



# Augmenting Trigger Semantics to Improve Event Coreference Resolution

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# Chapter 01

## Introduction

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## Introduction

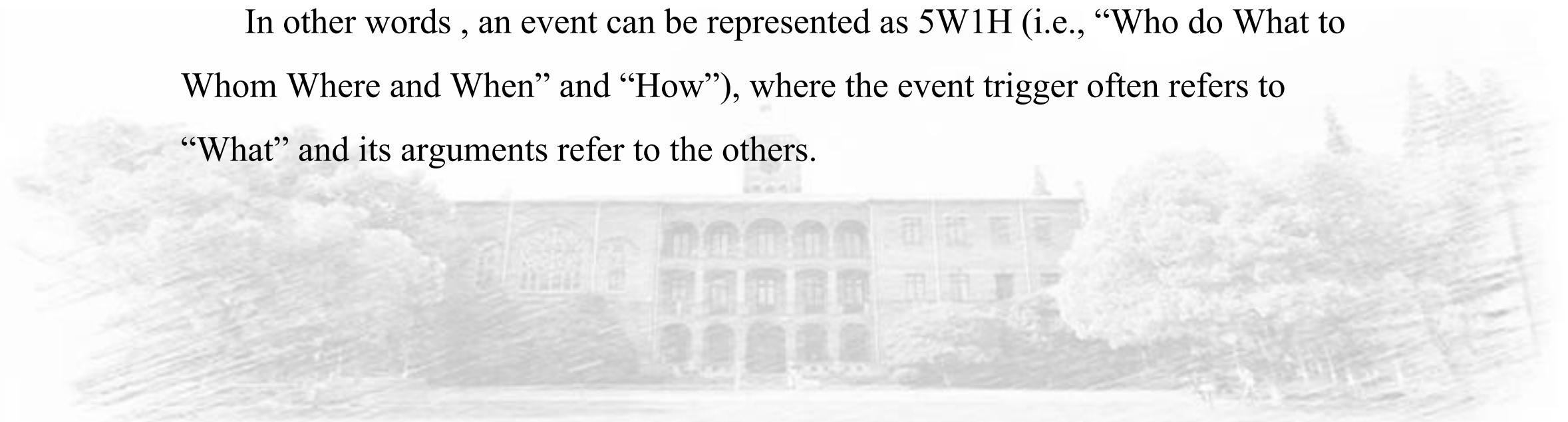
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As an important semantic unit, the event usually describes what happens in the real world.

An event is mainly composed of a trigger and its arguments, where the trigger is the core of the event, and the arguments are the participants .

In other words , an event can be represented as 5W1H (i.e., “Who do What to Whom Where and When” and “How”), where the event trigger often refers to “What” and its arguments refer to the others.



## Introduction

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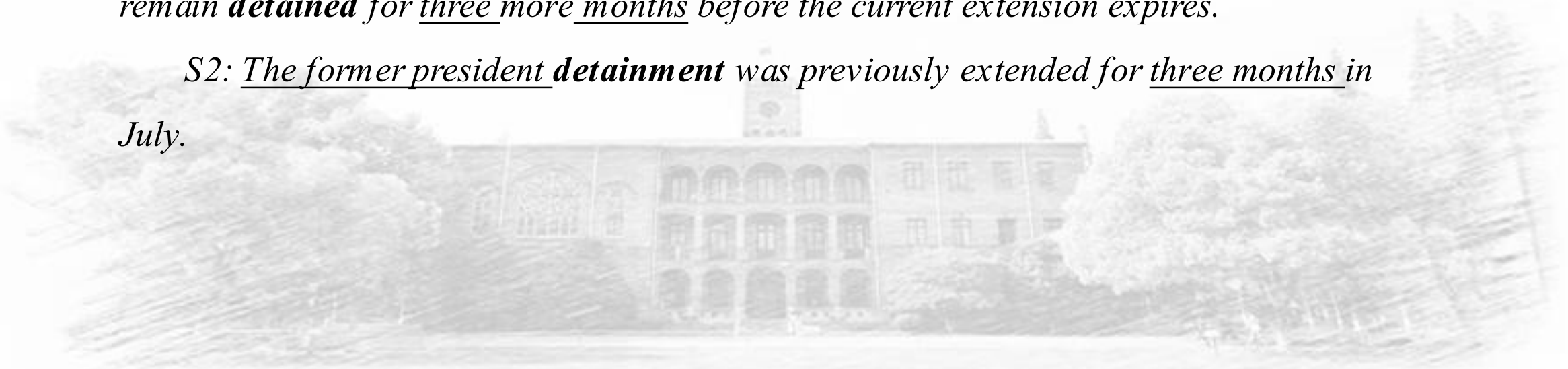


