CBAM

CBAM: Convolutional Block Attention Module

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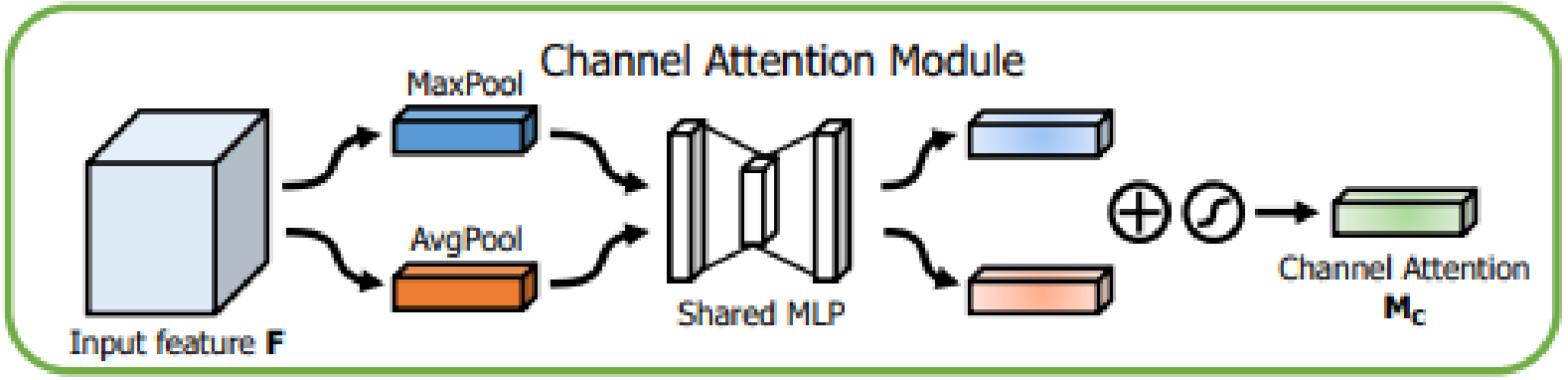
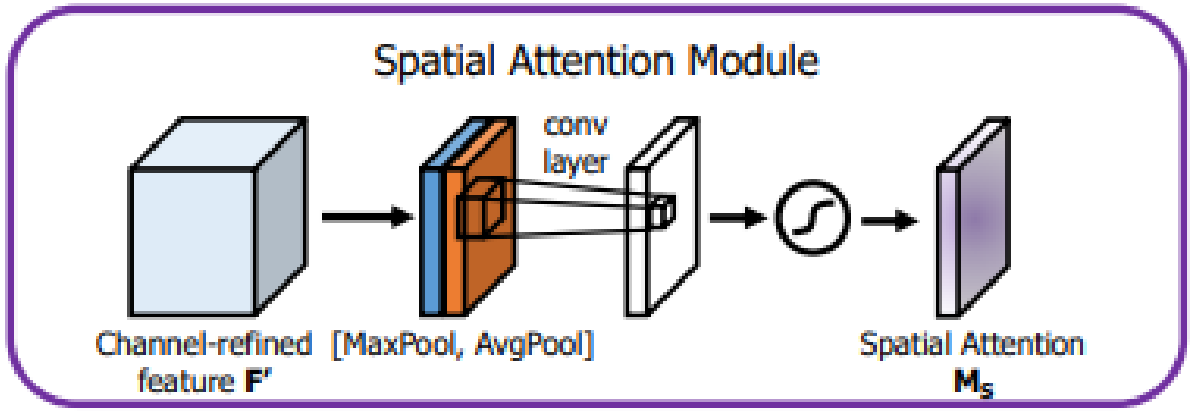
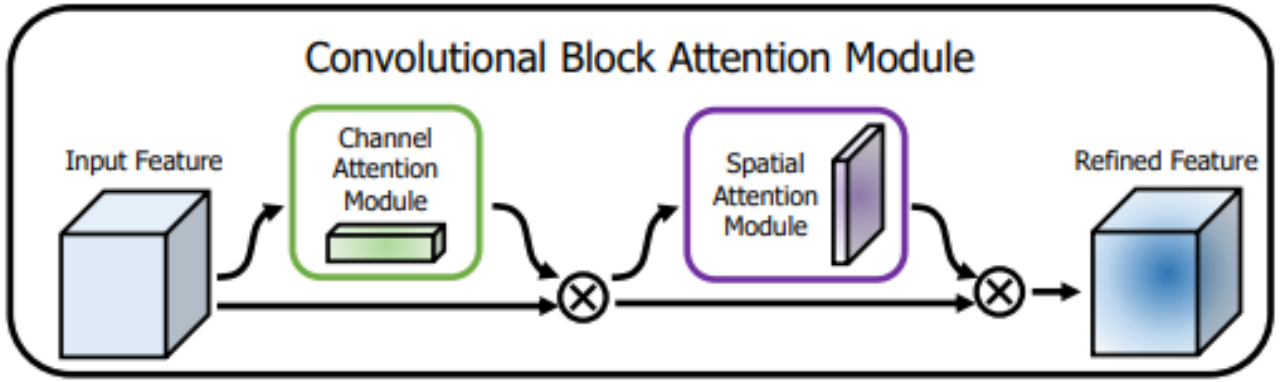
CBAM


