

LREC-COLING 2024

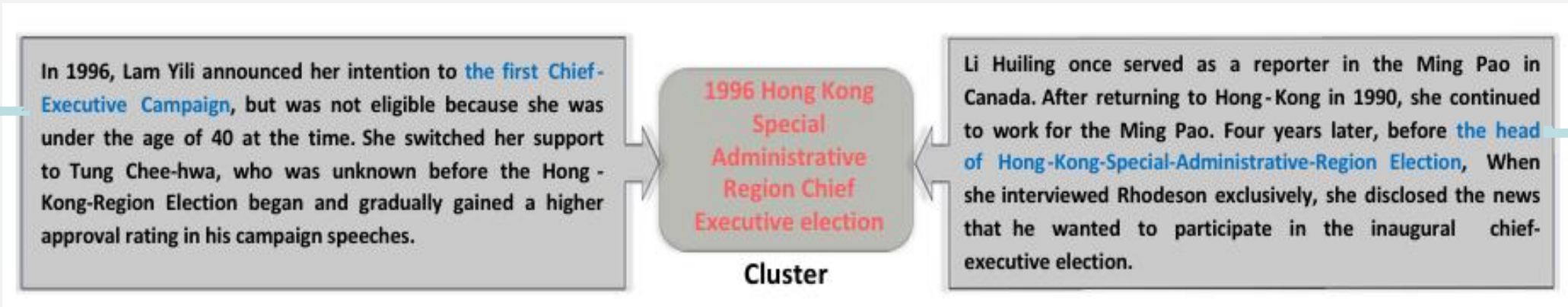
# Enhancing Cross-Document Event Coreference Resolution by Discourse Structure and Semantic Information

*Qiang Gao<sup>1</sup>, Bobo Li<sup>1</sup>, Zixiang Meng<sup>1</sup>,*

*Yunlong Li<sup>1</sup>, Jun Zhou<sup>1</sup>, Fei Li<sup>1</sup>\*, Chong Teng<sup>1</sup>, Donghong Ji<sup>1</sup>*

<sup>1</sup> Key Laboratory of Aerospace Information Security and Trusted Computing, Ministry of Education, School of Cyber Science and Engineering, Wuhan University

# ① Cross-document event coreference



event mention1

co-reference event

event mention2

### ③ Related Work

#### - Datasets

- ECB+

relatively small scale, comprising only 982 samples. It encompasses 26,712 coreference links between 6,833 event mentions and 69,050 coreference links between 8,289 entity mentions

- GVC

pertains to the domain of gun violence, the authors introduced an innovative semi-automatic method, known as structured-data-to-text (D2T).

- WEC-Eng

a large-scale cross-document coreference resolution dataset comprises 43,672 documents with a total of 7,597 clusters. The coreference determination in this dataset is independent of the event category,

