

Episode Based Training (1)



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):

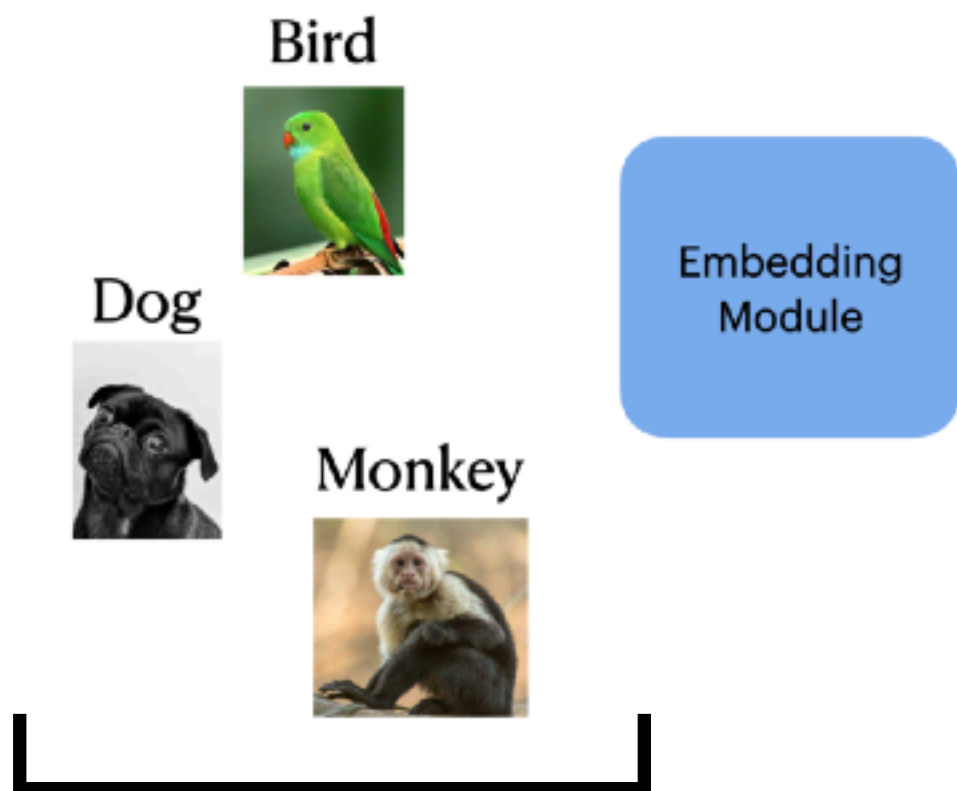
Randomly selecting C classes from the training set with K labelled samples

