Detailed Experimental Results

Additionally, we provide the detailed experimental results on the two public datasets (*i.e.,* PolNeAR and Riqua) and one proprietary dataset (*i.e.,* PoliticsZH). In the experiments, we use accuracy, precision, recall, and $F1$ to evaluate the performances of "Exact Math", "Begin Match" and "Jaccard". The corresponding experiments results are detailed in Table 1, Table 2 and Table 3, respectively. CRF and Cofe in the three tables refer to the models using CRF and Cofe based on word vectors directly to extract quotations.

From the results shown in the three tables, we have the following observations. First, CofeNet achieves significant advantages on all datasets and all evaluation metrics. It proves that our proposed CofeNet achieves the state-of-the-art performance on quotation extraction. Second, Cofe-based models perform better than CRF-based models. It reveals that our CofeNet is competitive and robust. Third, compared with the extraction of *source* and *cue*, almost all cases are better than CRF. It reveals that CofeNet achieves a more stable and substantial improvement in *content* extraction from the perspective of extraction targets. Last, our proposed CofeNet achieves more improvement on begin match and Jaccard than exact match. The above phenomena show that CofeNet has significant advantages in processing complicated text with variable lengths.

Table 1: Exact Match on PolNeAR, Riqua and PoliticsZH datasets.

Dataset	Model	Source				Cue				Content			
		Pre.	Rec.	F1	Acc.	Pre.	Rec.	F1	Acc.	Pre.	Rec.	F1	Acc.
PolNeAR	Rule	27.8	6.7	10.7	5.7	67.6	13.7	22.8	12.9	26.0	3.2	5.6	2.9
	CoreNLP	32.1	8.9	13.9	7.5	-	-	-	-	59.2	10.3	17.5	9.6
	CRF	62.6	42.4	50.6	33.8	66.3	44.7	53.4	36.4	36.8	23.5	28.6	16.7
	Cofe	**64.1**	**60.2**	**62.1**	**45.0**	**69.0**	**58.4**	**63.3**	**46.3**	**59.6**	**43.6**	**50.4**	**33.7**
	CNN	55.6	50.1	52.7	35.8	59.3	57.4	58.4	41.2	17.9	14.7	16.2	8.8
	w. CRF	**63.1**	59.1	61.0	43.9	**66.7**	59.0	**62.6**	**45.6**	46.9	38.0	42.0	26.6
	w. Cofe	60.5	**63.9**	**62.2**	**45.1**	63.7	**60.5**	62.1	45.0	**52.1**	**44.5**	**48.0**	**31.6**
	GRU	49.9	43.5	46.5	30.3	63.1	55.5	59.1	41.9	56.7	46.9	51.3	34.5
	w. CRF	68.0	63.7	65.8	49.0	68.2	62.7	65.3	48.5	59.3	51.5	55.1	38.0
	w. Cofe	**70.2**	**64.0**	**67.0**	**50.3**	**70.0**	**63.0**	**66.3**	**49.6**	**65.6**	**52.3**	**58.2**	**41.1**
