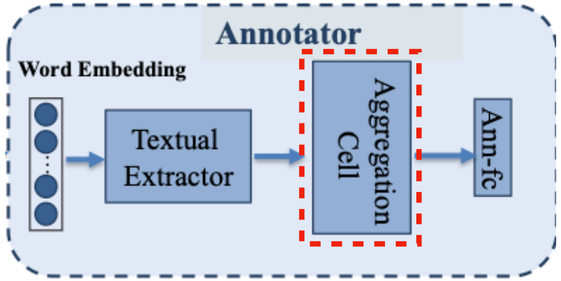
Methodology

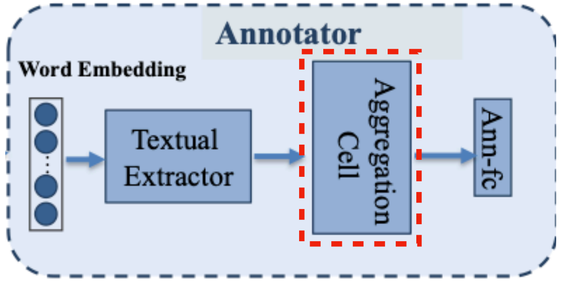
Automatic Annotation based on Reports



- One news article may have reports from multiple users
- Propose to aggregate features obtained from different reports for one sample.
- Design an aggregation cell consisting of a commutative aggregation function and a fully-connected layer
- The commutative aggregation function, like sum, mean and max-pooling, can combine the permutation invariant input set

Methodology

Automatic Annotation based on Reports



- Take the i-th sample as an example, and the j-th report message: $r_j^{(i)}$
- The corresponding report message set is denoted as $R^{(i)} = \{r_1^{(i)}, r_2^{(i)}, \cdots, r_{\left|R^{(i)}\right|}^{(i)}\}$
  - $\left|R^{(i)}\right|$: number of report messages of i-th sample
- $r_j^{(i)} \in R^{(i)}$ is first fed into the textual feature extractor to obtain $\mathbf{h}_j^{(i)}$
- Use the aggregation cell to combine $R^{(i)}$ to learn the hidden feature representation $\mathbf{h}^{(i)}$
- Procedure of aggregation cell: $\mathbf{h}^{(i)} = \mathrm{ReLU}\left(\mathbf{w}_r \cdot \sum_{j=1}^{\left|R^{(i)}\right|} \frac{\mathbf{h}_j^{(i)}}{\left|R^{(i)}\right|}\right)$, $\mathbf{w}_r$: weight of the fully-connected layer