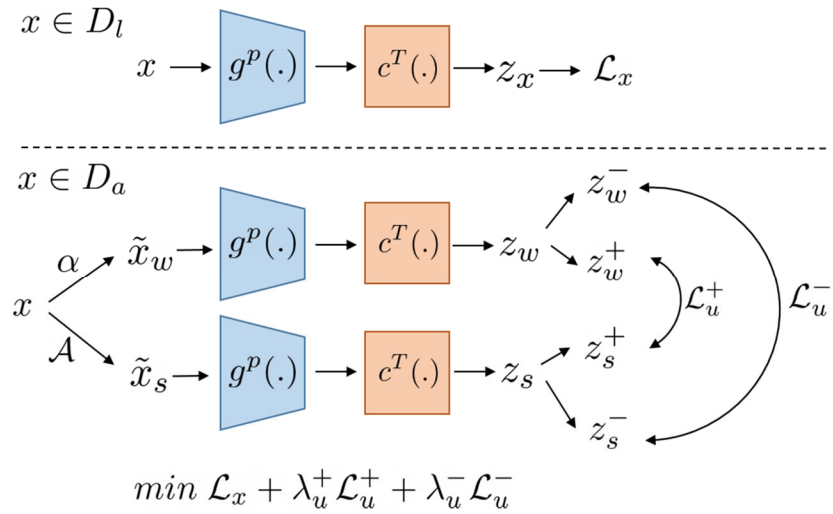
# AuxMix

This is PyTorch implementation of AuxMix: Semi-Supervised Learning with Unconstrained Unlabeled Data.

1. Self-supervised pre-training to generate affinity scores



2. Learning with augmentation consistency on positive selection set and entropy maximization on negative regularization set.



## Requirements

- python 3.7
- torch 1.6
- torchvision 0.7.0
- tensorboard
- numpy
- tqdm
- torchsummary

## Usage

Train the model by 4000 labeled data of CIFAR-10 dataset and TinyImagenet as aux dataset:

```
python train_prototype.py --dataset cifar10 --num-labeled 4000 --arch resnet
--batch-size 64 --lr 0.03

--lr-rot 0.1 --scheduler-type cosine --auto-thresh --alpha-thresh -1 --
expand-labels --seed 5 --use-ema

--out results/cifar10-4k-auxtiny-100k
```

## Results

### CIFAR10-Animals (400 images / class) as labeled and others are unlabeled

Method	Error Rate
Supervised	22.47
Temporal Ensembling	27.08
Mean Teacher	26.81
VAT	26.19
Pseudo-Label	25.94
SWA	24.10
UASD	22.47
RealMix	17.62
AuxMix (Ours)	14.12

### CIFAR10-4k Labeled, Others Unlabeled

Method	Tiny-Imagenet	CUB	Noise
Supervised	59.91	59.91	59.91
Pseudo-Label	63.04	61.80	64.89
MPL	49.18	68.86	52.44
FixMatch	58.48	49.23	65.88
AuxMix (Ours)	68.38	73.95	69.34

## Ablations

Method	Accuracy
Supervised	77.53
AuxMix	85.88
AuxMix without EntMax	84.13
AuxMix without Similarity Masking	83.92

## References

- [Unofficial PyTorch implementation of FixMatch](#)
- [PyTorch image models](#)