The task of event coreference resolution aims to identify whether multiple event mentions in documents refer to the same event.

### *Examples:*

*S1: The court would hand down a ruling on whether the former president will remain **detained** for three more months before the current extension expires.*

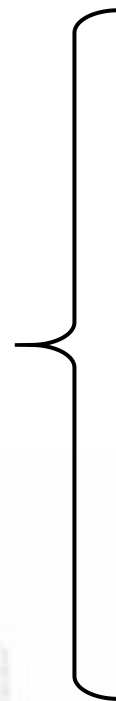
*S2: The former president **detainment** was previously extended for three months in July.*



# Background



**Event  
Coreference  
Resolution**



Topic Exploration



Information Extraction



Reading Comprehension

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# Motivation

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- Since the trigger is the core of an event, trigger semantics is the key evidence for the task of event coreference resolution.
- Sufficient trigger semantics will benefit the performance of event coreference resolution





## Chapter 02

# Trigger Semantics Augmentation







## Trigger Semantics Augmentation

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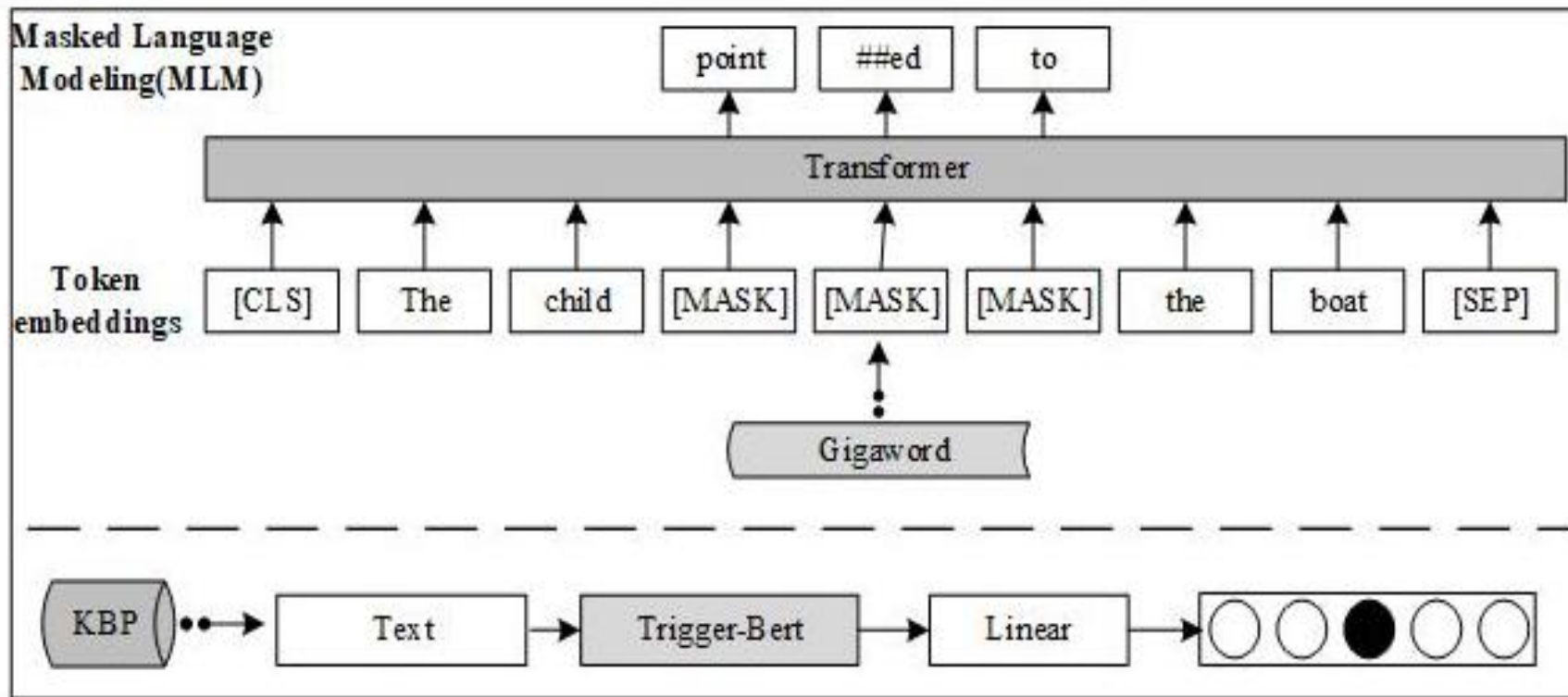
- In most cases, there are multiple trigger words in a sentence.
- Inspired by the whole-word masking technology, we propose a modified BERT model (Trigger-BERT) to mask the fixed trigger words in the event mentions to fine-tune the parameters in the BERT-based encoder. This encoder can capture the complete trigger semantics related to the target.