	LSTM	52.4	41.2	46.1	30.0	63.8	54.2	58.6	41.5	55.7	46.0	50.4	33.7
	w. CRF	**73.0**	59.5	65.5	48.8	**73.8**	58.1	65.0	48.2	64.6	47.8	55.0	37.9
	w. Cofe	71.5	**64.6**	**67.9**	**51.4**	68.5	**62.1**	**65.1**	**48.3**	**64.7**	**52.5**	**58.0**	**40.8**
	BiLSTM	63.8	64.4	64.1	47.2	65.7	61.1	63.3	46.3	57.4	49.9	53.4	36.4
	w. CRF	**73.1**	66.4	69.6	53.4	**72.2**	62.0	66.7	50.0	**66.0**	53.4	59.0	41.9
	w. Cofe	71.0	**71.3**	**71.2**	**55.2**	69.4	**64.8**	**67.0**	**50.4**	65.5	**59.2**	**62.2**	**45.1**
	BiLSTM-L2	69.6	68.3	68.9	52.6	67.2	63.6	65.4	48.6	60.4	55.1	57.6	40.5
	w. CRF	71.8	70.4	71.1	55.2	**68.1**	66.1	**67.1**	**50.5**	62.5	59.4	60.9	43.8
	w. Cofe	**71.9**	**74.7**	**73.3**	**57.9**	66.1	**66.3**	66.2	49.5	**64.7**	**62.6**	**63.6**	**46.7**
	BERT	80.9	81.3	81.1	68.2	**76.8**	71.4	74.0	58.7	71.1	66.8	68.9	52.6
	w. CRF	81.5	82.9	82.2	69.8	75.0	**74.7**	74.9	59.8	72.4	69.7	71.0	55.1
	w. Cofe	**82.9**	**83.6**	**83.2**	**71.3**	75.9	**74.7**	**75.3**	**60.4**	**74.9**	**71.1**	**72.9**	**57.4**
Riqua	Rule	29.8	11.7	16.8	9.2	57.5	26.7	36.5	22.3	0.0	0.0	0.0	0.0
	CoreNLP	26.4	20.0	22.8	12.8	-	-	-	-	**97.2**	47.5	63.8	46.9
	CRF	60.5	38.3	46.9	30.7	52.7	68.6	59.6	42.5	39.5	46.6	42.7	27.2
	Cofe	**83.6**	**46.7**	**59.9**	**42.8**	**92.9**	**75.6**	**83.3**	**71.4**	93.8	**89.6**	**91.7**	**84.6**
	CNN	74.2	40.8	52.7	35.8	**95.7**	**76.7**	**85.2**	**74.2**	46.0	44.3	45.2	29.2
	w. CRF	64.5	40.8	50.0	33.3	91.6	75.6	82.8	70.7	47.0	45.3	46.1	29.9
	w. Cofe	**85.5**	**49.2**	**62.4**	**45.4**	93.0	**76.7**	84.1	72.5	**87.7**	**84.2**	**85.9**	**75.3**
	GRU	71.4	45.8	55.8	38.7	80.0	74.4	77.1	62.8	93.5	91.4	92.5	86.0
	w. CRF	71.2	39.2	50.5	33.8	87.7	74.4	80.5	67.4	94.4	91.9	93.1	87.1
	w. Cofe	**76.3**	**50.8**	**61.0**	**43.9**	**94.2**	**75.6**	**83.9**	**72.2**	**96.3**	**93.7**	**95.0**	**90.4**
	LSTM	71.6	40.0	51.3	34.5	90.9	69.8	79.0	65.2	96.2	91.9	94.0	88.7
	w. CRF	79.7	45.8	58.2	41.0	92.8	74.4	82.6	70.3	95.7	91.0	93.3	87.4
	w. Cofe	**81.7**	**48.3**	**60.7**	**43.6**	**93.0**	**76.7**	**84.1**	**72.5**	**96.7**	**93.2**	**94.9**	**90.4**
	BiLSTM	**83.6**	42.5	56.4	39.2	94.4	**77.9**	85.4	74.4	93.9	90.5	92.2	85.5
	w. CRF	78.7	**49.2**	60.5	43.4	94.2	75.6	83.9	72.2	96.7	91.9	94.2	89.0
	w. Cofe	79.7	**49.2**	**60.8**	**43.7**	**98.5**	75.6	**85.5**	**74.7**	**97.2**	**92.8**	**94.9**	**90.3**
	BiLSTM-L2	79.8	**55.8**	**65.7**	**48.9**	**95.6**	75.6	84.4	73.0	**97.1**	91.9	94.4	89.4
