

An Embarrassingly Simple Model for Dialogue Relation Extraction

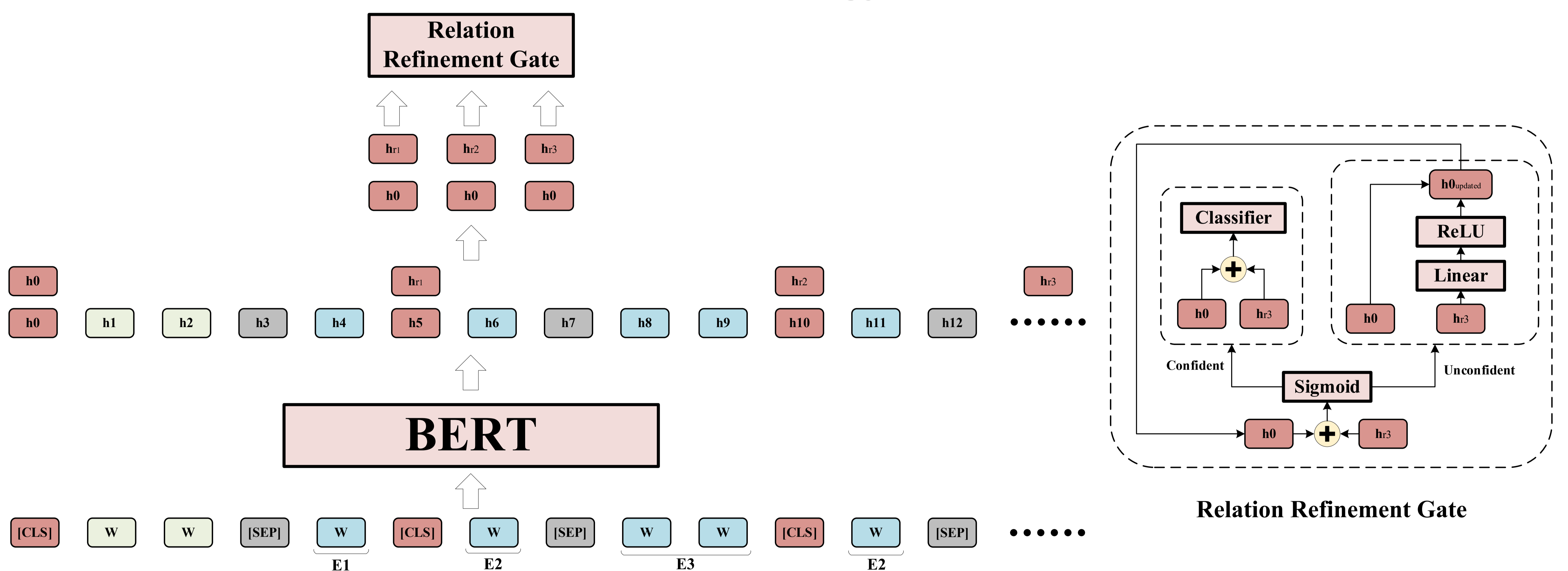
Introduction

- Given two entities and a piece of text where the two entities are mentioned, the task of relation extraction (RE) is to predict the semantic relation between the two entities. The types of semantic relations are predefined.
- For dialogue RE, the context is a piece of dialogue, and each dialogue usually include multiple entity pairs.
- Among multiple pairs of entities, the relations mentioned in the same dialog often interrelate with each other to some extent.
- We propose SimpleRE, a simple yet effective model for dialogue relation extraction, which can capture the interrelations among multiple relations in a dialogue.

Contribution

- We propose a novel input format named BERT Relation Token Sequence (BRS) to capture possible relations between different pairs of entities mentioned in the dialogue.
- We propose Relation Refinement Gate (RRG) to extract relation-specific semantic representation in an adaptive manner
- We combine BRS and RRG to form the SimpleRE and evaluate SimpleRE on DialogRE dataset. Experimental results demonstrate that SimpleRE achieves the best performance, with much shorter training time.

Methodology



Experiments

Dialogue RE on three different versions of DialogRE dataset.

Model	$F1 \pm \delta$
CNN [1]	48.0±1.5
LSTM [1]	47.4±0.6
BiLSTM [1]	48.6±1.0
AGGCN [11]	46.2
LSR [12]	44.4
DHGAT [3]	56.1
BERT [4]	58.5±2.0
BERTs [1]	61.2±0.9
GDPNet [2]	64.9±1.1
SimpleRE (Ours)	66.3±0.7

Model	English V2 ($F1 \pm \delta$)	Chinese ($F1 \pm \delta$)
BERT [4]	60.6±0.5	61.6±0.4
BERTs [1]	61.8±0.6	63.8±0.6
GDPNet [2]	64.3±1.1	62.2±0.9
SimpleRE (Ours)	66.7±0.7	65.2±1.1

Model	Average Time (mins)
BERT [4]	4.7
BERTs [1]	4.7
GDPNet [2]	12.6
SimpleRE (Ours)	0.9

Sentence-level RE on TACRED and TACREV.

Model	TACRED	TACREV
LSTM [14]	62.7	70.6
PA-LSTM [14]	65.1	74.3
C-AGGCN [11]	68.2	75.5
LST-AGCN [15]	68.8	-
SpanBERT [16]	70.8	78.0
GDPNet [2]	70.5	80.2
SimpleRE (Ours)	71.7	80.7
KnowBERT [17]	71.5	79.3