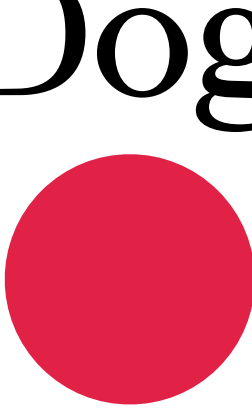
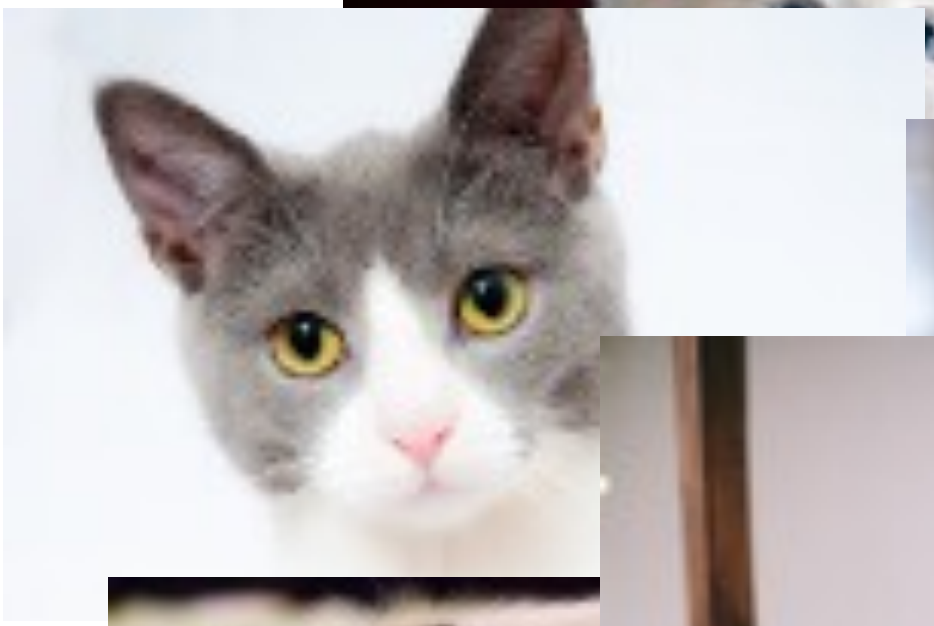
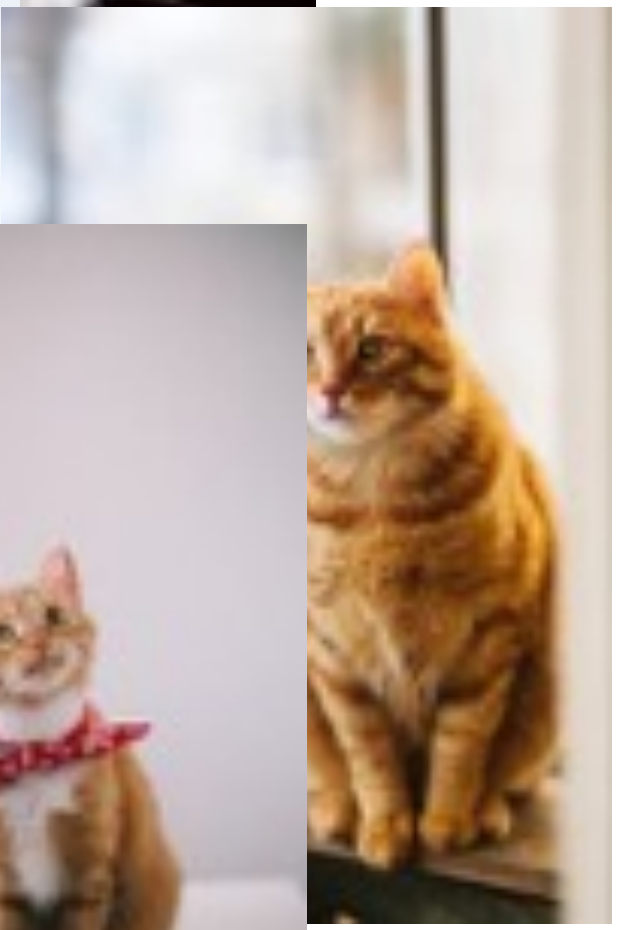
Dog