Channel Attention Module
MaxPool
AvgPool
Shared MLP
Input feature F
Channel Attention
M_c


Spatial Attention Module
conv
layer
Channel-refined
feature F'
[MaxPool, AvgPool]
Spatial Attention
M_s


Convolutional Block Attention Module
Input Feature
Channel
Attention
Module
Spatial
Attention
Module
Refined Feature

Triplet Loss

FaceNet: A Unified Embedding for Face Recognition and Clustering

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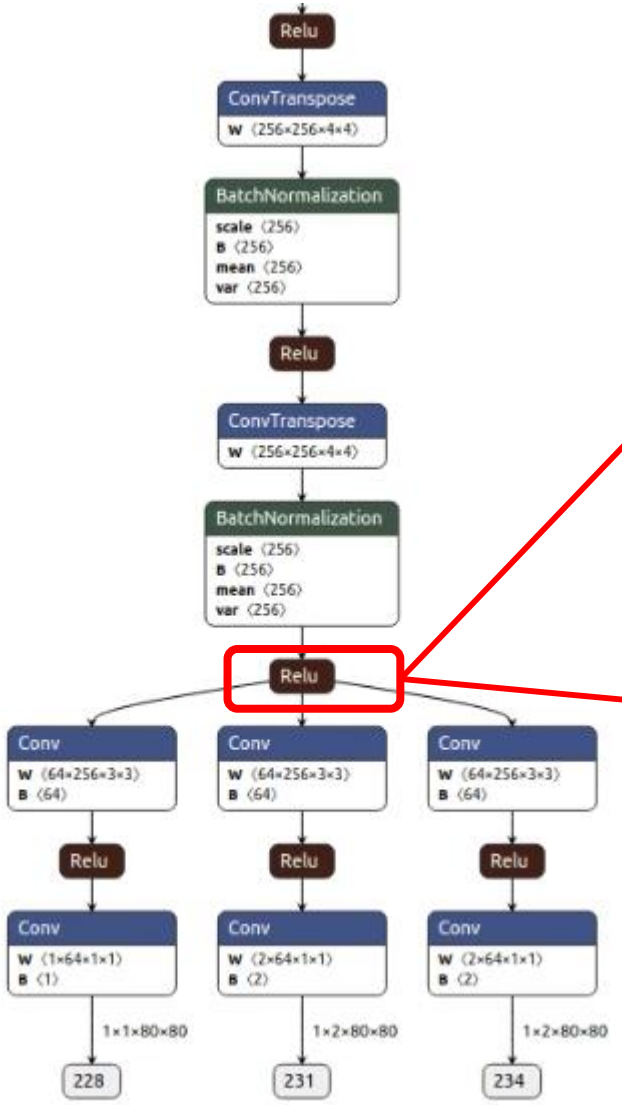
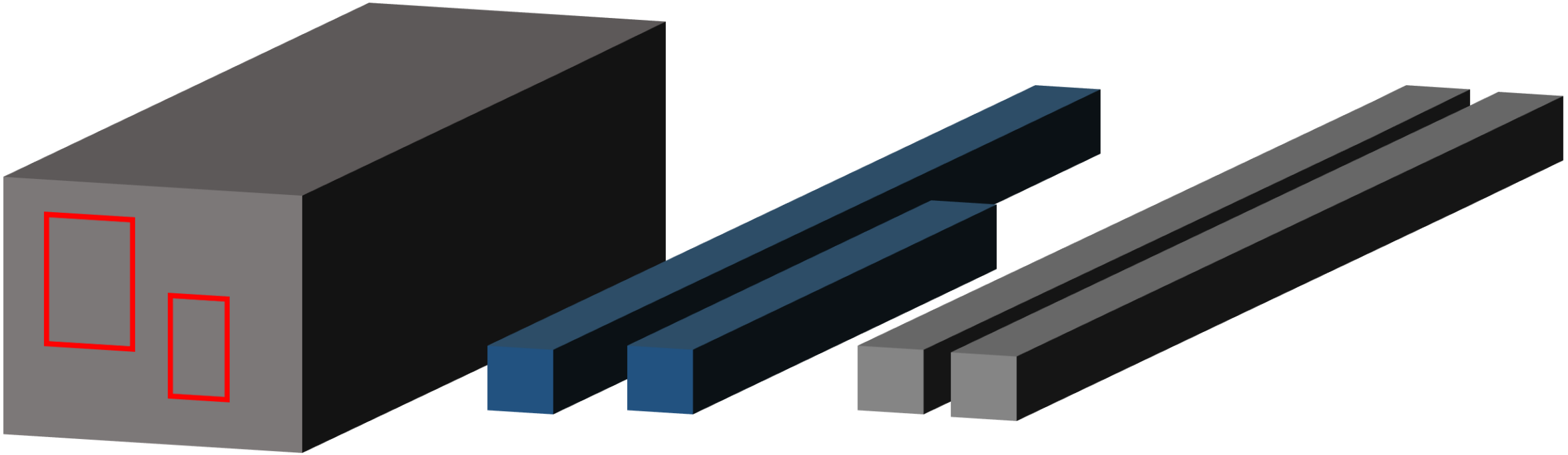
Triplet Loss