	w. CRF	**84.0**	52.5	64.6	47.7	**95.6**	75.6	84.4	73.0	96.2	91.0	93.5	87.8
	w. Cofe	81.5	55.0	65.7	48.9	94.4	**77.9**	**85.4**	**74.4**	96.3	**93.2**	**94.7**	**90.0**
	BERT	77.5	71.7	74.5	59.3	94.7	83.7	88.9	80.0	95.4	93.2	94.3	89.2
	w. CRF	**88.3**	69.2	77.6	63.4	**95.8**	79.1	86.6	76.4	**96.7**	92.3	**94.4**	**89.5**
	w. Cofe	81.2	**82.5**	**81.8**	**69.2**	92.5	**86.1**	**89.2**	**80.4**	94.1	**94.6**	94.4	89.3
PoliticsZH	Rule	82.5	75.4	78.8	64.9	**88.4**	73.5	80.3	67.1	3.9	0.2	0.4	0.2
	CoreNLP	68.1	26.5	38.1	23.5	-	-	-	-	0.3	0.2	0.2	0.1
	CRF	82.3	80.9	81.6	68.9	81.2	78.7	80.0	66.6	51.3	41.2	45.7	29.6
	Cofe	**88.2**	**90.4**	**89.3**	**80.7**	85.9	**85.2**	**85.5**	**74.7**	**72.0**	**70.7**	**71.3**	**55.4**
	CNN	81.5	83.4	82.5	70.2	82.4	80.4	81.4	68.6	38.0	32.5	35.0	21.2
	w. CRF	85.9	87.7	86.8	76.6	83.4	81.3	82.3	70.0	60.6	61.3	61.0	43.9
	w. Cofe	**87.6**	**90.0**	**88.8**	**79.8**	**85.3**	**86.6**	**86.0**	**75.4**	**72.4**	**71.8**	**72.1**	**56.4**
	GRU	84.2	86.8	85.5	74.6	81.9	82.2	82.1	69.6	65.9	65.5	65.7	48.9
	w. CRF	**88.6**	86.8	87.7	78.1	85.2	85.1	85.2	74.2	72.7	71.8	72.2	56.5
	w. Cofe	88.1	**90.8**	**89.4**	**80.9**	**86.5**	**86.2**	**86.4**	**76.0**	**73.4**	**75.1**	**74.2**	**59.0**
	LSTM	84.3	85.4	84.9	73.7	82.7	83.2	82.9	70.9	70.5	67.8	69.1	52.8
	w. CRF	**87.4**	89.5	88.5	79.3	**85.5**	85.3	85.4	74.5	**72.4**	70.8	**71.6**	**55.7**
	w. Cofe	86.8	**92.1**	**89.4**	**80.8**	83.5	**87.4**	**85.4**	**74.6**	69.2	**74.1**	71.6	**55.7**
	BiLSTM	87.4	87.5	87.5	77.7	85.4	87.1	86.2	75.8	72.1	68.5	70.3	54.1
	w. CRF	88.3	92.1	90.1	82.1	**87.6**	88.1	**87.9**	**78.3**	72.5	73.6	73.0	57.5
	w. Cofe	**90.3**	**92.5**	**91.4**	**84.1**	87.3	**88.3**	87.8	78.3	**74.5**	**74.8**	**74.7**	**59.6**
	BiLSTM-L2	87.9	89.7	88.8	79.8	86.1	87.4	86.7	76.6	73.2	71.1	72.1	56.4
	w. CRF	89.2	92.3	90.8	83.1	86.5	**89.1**	**87.8**	**78.2**	71.9	72.6	72.2	56.5
	w. Cofe	**90.0**	**94.2**	**92.1**	**85.3**	**86.6**	88.5	87.6	77.9	**75.4**	**77.1**	**76.3**	**61.6**
	BERT	91.9	93.4	92.6	86.3	89.0	89.9	89.5	80.9	70.9	76.8	73.7	58.4
	w. CRF	91.5	**95.3**	93.4	87.6	88.6	**91.2**	89.9	81.6	75.9	78.5	77.1	62.8
	w. Cofe	**92.2**	95.3	**93.7**	**88.2**	**89.9**	90.7	**90.3**	**82.3**	**77.3**	**78.8**	**78.0**	**64.0**

Table 2: Begin Match on PolNeAR, Riqua and PoliticsZH datasets.

Dataset	Model	Source				Cue				Content			
		Pre.	Rec.	F1	Acc.	Pre.	Rec.	F1	Acc.	Pre.	Rec.	F1	Acc.