**R1.** If the trigger is a word and the result of the word segmentation is a single word, our encoder will use a word-masking strategy.

**R2.** If the trigger is a word, but the result of the word segmentation is multiple words, we will adopt the strategy of masking the whole word.

**R3.** If the trigger is a phrase, we will adopt the strategy of masking phrases, taking the complete phrase as a unit.

# Trigger Semantics Augmentation



Trigger-BERT encoder



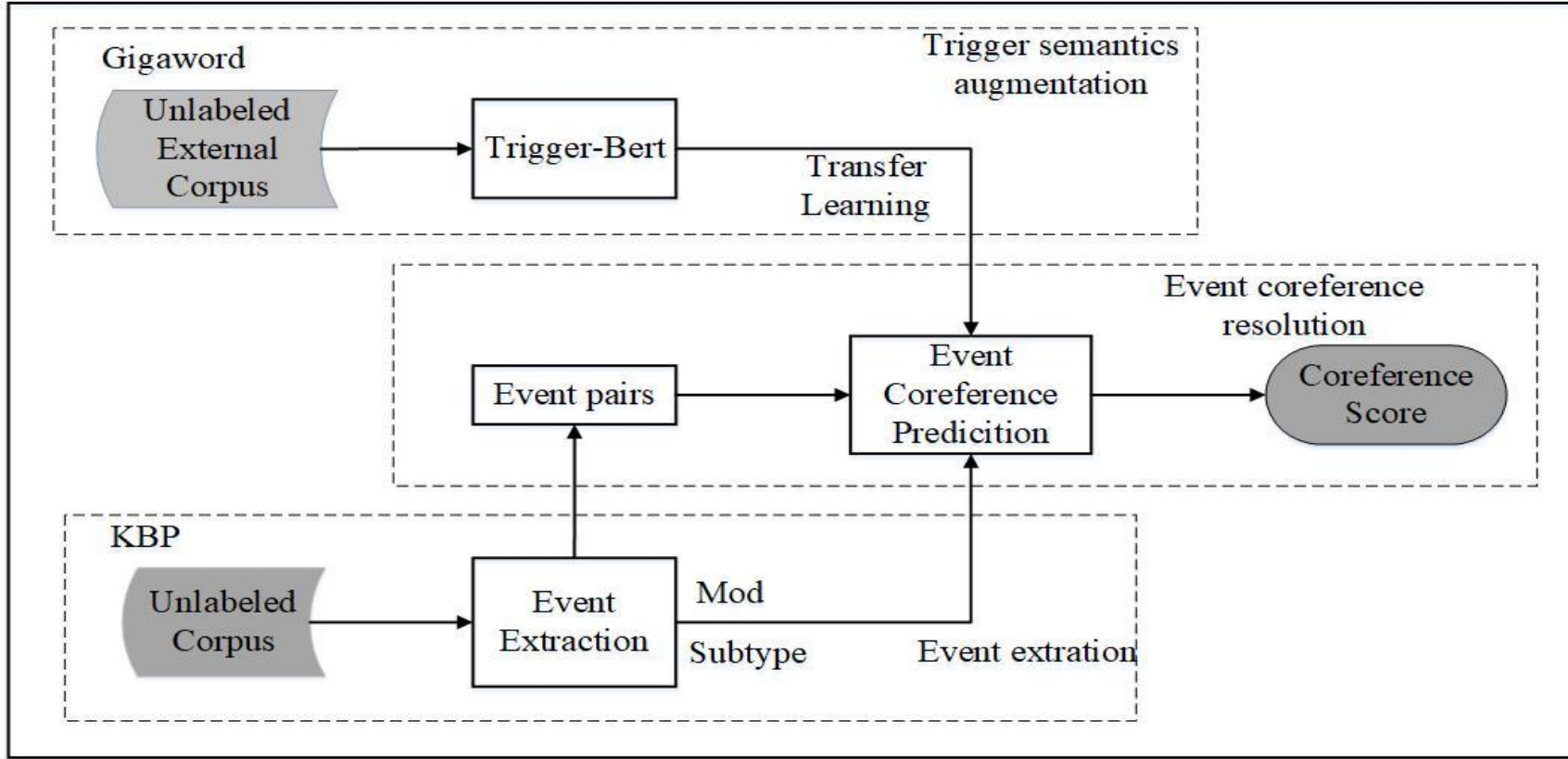
# Chapter 03

## Our model

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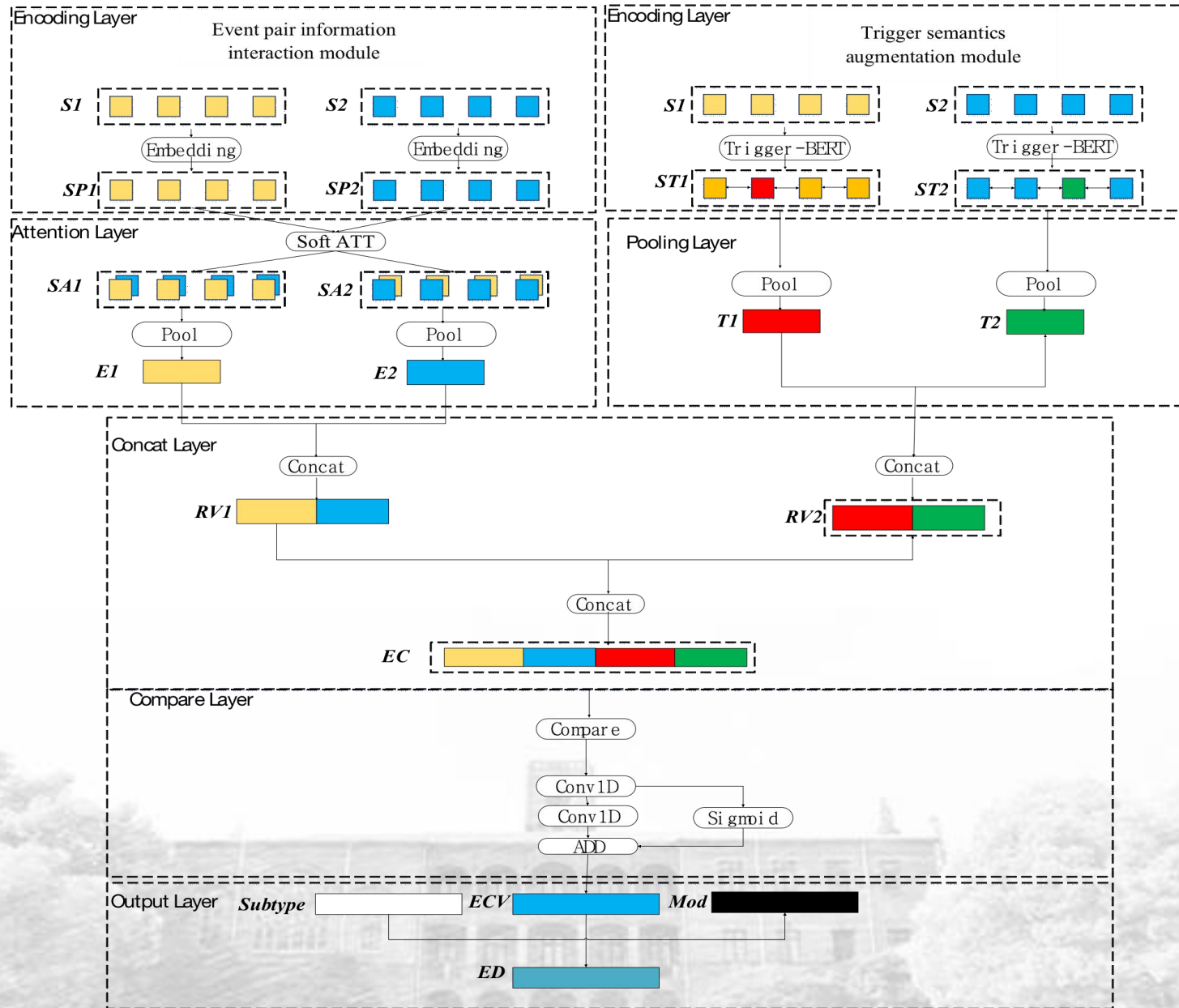


# Our model



Overall flow chart of event coreference resolution