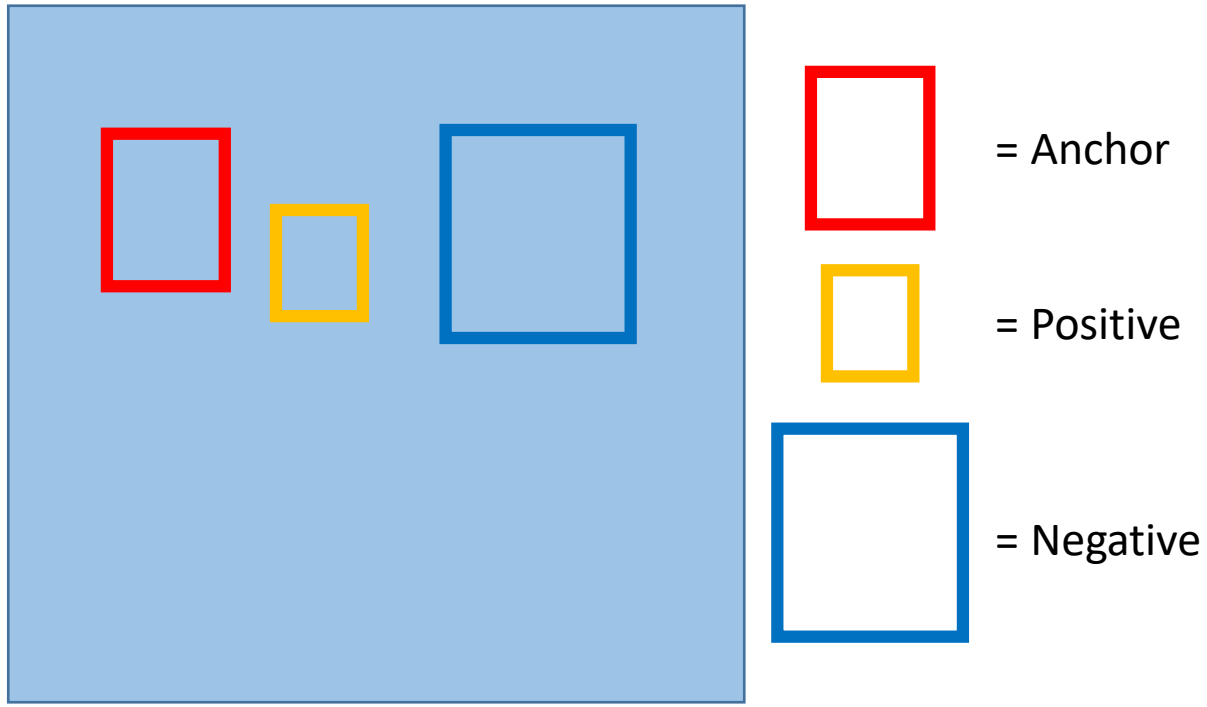


- Face as anchor and positive examples, mask and some near face and mask area as negative examples.
- Mask as anchor and positive examples, face and some near face and mask area as negative examples.