Bird

Cat

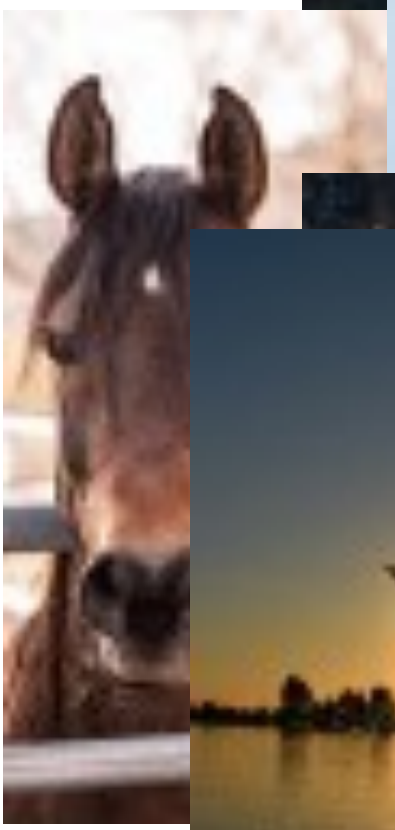


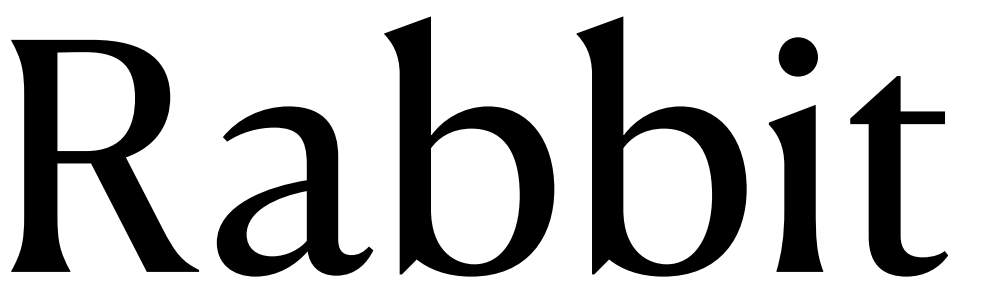


Dog

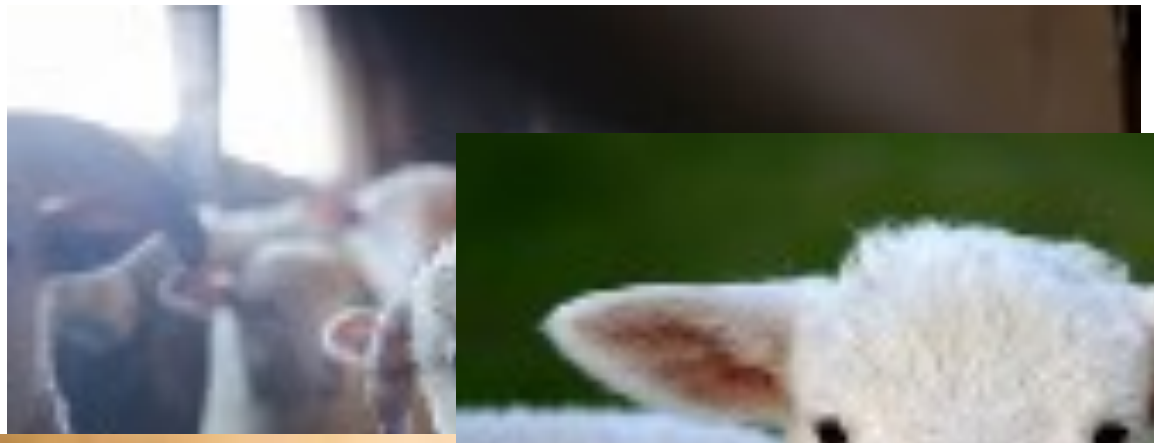
Fish

Horse




Rabbit

Sheep



Training Set

Bird

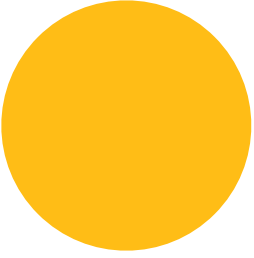
Dog

Rabbit

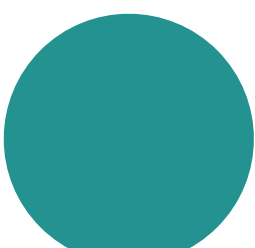
$$L \sim \mathscr{T}$$

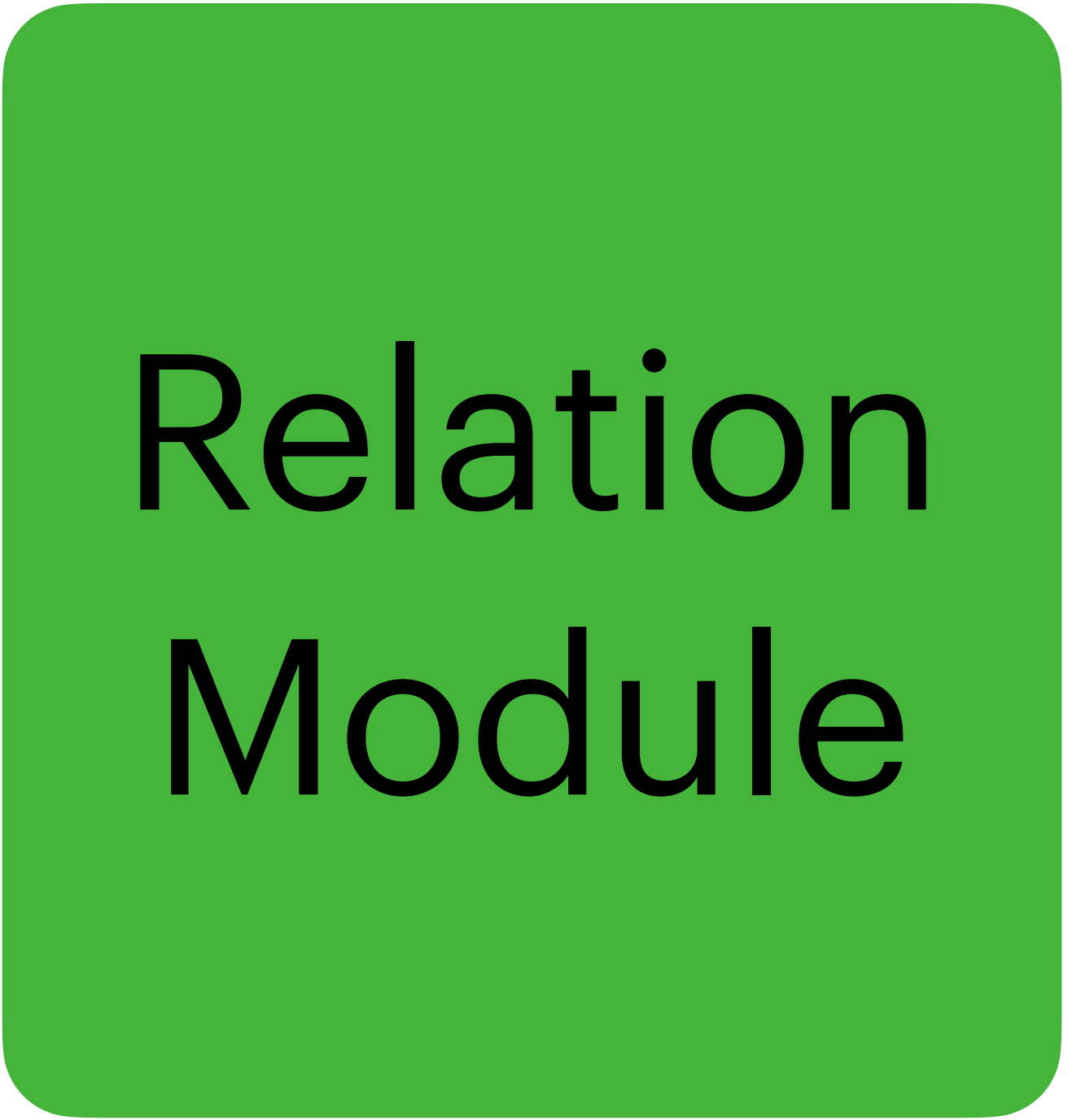
