

SLSTC at the NTCIR-14 STC-3 Dialogue Quality and Nugget Detection Subtasks

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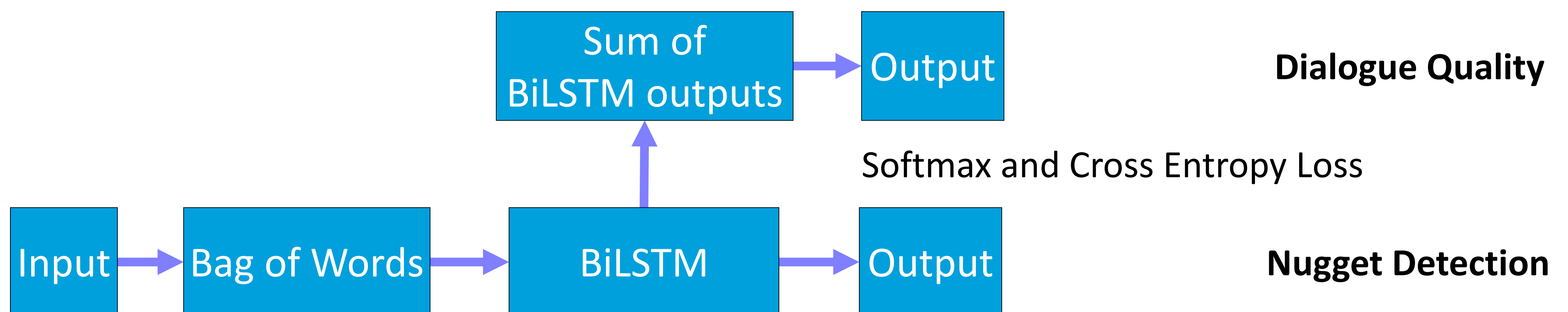
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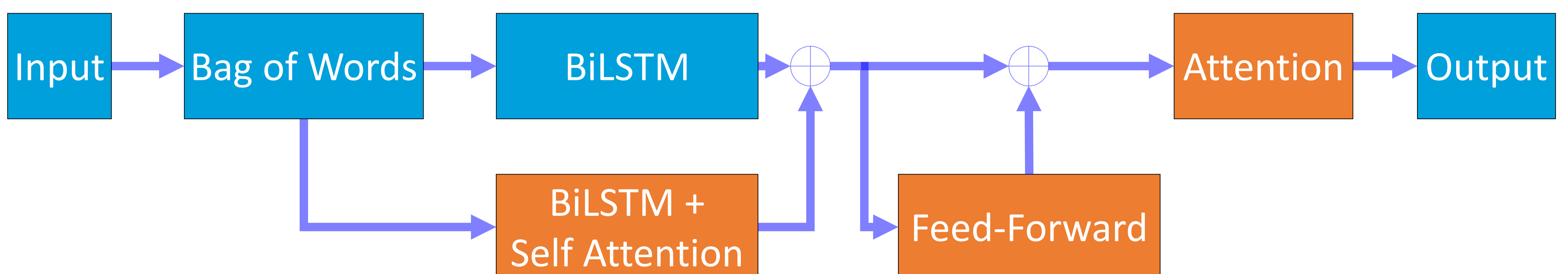
Main Finding

BiLSTM with multi-task learning (Run1) and pre-trained embedding by BERT (Run2) outperform the baseline model on the Chinese dataset in both subtasks. The same methods are a little less successful on the English dataset, possibly due to the smaller training data.

BiLSTM Baseline



Run0: BiLSTM with Multi-Head Attention



Run1: Baseline with Multi-Task Learning

$$L = \frac{1}{B-1} \sum_i^{B-1} \{(\hat{y}(i+1) - \hat{y}(i)) - (y(i+1) - y(i))\}^2$$

