Episode Based Training (1)

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Mimic the few-shot learning setting via episode based training.

An **episode** in few-shot learning consists of a sample set (S) and a query set (Q)

$$\text{Episode} = \{S, Q\}$$

Sample Set (S):

Randomly selecting C classes from the training set with K labelled samples

$$S = \{(x_i, y_i)\}_{i=1}^{m}, \quad m = K \times C$$

Query Set (Q):

A fraction of the **remainder** of those C classes

$$Q = \{(x_j, y_j)\}_{j=1}^{n}$$

Bird

Dog

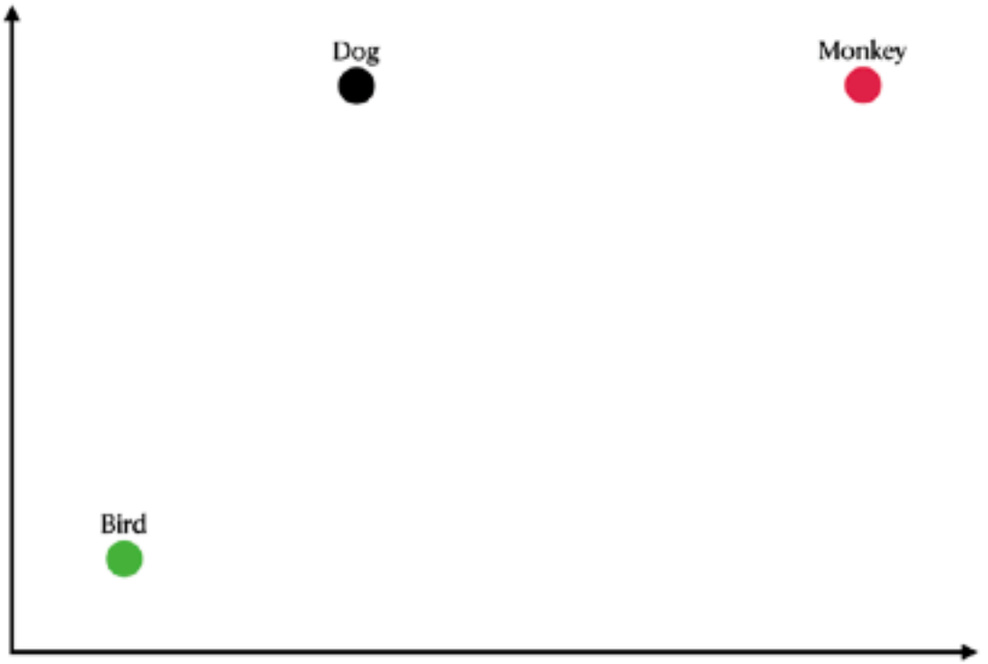
Monkey

Embedding Module

S

Embedding Module

Q



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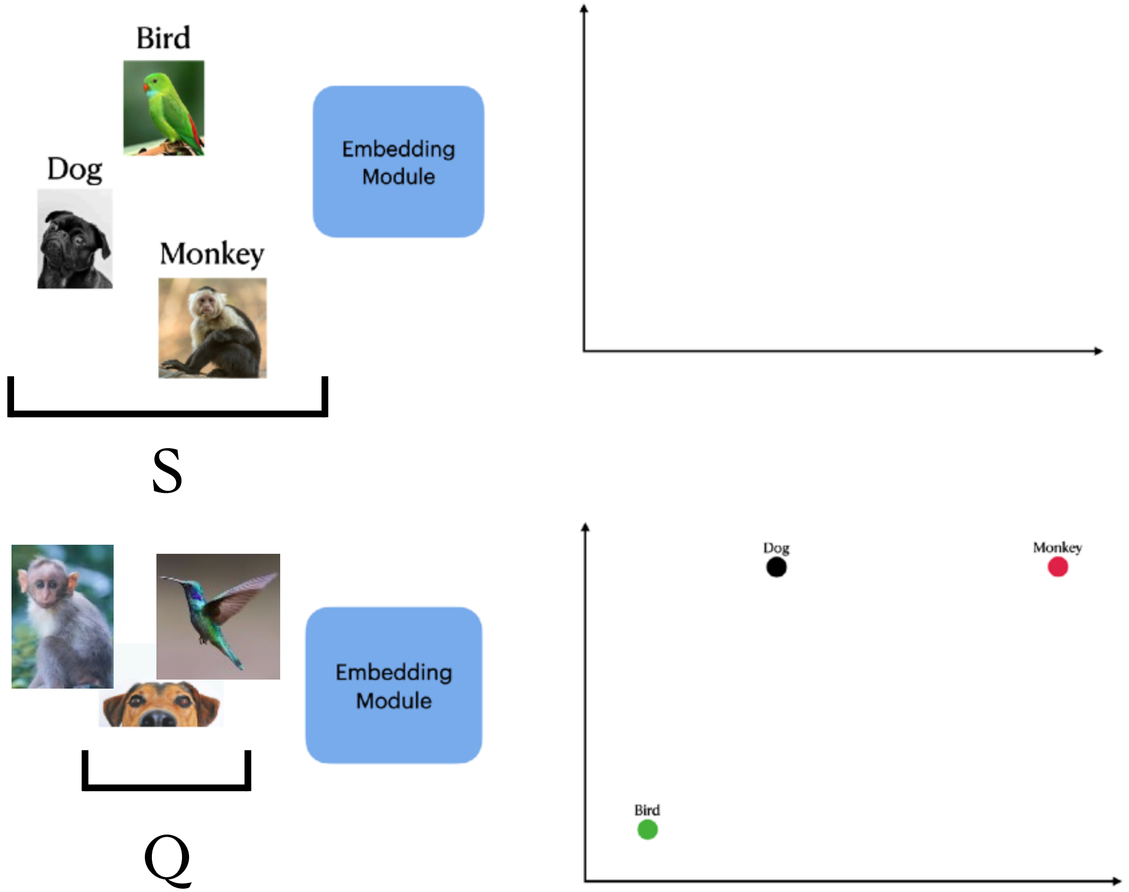

Episode Based Training (2)

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

Label of image j

Label of image i

Relation score of query image j with sample image i