$Q \sim L$

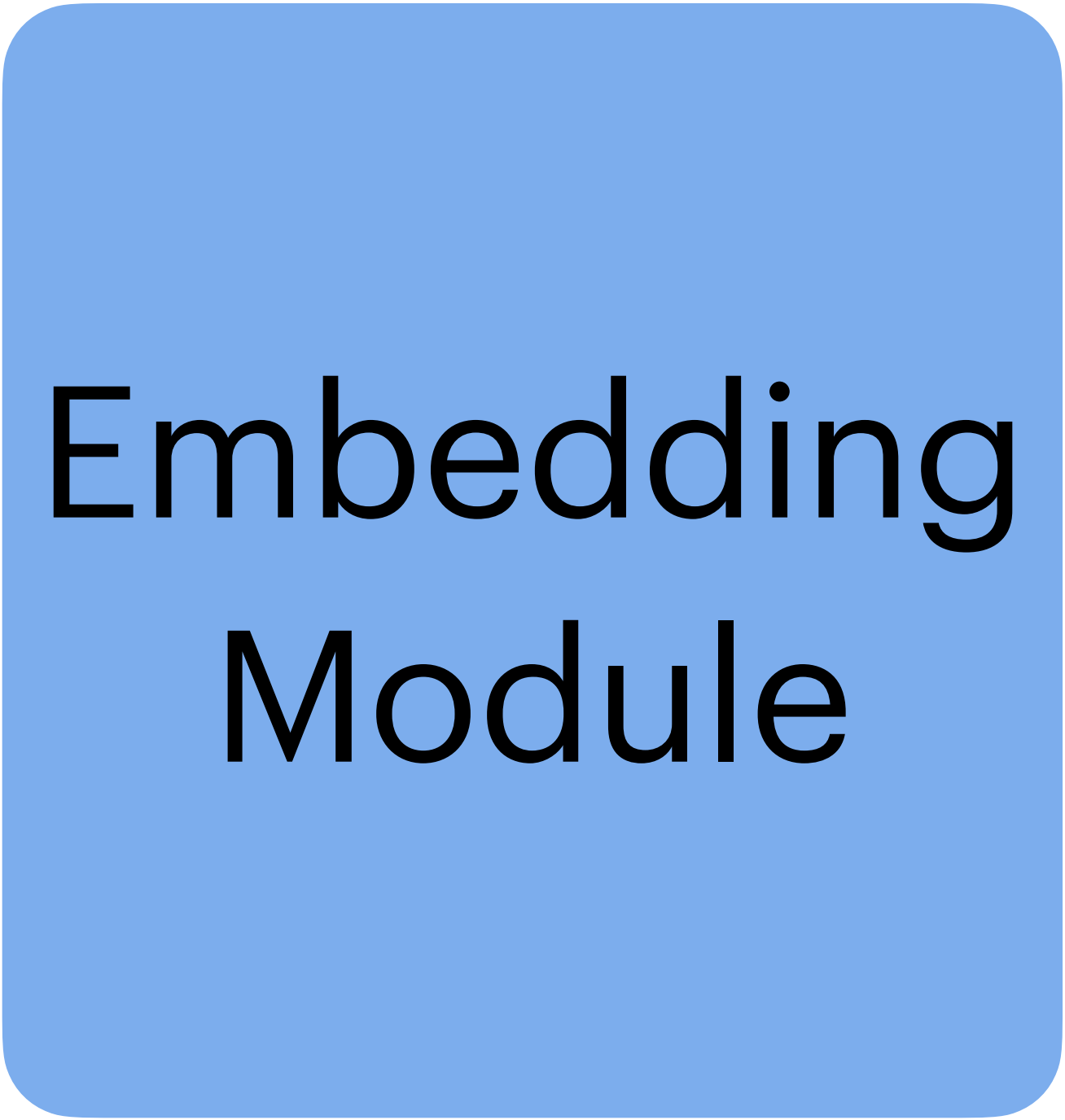
Rabbit

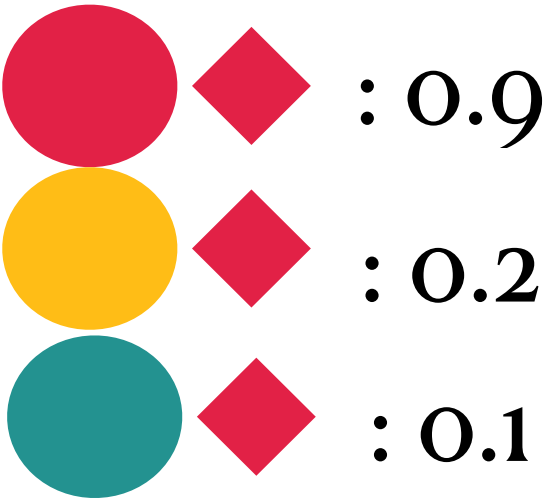


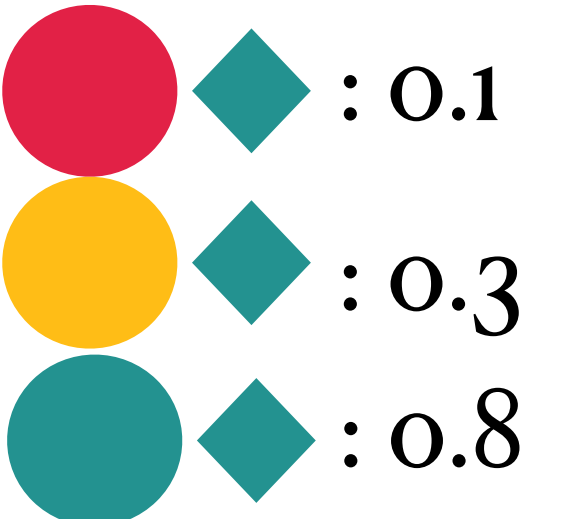
Bird

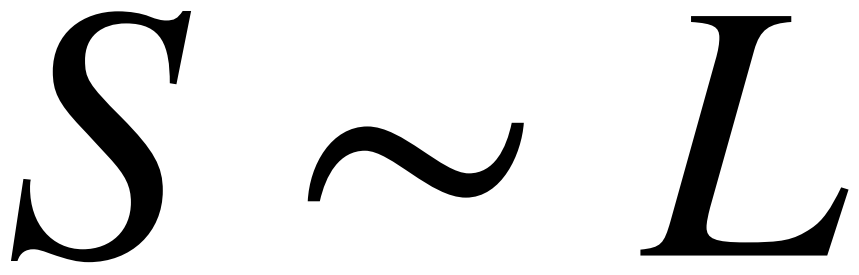



Relation
Module


Embedding
Module


: 0.9
: 0.2
: 0.1


: 0.1
: 0.3
: 0.8



$f_\varphi(image)$

$g_\varphi(e_1, e_2)$

