Episode Based Training (2)

10

We are going to treat episodes as mini-batches in training

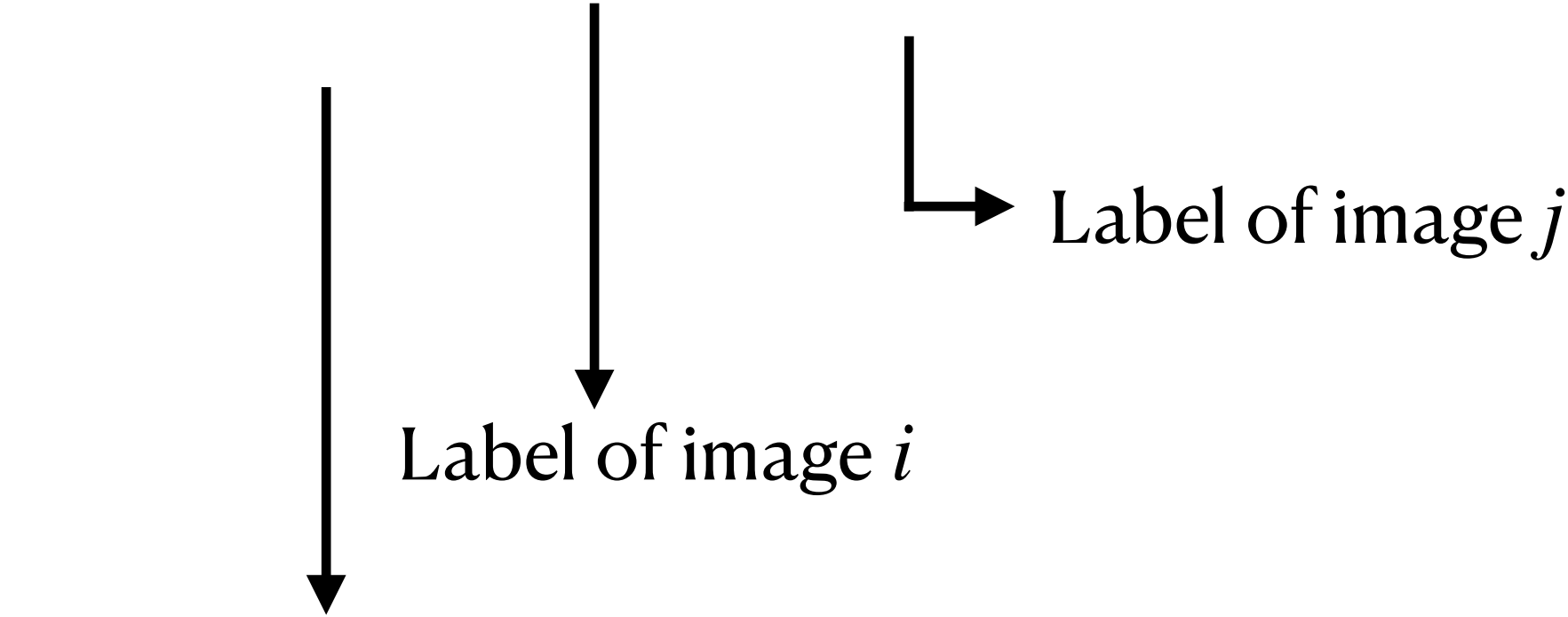
$$\mathscr{L}_{\text{episode}}(S, Q) = \sum_{i=1}^{m} \sum_{j=1}^{n} \left(r_{i,j} - 1(y_i == y_j) \right)^2$$

: loss for an episode defined by the support set S and the query set Q

$$\varphi, \phi \leftarrow \arg\min_{\varphi,\phi} \mathbb{E}_{L\sim\mathcal{T}} \left[\mathbb{E}_{S\sim L, Q\sim L} \left[\mathscr{L}_{\text{episode}}(S, Q) \right] \right]$$

sampling a label set over a distribution over possible label sets $\mathcal{T}$

$S \sim L$ and $Q \sim L$ represent sampling the support set S and query set Q from L


Label of image j
Label of image i
Relation score of query image j with sample image i

Episode Based Training (2)

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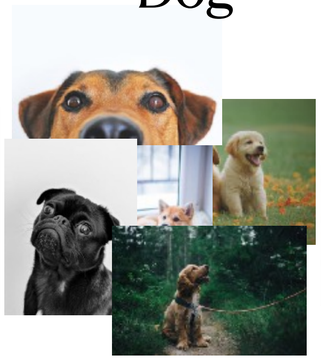

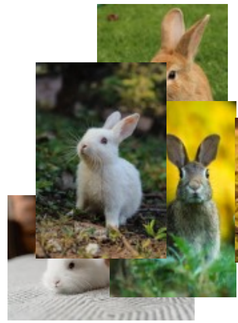

Training Set

$L \sim \mathcal{T}$

$S \sim L$

$Q \sim L$

$f_\varphi(image)$

Embedding Module

$g_\varphi(e_1, e_2)$

Relation Module

$$\varphi, \phi \leftarrow \arg\min_{\varphi,\phi} \mathbb{E}_{L\sim\mathcal{T}} \left[\mathbb{E}_{S\sim L, Q\sim L} \left[\mathcal{L}_{\text{episode}}(S, Q) \right] \right]$$

$$\mathcal{L}_{\text{episode}}(S, Q) = \sum_{i=1}^{m} \sum_{j=1}^{n} \left(r_{i,j} - 1(y_i == y_j) \right)^2$$