#### - Methods

- QA

- pre-filtering

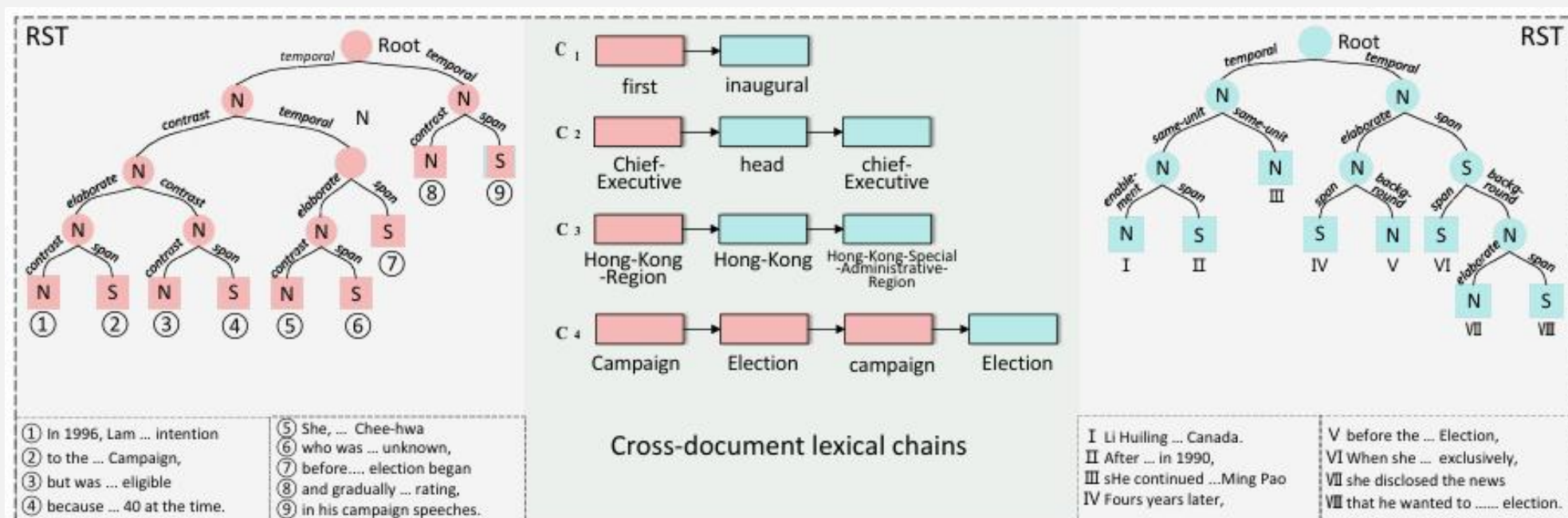
- Deep Passage Retrieval (DPR) model

- extracting event argument information

- graph

- structures

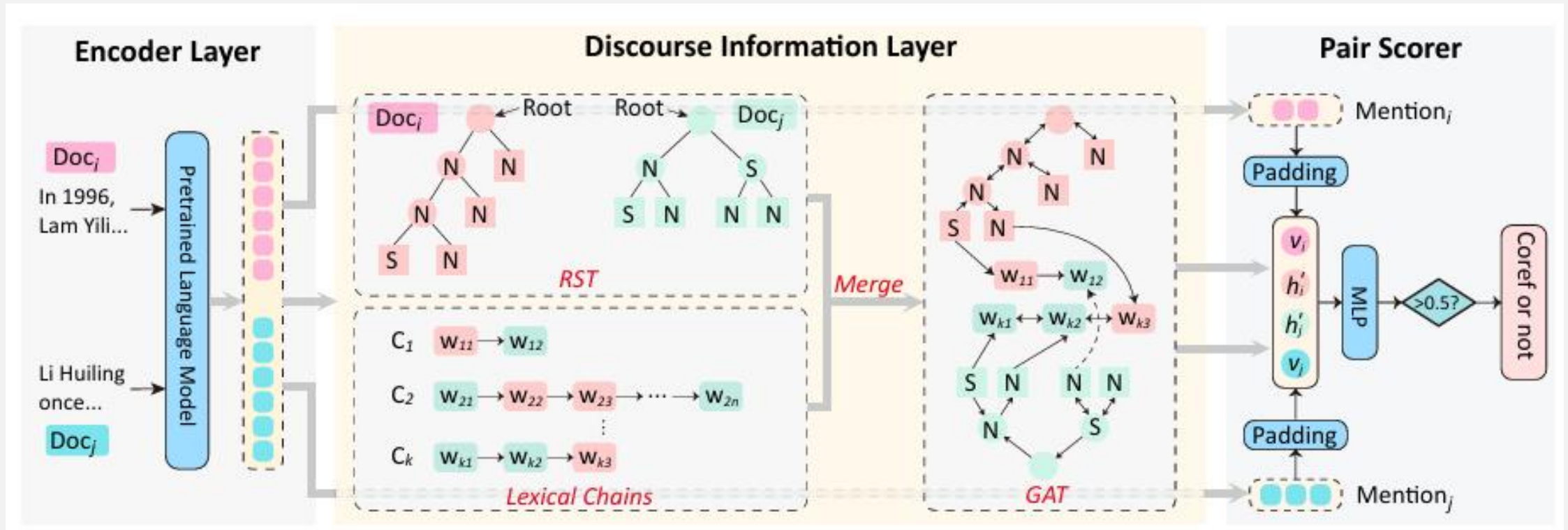
## ② RST and Lexical Chains



(b) Discourse information: document-level RST trees and cross-document lexical chains.

Figure 1: An example to show cross-document event coreference resolution and our main idea of building document and cross-document information. [the first Chief-Executive election](#) and [the head of Hong Kong Special Administrative Region Election](#) refer to the same event “1996 Hong Kong Special Administrative Region Chief Executive election”.

#### ④ DIE-EC: A Discourse-Information-Enhanced Event Coreference Model for Cross-Document



## ⑤ Experiments

	MUC			$B^3$			CEAF			CoNLL
	R	P	$F_1$	R	P	$F_1$	R	P	$F_1$	$F_1$
Lemma	<b>85.5</b>	79.9	<b>82.6</b>	74.5	32.8	45.5	25.9	39.4	31.2	53.1
WEC-Eng	78	83.6	80.7	66.1	55.3	60.2	53.4	<b>40.3</b>	45.9	62.3
Our model	78.2	<b>85.8</b>	81.8	<b>69.6</b>	<b>62.4</b>	<b>65.8</b>	<b>58.9</b>	39.5	<b>47.3</b>	<b>65.0</b>

Table 3: Event coreference resolution results on the WEC-Eng test set.

	MUC			$B^3$			CEAF			CoNLL
	R	P	$F_1$	R	P	$F_1$	R	P	$F_1$	$F_1$
Lemma	80.5	45.0	57.7	84.3	47.1	60.4	37.3	52.4	43.6	53.9
WEC-Eng	<b>91.1</b>	54.2	68.0	<b>91.9</b>	52.3	66.7	39.0	<b>76.3</b>	51.6	62.1
Our model	90.3	<b>57.9</b>	<b>70.6</b>	90.8	<b>60.2</b>	<b>72.4</b>	<b>46.7</b>	76.0	<b>57.8</b>	<b>66.9</b>

Table 4: Event coreference resolution results on the WEC-Zh test set