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

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

11

Bird

Cat

Dog

Fish

Horse

Rabbit

Sheep

Training Set

$L \sim \mathcal{T}$

Dog

Rabbit

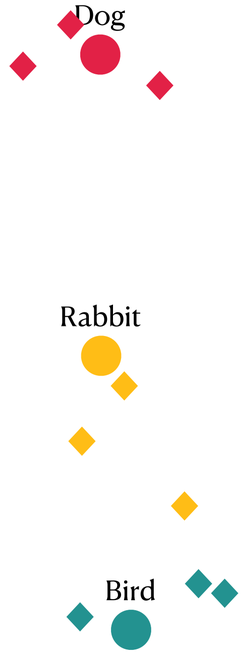
Bird

$S \sim L$

$Q \sim L$

$f_\varphi(image)$

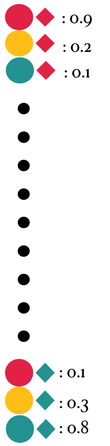
Embedding Module



$g_\varphi(e_1, e_2)$

Relation Module

$r_{i,j}$



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

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

Relation Nets One-Shot Testing

$L \sim \mathcal{T}_{test}$

Lion

Elephant

Monkey

$S \sim L$

$Q \sim L$

$f_\varphi(image)$

Embedding Module

$g_\varphi(e_1, e_2)$

Relation Module