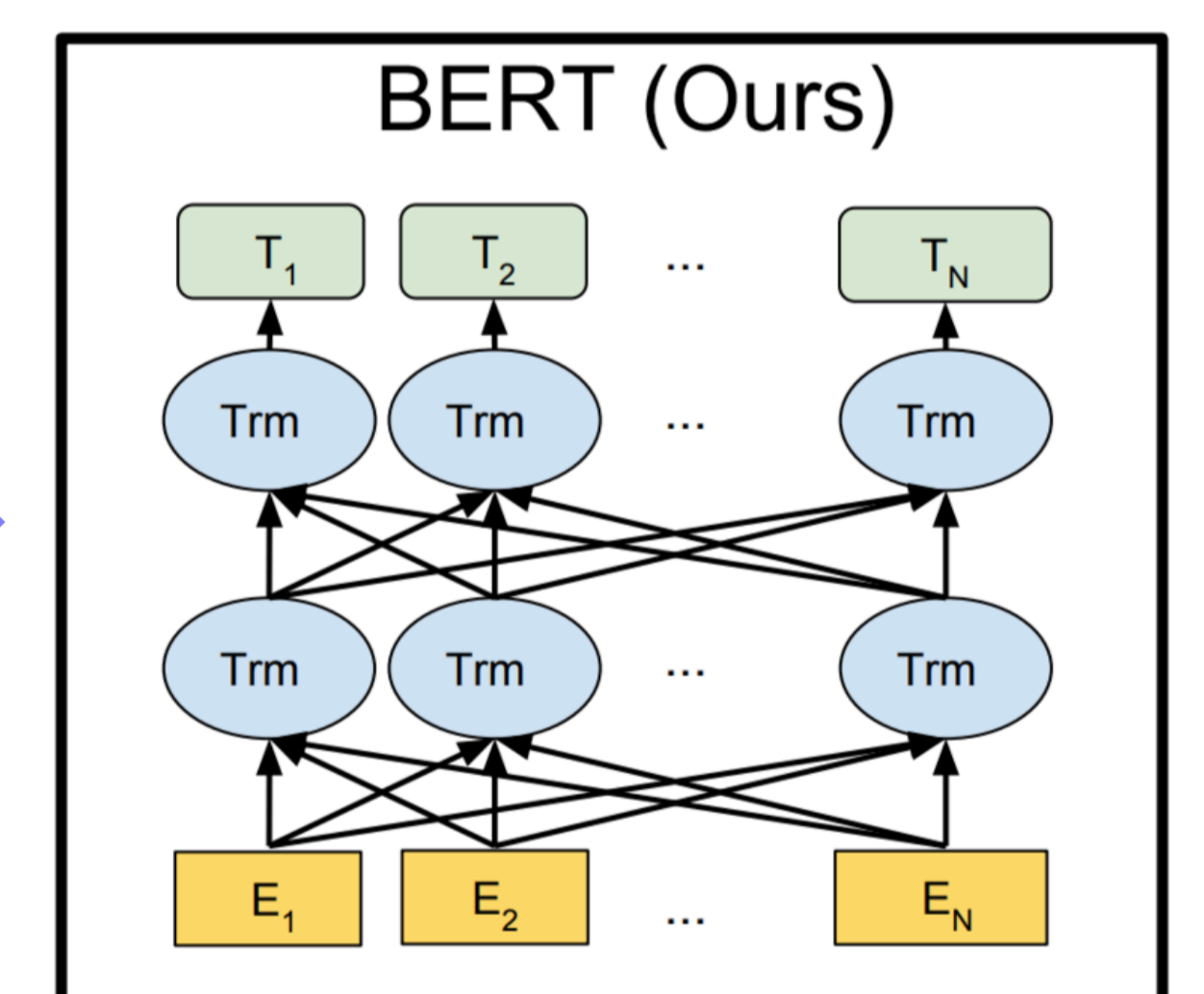
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Parameter Sharing

Run2: Baseline with BERT Embedding

Chinese:
Word2Vec

English:
GloVe



Results (smaller = better)

| Language | Chinese | | | | | | | | English | | | | | | | |
|----------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Task | ND | | DQ | | | | | | ND | | DQ | | | | | |
| Measure | JSD | RNSS | NMD | | | RSNOD | | | JSD | RNSS | NMD | | | RSNOD | | |
| Score | | | A | S | E | A | S | E | | | A | S | E | A | S | E |
| Baseline | 0.0220 | 0.0899 | 0.0863 | 0.0800 | 0.0794 | 0.1263 | 0.1245 | 0.1182 | 0.0248 | 0.0952 | 0.0896 | 0.0838 | 0.0824 | 0.1320 | 0.1310 | 0.1220 |
| Run0 | 0.0241 | 0.0946 | 0.0831 | 0.0787 | 0.0790 | 0.1306 | 0.1290 | 0.1238 | 0.0263 | 0.1037 | 0.1017 | 0.0907 | 0.0938 | 0.1493 | 0.1423 | 0.1404 |
| Run1 | 0.0225 | 0.0913 | 0.0819 | 0.0772 | 0.0754 | 0.1235 | 0.1243 | 0.1159 | 0.0252 | 0.0973 | 0.0908 | 0.0820 | 0.0859 | 0.1391 | 0.1340 | 0.1321 |
| Run2 | 0.0217 | 0.0876 | 0.0843 | 0.0731 | 0.0779 | 0.1249 | 0.1175 | 0.1178 | 0.0289 | 0.0979 | 0.0933 | 0.0822 | 0.0828 | 0.1370 | 0.1306 | 0.1219 |