## Loss with margins:

$$L_{inter} = \frac{1}{C} \sum_{c_A=1}^{C} \frac{1}{|\mathbf{N}_{c_A}|} \sum_{c_B \in \mathbf{N}_{c_A}} \left[ \operatorname{CosS}(\mu_{c_A}, \mu_{c_B}) - \delta_1 \right]_{+}$$

$$L_{intra} = \frac{1}{C} \sum_{c=1}^{C} \frac{1}{E_c} \sum_{i=1}^{E_c} \left[ 1 - \text{CosS}(e_i, \mu_c) - \delta_2 \right]_{+}$$







**Hinge Loss** 





Original