MixMatch

Consistency Regularization

$$\| p_{model}(y \mid Augment(x); \theta) - p_{model}(y \mid Augment(x); \theta) \|_2^2$$

Notation

Labeled data $\mathcal{X}$; unlabeled data $\mathcal{U}$

$$X', U' = MixMatch(\mathcal{X}, \mathcal{U}, T, K, \alpha)$$

$$\mathcal{L}_x = \frac{1}{|X'|} \sum_{x \in X'} H(p, p_{model}(y \mid x; \theta))$$

$$\mathcal{L}_u = \frac{1}{L|U'|} \sum_{u,q \in U'} \| q - p_{model}(y \mid u; \theta) \|_2^2$$

Augmentation:
$$\begin{cases} \hat{x}_b = Augment(x_b) \\ \hat{u}_{b,k} = Augment(u_b) \; ; \; K \in 1 \dots k \end{cases}$$

Label guessing:
$$\bar{q}_b = \frac{1}{K} \sum_{k=1}^{K} p_{model}(y \mid \hat{u}_{b,k}; \theta)$$

Sharpening $(P, T) := P_i^{1/T} \Big/ \sum_j P_j^{1/T}$

MixUp : Same as DivideMix.