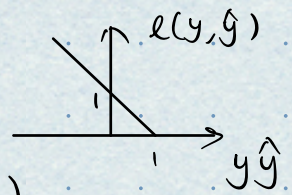


Hinge loss



$$\text{Binary: } l(y, \hat{y}) = \max(0, 1 - y\hat{y})$$

$\leftarrow \{ \pm 1 \}$

$$\text{N-class: } \leftarrow (-\infty, +\infty)$$

$$\hat{y} = (\hat{y}_1, \hat{y}_2, \dots, \hat{y}_N)$$

$$l(y, \hat{y}) = \sum_{i \neq y} \max(0, 1 + \hat{y}_i - \hat{y}_y)$$

Hinge embedding loss

$$l(x, y) = \begin{cases} x & \text{if } y = 1 \\ \max(0, \Delta - x) & \text{if } y = -1 \end{cases}$$

x measures the distance between a pair instances
 $y = 1 / -1$ means the pair is similar/dissimilar

Cross entropy loss

$$\text{Binary: } l(y, \hat{y}) = -y \log \hat{y} - (1-y) \log(1-\hat{y})$$

$\leftarrow \{0, 1\}$ $\leftarrow (0, 1)$

$$\text{N-class: } \hat{y} = (\hat{y}_1, \dots, \hat{y}_N) \leftarrow (0, 1)$$

$$l(y, \hat{y}) = - \sum_{i=1}^N \mathbb{1}_{y=i} \log \hat{y}_i$$

Logistic loss

$$\text{Binary: } \ln(1 + e^{-y\hat{y}}) \leftarrow \{ \pm 1 \}$$

\leftarrow equal to CE loss applied on NN output with $\sigma(\cdot)$