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

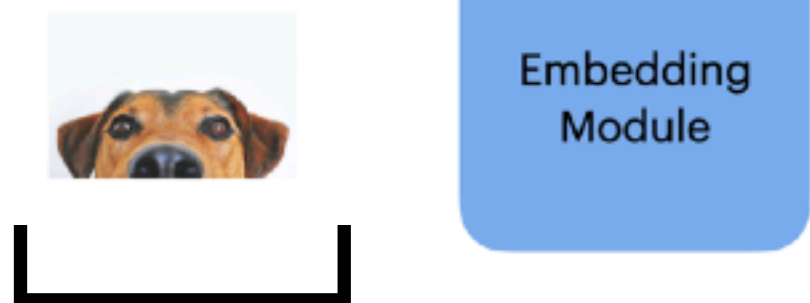
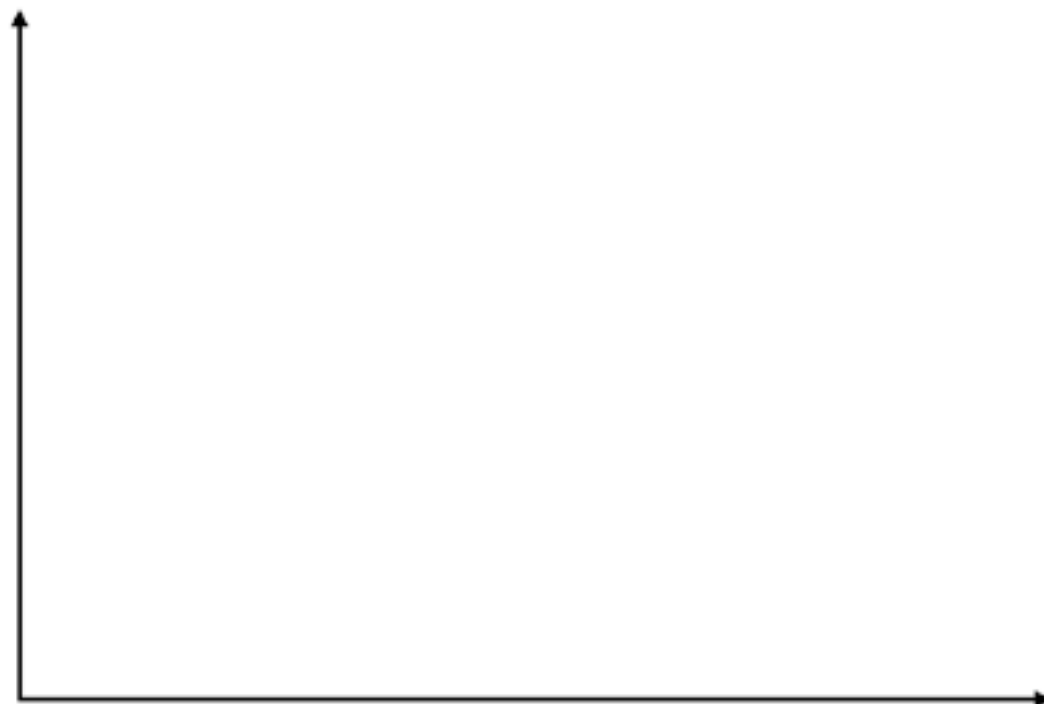
Query Set (Q):

