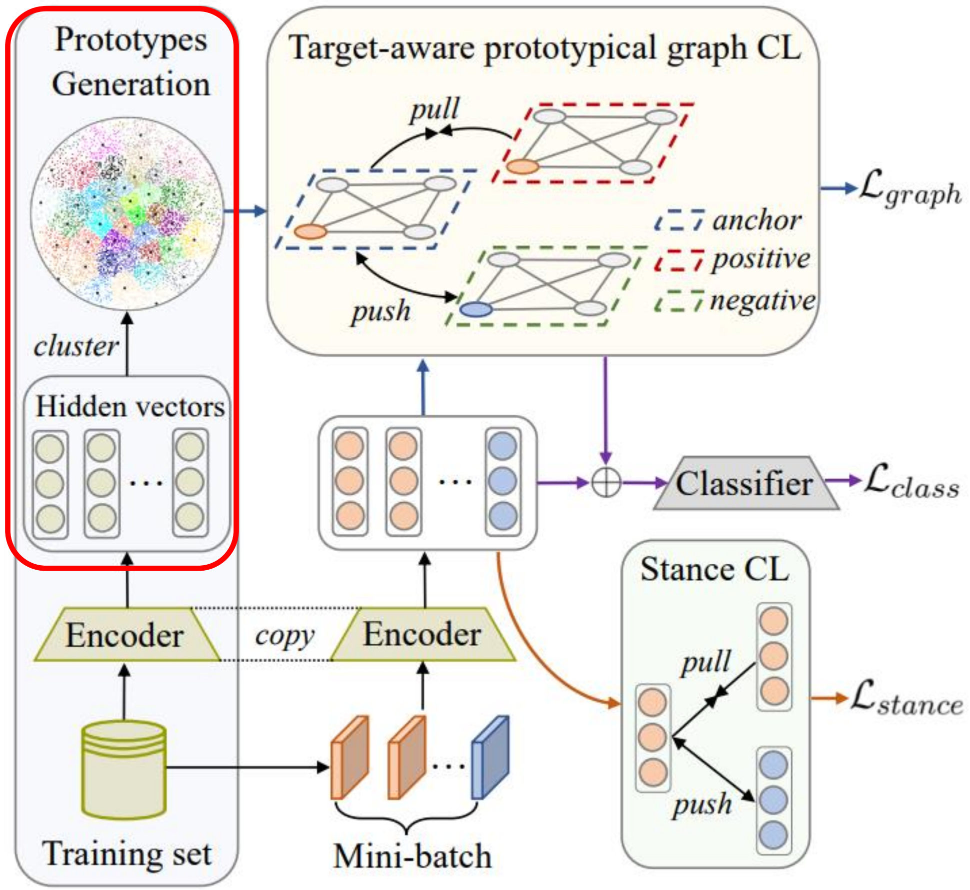
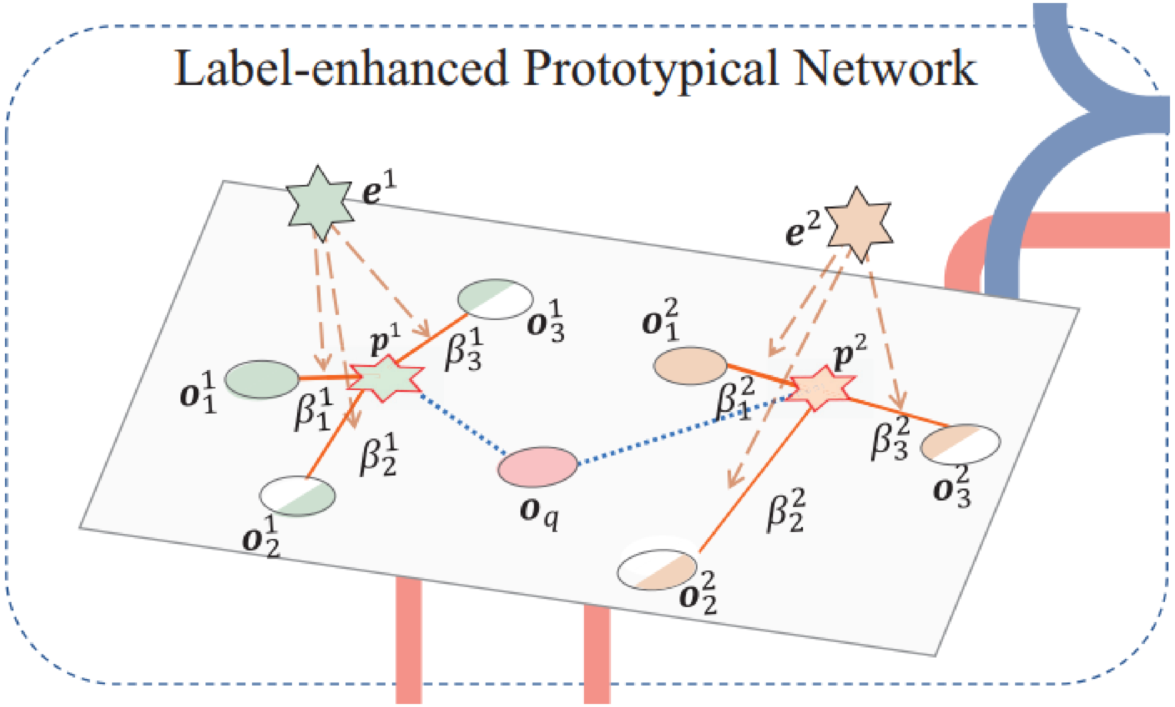