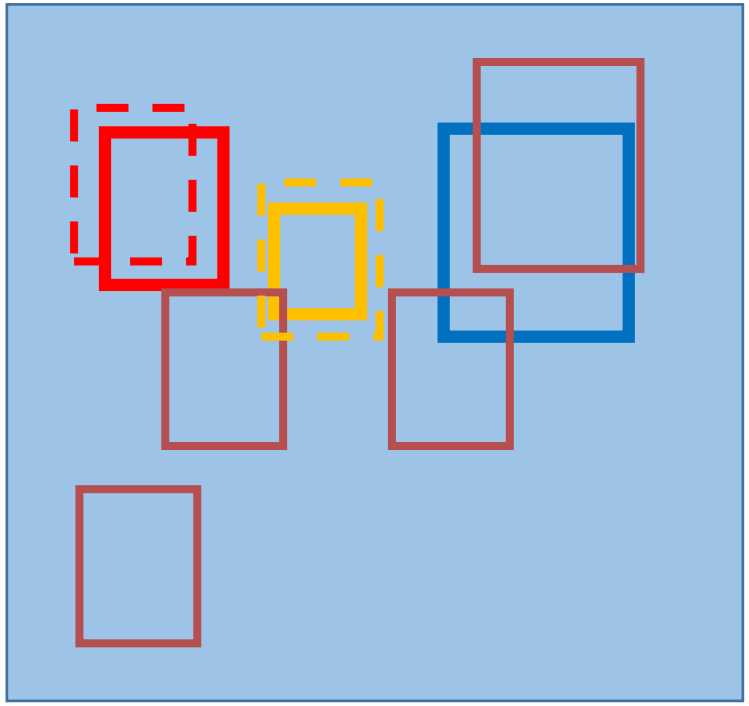
Triplet Loss



Triplet Loss



Triplet Loss

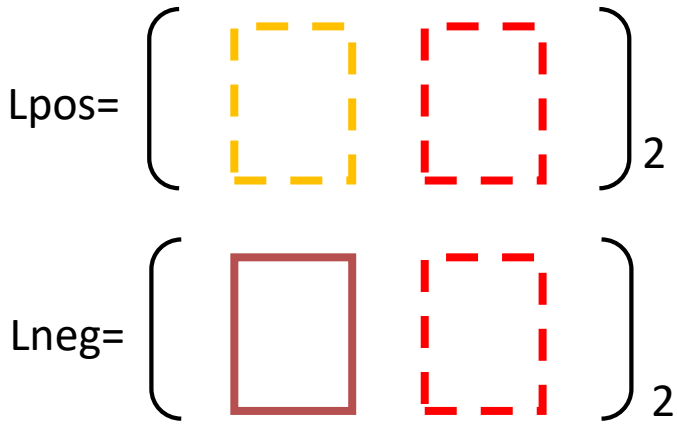


= Anchor

= Positive

= Negative

Triplet Loss



Lneg – Lpos < margin

Consistency-based Semi-supervised Learning for Object Detection

Consistency-based Semi-supervised Learning for Object Detection

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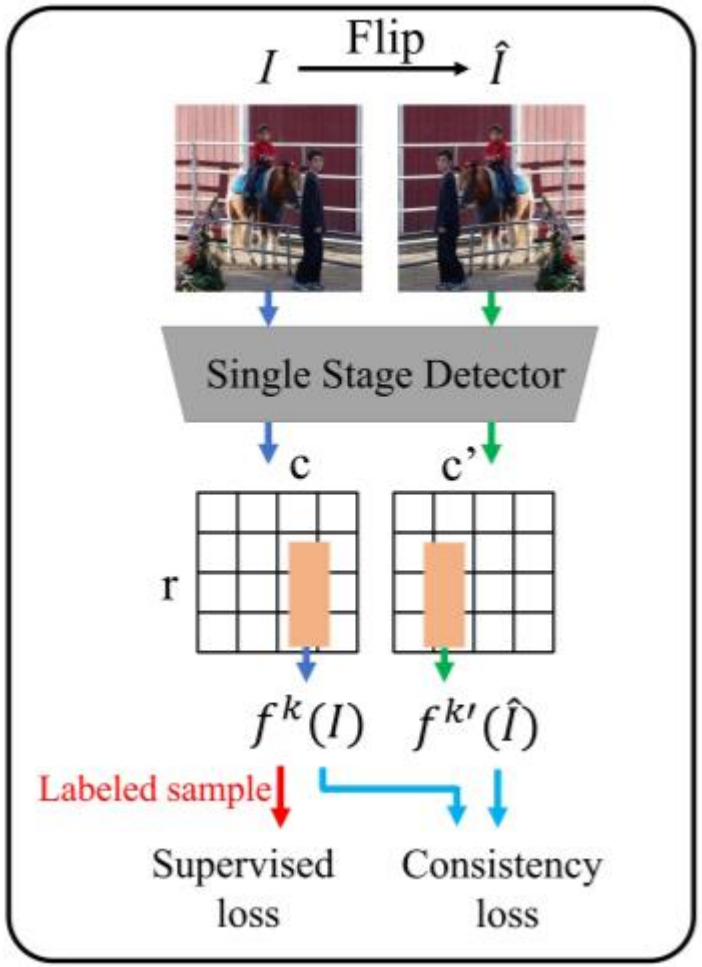
NIPS2019