# Our model



The event coreference resolution process





# Chapter 04

## Experiment

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# Experiment

## Evaluation :

### KBP2016 and KBP2017

(the complete official KBP test set)

KBP2016					
System	MUC	B <sup>3</sup>	BLANC	CEAF <sub>e</sub>	AVG
Lu	27.41	40.90	25.00	39.00	33.08
Co-BERT	31.51	48.49	36.45	43.57	40.00
<b>Our</b>	<b>37.94</b>	<b>49.78</b>	<b>39.60</b>	<b>47.98</b>	<b>43.82</b>
KBP2017					
System	MUC	B <sup>3</sup>	BLANC	CEAF <sub>e</sub>	AVG
Huang	35.66	43.2	32.43	40.02	36.75
Co-BERT	41.24	46.71	39.82	36.63	41.10
<b>Our</b>	<b>47.35</b>	<b>48.52</b>	<b>41.11</b>	<b>39.86</b>	<b>44.21</b>

**Comparison of experimental results on event coreference resolution**



# Chapter 05

## Conclusion

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# Conclusion

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➤ **This paper makes the following contributions :**

- 1)we introduce a trigger semantics augmentation mechanism to boost event coreference resolution, which performs a trigger-oriented masking strategy to pre-train a BERT-based encoder (i.e., Triger-BERT), fine-tuned on a large unlabeled dataset.
- 2)we combine the event semantic relations from Triger-BERT and the event interactions from the soft-attention mechanism to resolve coreferent events.





Thank you for listening!

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