A fraction of the
remainder of those
C classes

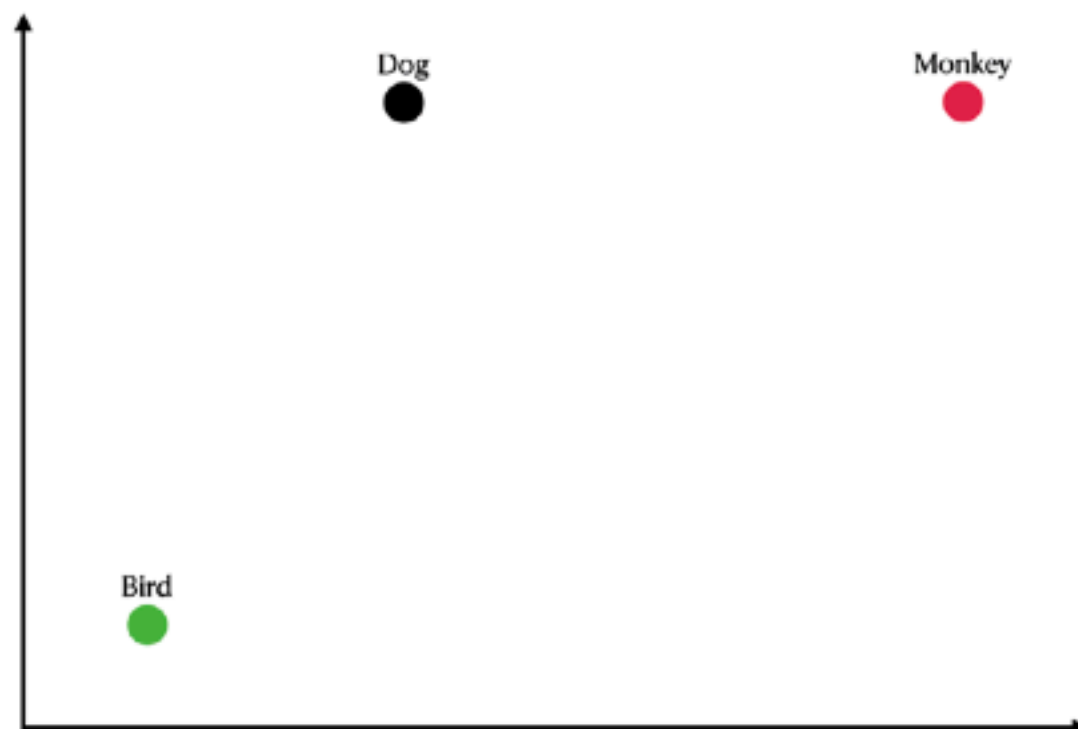
$$Q = \{(x_j, y_j)\}_{j=1}^n$$

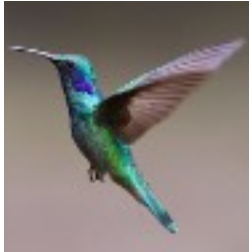


S



Q





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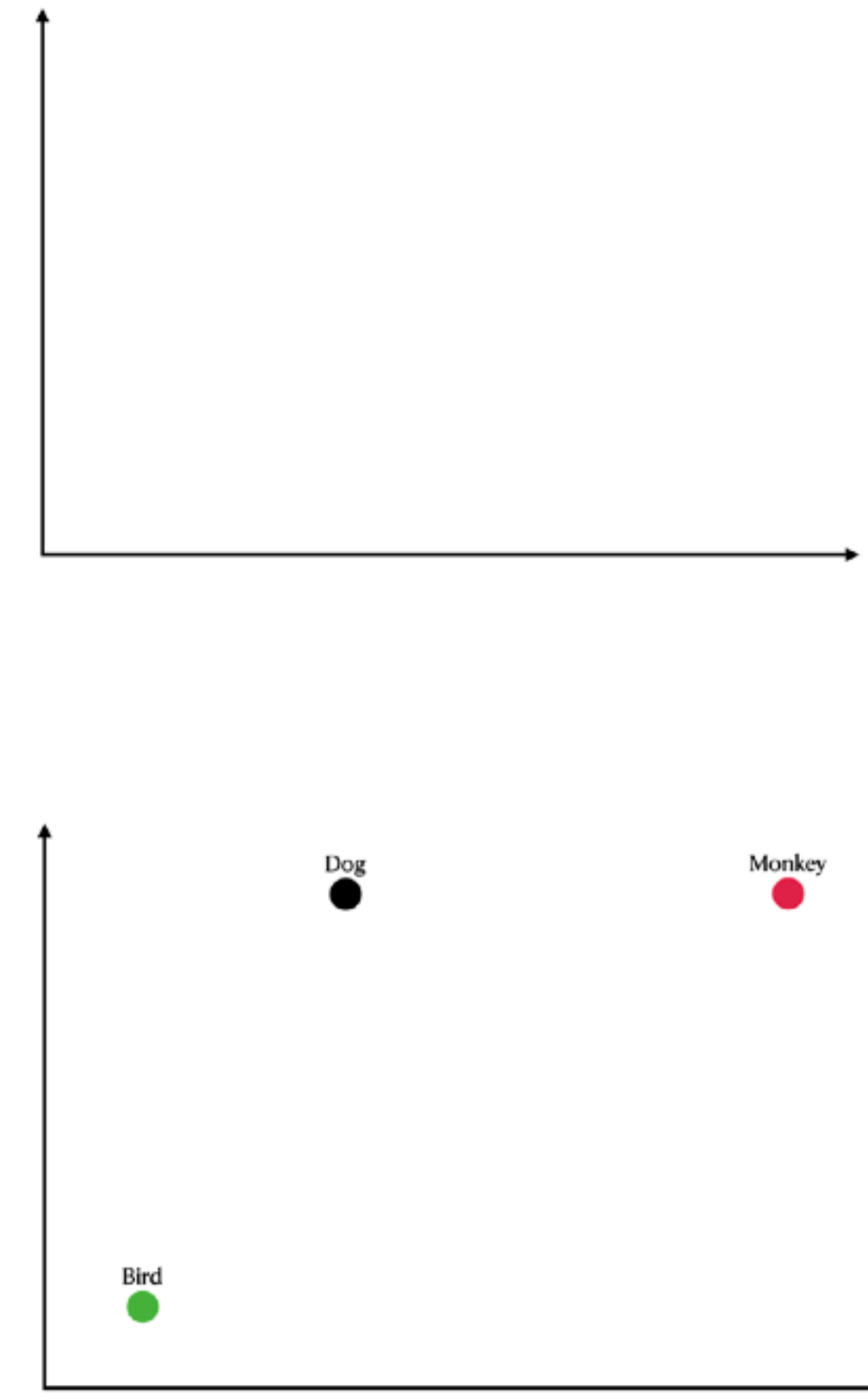
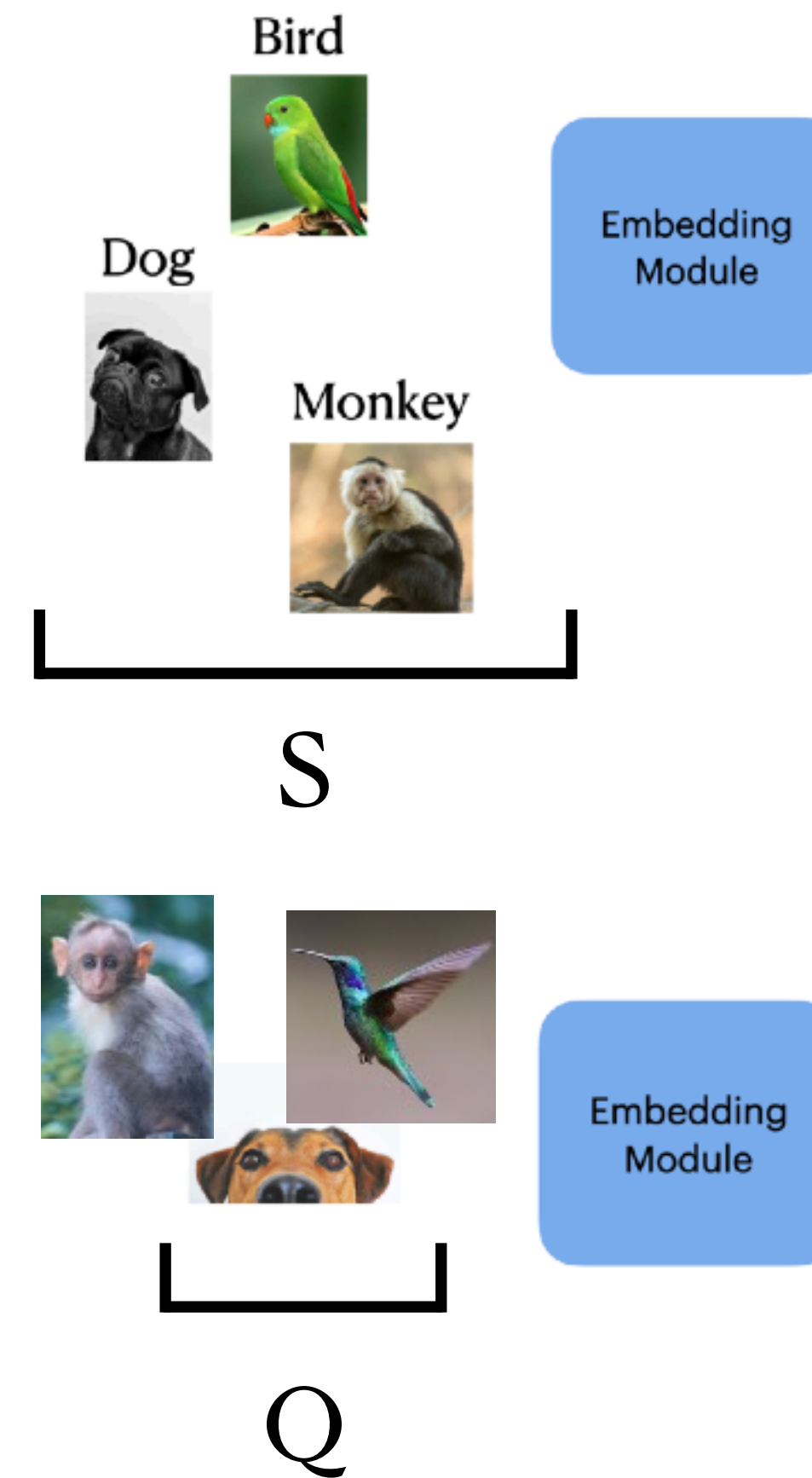
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Episode Based Training (2)

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

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

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

Diagram illustrating the components of the loss function:

- $r_{i,j}$: Relation score of query image j with sample image i
- y_i : Label of image i
- y_j : Label of image j