Problem definition: Episodic learning: Examples

   sample set: $S = \{(x_i, y_i)\}_{i=1}^{m}$ $(m = k \times c)$

             No of class.

   Query Set: $Q = \{(x_i, y_i)\}_{i=1}^{n}$

One shot learning: Relation Network Score.

$k = 1$ for each k if k-shot learning.

$$r_{i,j} = g_{\phi}\left(C\left(f_{\varphi}(x_i), f_{\varphi}(x_j)\right)\right) ; \quad i = 1, 2 \cdots c$$

     Relation   Embedding
     Networks.   Networks

            query   support

Objective function:

$$f_{\varphi}, g_{\phi} \leftarrow \underset{p, \phi}{\arg\min} \sum_{j=1}^{n} \sum_{i=1}^{m} \left\{ r_{ij} - \mathbb{1}(y_i == y_j) \right\}^2$$