by (Li et al., 2021), we perform k-means clustering on the hidden vectors of the training instances $\mathcal{H} = \{\boldsymbol{h}_i\}_{i=1}^{N_s}$ to generate k clusters as the prototypes $\mathcal{C} = \{\boldsymbol{c}_i\}_{i=1}^{k}$ with respect to the target-based representations of training set. Here, a prototype is defined as *a representative embedding for a group of semantically similar instances* (Li et al., 2021).

2022_ACL_JointCL: A Joint Contrastive Learning Framework for Zero-Shot Stance Detection

Code:https://github.com/HITSZ-HLT/JointCL



$$\alpha_j^i = {\mathbf{o}_j^i}^T \mathbf{W} \mathbf{e}^i, \tag{4}$$

$$\alpha_j^i = {\mathbf{o}_j^i}^T \mathbf{U}\mathbf{V}^T \mathbf{e}^i = \mathbf{1}^T(\mathbf{U}^T\mathbf{o}_j^i \circ \mathbf{V}^T\mathbf{e}^i), \tag{5}$$

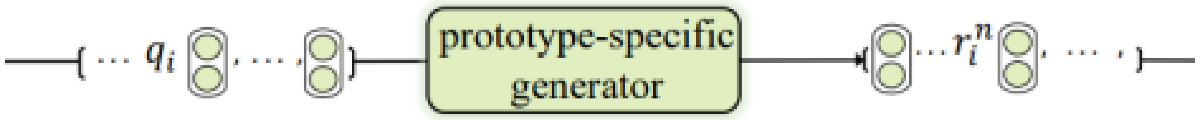
$$\beta_j^i = \frac{\exp(\alpha_j^i)}{\sum_{j'=1}^{K} \exp(\alpha_{j'}^i)}. \tag{6}$$

$$\mathbf{p}^i = \sum_{j=1}^{K} \beta_j^i \mathbf{o}_j^i. \tag{7}$$

$$p(y=y^i|\mathbf{x},\mathcal{S}) = \frac{\exp(-||\mathbf{o}-\mathbf{p}^i||_2^2)}{\sum_{j=1}^{N} \exp(-||\mathbf{o}-\mathbf{p}^j||_2^2)}, \tag{8}$$

$$\mathcal{L}_{lepn} = \frac{1}{|Q|}\sum_{x\in Q}\sum_{i=1}^{N} -y^i \log p(y=y^i|\mathbf{x},\mathcal{S}), \tag{9}$$

2022_KDD_Label-enhanced Prototypical Network with Contrastive Learning for Multi-label Few-shot Aspect Category Detection