Consistency-based Semi-supervised Learning for Object Detection

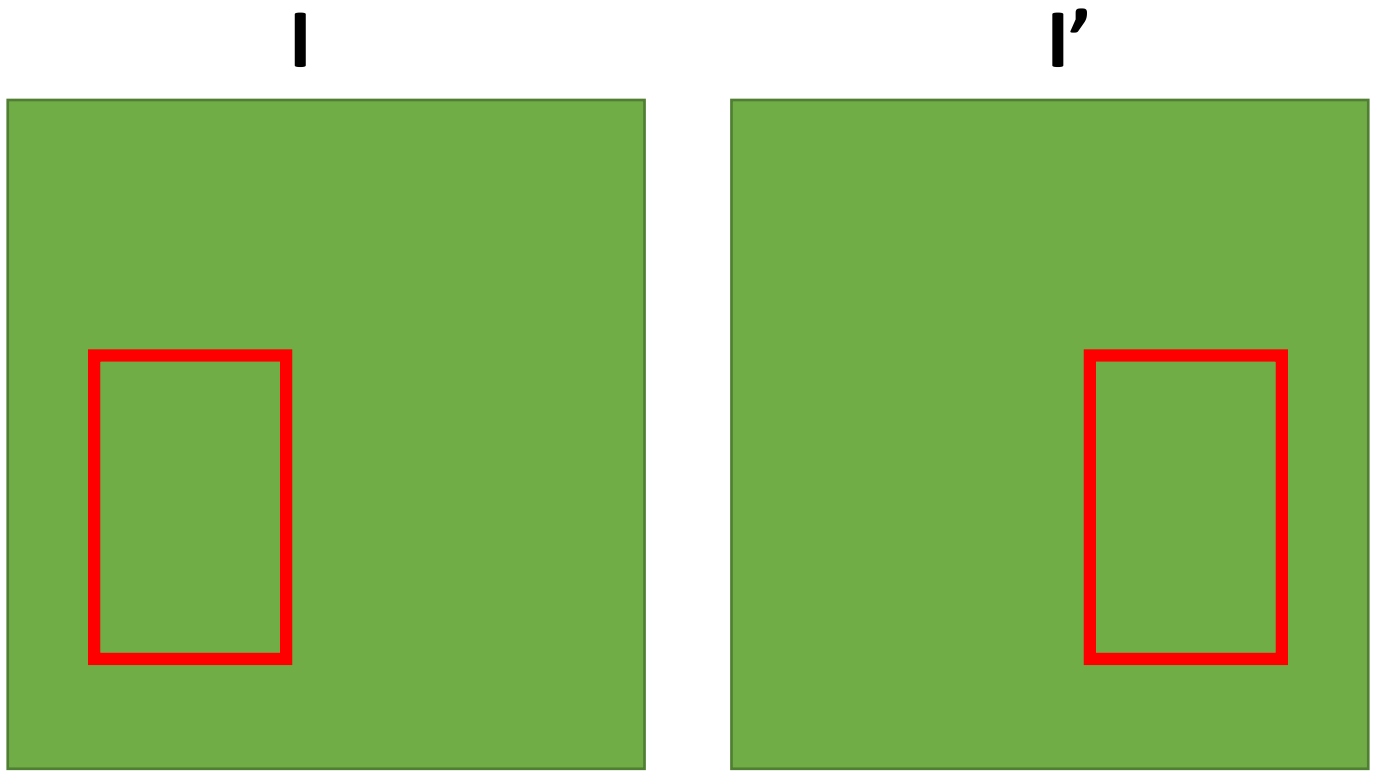


$$\mathcal{L}_{con-c} = \mathbb{E}_k[l_{con\_cls}(f^k_{cls}(I), f^{k'}_{cls}(\hat{I}))]$$

$$\Delta\, cx^k \Longleftrightarrow -\Delta\, \hat{cx}^{k'}$$
$$\Delta\, cy^k, \Delta\, w^k, \Delta\, h^k \Longleftrightarrow \Delta\, \hat{cy}^{k'}, \Delta\, \hat{w}^{k'}, \Delta\, \hat{h}^{k'}$$

$$l_{con\_loc}(f^k_{loc}(I), f^{k'}_{loc}(\hat{I})) = \frac{1}{4}(\|\Delta cx^k - (-\Delta \hat{cx}^{k'})\|^2 + \|\Delta cy^k - \Delta \hat{cy}^{k'}\|^2 + \|\Delta w^k - \Delta \hat{w}^{k'}\|^2 + \|\Delta h^k - \Delta \hat{h}^{k'}\|^2)$$

Consistency-based Semi-supervised Learning for Object Detection



Make heatmap to be the same.

Result

Model	Easy Set	Medium Set	Hard Set	MAFA
Resnet50-r-512 –paper(HK)	0.594	0.489	0.265	0.943
Resnet18 0.8crop max obj32	0.726	0.714	0.46	0.915
Resnet18 triplet loss margin :0.01, 0.1	0.764	0.740	0.471	0.91
Resnet18 consistency	0.747	0.734	0.474	0.916
Resnet18 triplet loss margin :0.01,0.1 + consistency	0.766	0.744	0.478	0.908
Resnet18 self supervised rotation	0.655	0.630	0.383	0.914

Reference

Centerface : https://github.com/chenjun2hao/CenterFace.pytorch

CBAM : https://github.com/luuuyi/CBAM.PyTorch

Triplet Loss : https://arxiv.org/pdf/1503.03832.pdf

Self supervise rotation: https://arxiv.org/pdf/1803.07728.pdf

self supervise consistency: https://github.com/xuguodong03/SSKD