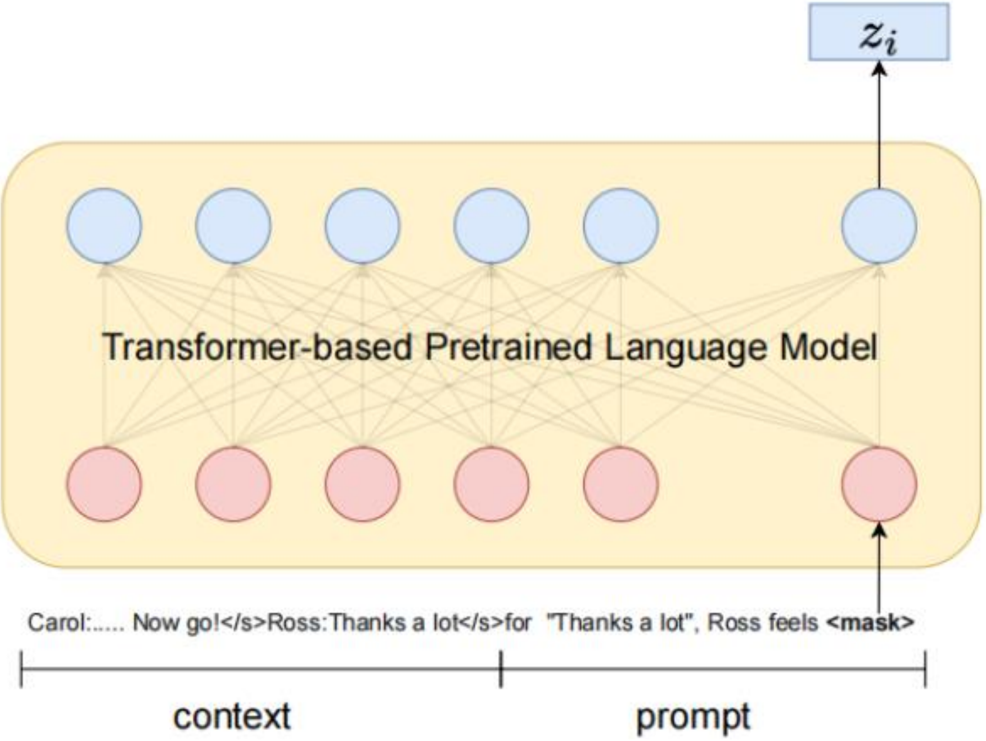
attention mechanism. After that, we aggregate all instance representations for the class n to produce the prototype:

$$r^n = \text{Aggregation}(r_1^n, ..., r_K^n), \quad (3)$$

where Aggregation$(\cdot)$ denotes the attention mechanism or average pooling operation. After processing all classes in the support set S, we obtain N prototypes $\{r^1, r^2, ..., r^n, ..., r^N\}$.

Label-Driven Denoising Framework for MultiLabel Few-Shot Aspect Category Detection

https://github.com/1429904852/LDF



Prototypical Contrastive Learning

$$Q_i = [z_1^i, z_2^i, \cdots, z_M^i]$$

$$S_K = \textsc{RandomSelect}(Q_i, K) \tag{8}$$

$$\mathbf{T}_i = \frac{1}{K} \sum_{z_j^i \in S_K, j \in [1...K]} z_j^i \tag{9}$$

$$\mathcal{N}_{spcl}(i) = \mathcal{N}_{sup}(i) + \sum_{k \in \mathcal{E} \setminus y_i} \mathcal{F}(z_i, \mathbf{T}_k) \tag{10}$$

$$\mathcal{P}_{spcl}(i) = \mathcal{P}_{sup}(i) + \mathcal{F}(z_i, \mathbf{T}_{y_i}) \tag{11}$$

$$\mathcal{L}_i^{spcl} = -\log\left(\frac{1}{|P(i)|+1} \cdot \frac{\mathcal{P}_{spcl}(i)}{\mathcal{N}_{spcl}(i)}\right) \tag{12}$$

$$\mathcal{L}^{spcl} = \sum_{i=1}^{N} \mathcal{L}_i^{spcl} \tag{13}$$

2022_EMNLP_Supervised Prototypical Contrastive Learning for Emotion Recognition in Conversation

https://github.com/caskcsg/SPCL