PolNeAR	Rule	33.7	8.1	13.0	7.0	74.8	15.2	25.3	14.5	48.6	5.9	10.5	5.5
	CoreNLP	49.1	13.6	21.3	11.9	-	-	-	-	63.3	11.0	18.7	10.3
	CRF	69.6	47.2	56.2	39.1	**78.5**	53.0	63.3	46.3	65.4	41.7	50.9	34.2
	Cofe	**72.6**	**68.2**	**70.3**	**54.2**	76.5	**64.8**	**70.2**	**54.1**	**75.2**	**55.0**	**63.6**	**46.6**
	CNN	69.5	62.6	65.9	49.1	69.0	66.7	67.8	51.3	67.1	55.2	60.6	43.4
	w. CRF	**72.4**	67.7	**69.9**	**53.8**	**74.6**	65.9	**70.0**	**53.8**	**69.8**	56.6	62.5	45.4
	w. Cofe	67.9	**71.7**	69.8	53.6	71.8	**68.1**	69.9	53.7	69.1	**59.0**	**63.6**	**46.7**
	GRU	62.5	54.4	58.2	41.0	72.8	64.0	68.1	51.7	71.8	59.3	65.0	48.1
	w. CRF	74.3	**69.5**	71.9	56.1	75.2	**69.1**	72.0	56.2	70.8	**61.5**	65.8	49.0
	w. Cofe	**76.2**	**69.5**	**72.7**	**57.2**	**76.7**	69.0	**72.7**	**57.1**	**75.4**	60.1	**66.9**	**50.2**
	LSTM	64.1	50.3	56.4	39.3	73.4	62.4	67.5	50.9	72.4	59.8	65.5	48.7
	w. CRF	**79.1**	64.5	71.1	55.1	**81.3**	64.1	71.7	55.8	**77.4**	57.3	65.8	49.1
	w. Cofe	76.5	**69.2**	**72.7**	**57.1**	75.5	**68.5**	**71.8**	**56.0**	73.9	**60.0**	**66.2**	**49.5**
	BiLSTM	74.1	74.7	74.4	59.2	75.3	70.1	72.6	57.0	72.4	62.9	67.3	50.7
	w. CRF	**79.5**	72.3	75.7	60.9	**79.9**	68.6	73.8	58.5	**77.5**	62.8	69.4	53.1
	w. Cofe	77.9	**78.3**	**78.1**	**64.0**	76.5	**71.5**	**73.9**	**58.7**	74.5	**67.4**	**70.8**	**54.7**
	BiLSTM-L2	77.4	76.0	76.7	62.2	74.6	70.6	72.6	57.0	**73.7**	67.3	70.3	54.2
	w. CRF	**78.5**	76.9	77.7	63.5	**74.7**	72.5	73.6	58.2	72.3	68.8	70.5	54.5
	w. Cofe	77.8	**80.8**	**79.3**	**65.6**	74.2	**74.4**	**74.3**	**59.1**	73.2	**70.8**	**72.0**	**56.3**
	BERT	86.0	86.4	86.2	75.7	**84.2**	78.3	81.1	68.2	81.2	76.3	78.7	64.9
	w. CRF	85.8	87.2	86.5	76.2	82.2	**81.8**	82.0	69.5	80.5	77.4	78.9	65.2
	w. Cofe	**86.7**	**87.5**	**87.1**	**77.1**	83.0	81.6	**82.3**	**69.9**	**81.8**	**77.6**	**79.6**	**66.2**
Riqua	Rule	29.8	11.7	16.8	9.2	57.5	26.7	36.5	22.3	10.0	1.4	2.4	1.2
	CoreNLP	26.4	20.0	22.8	12.8	-	-	-	-	97.2	47.5	63.8	46.9
	CRF	65.8	41.7	51.0	34.3	58.0	**75.6**	65.7	48.9	79.3	**93.7**	85.9	75.3
	Cofe	**89.6**	**50.0**	**64.2**	**47.2**	**92.9**	**75.6**	**83.3**	**71.4**	**97.6**	93.2	**95.4**	**91.2**
	CNN	83.3	45.8	59.1	42.0	**95.7**	**76.7**	**85.2**	**74.2**	97.2	**93.7**	95.4	91.2
	w. CRF	76.3	48.3	59.2	42.0	91.6	75.6	82.8	70.7	96.2	92.8	94.5	89.5
	w. Cofe	**89.9**	**51.7**	**65.6**	**48.8**	93.0	**76.7**	84.1	72.5	**97.6**	**93.7**	**95.6**	**91.6**
	GRU	80.5	51.7	62.9	45.9	80.0	74.4	77.1	62.8	96.3	94.1	95.2	90.8
	w. CRF	84.9	46.7	60.2	43.1	87.7	74.4	80.5	67.4	96.7	94.1	95.4	91.2
	w. Cofe	**86.3**	**57.5**	**69.0**	**52.7**	**94.2**	**75.6**	**83.9**	**72.2**	**97.7**	**95.0**	**96.3**	**92.9**
	LSTM	83.6	46.7	59.9	42.8	90.9	69.8	79.0	65.2	97.2	92.8	94.9	90.3
	w. CRF	89.9	51.7	65.6	48.8	92.8	74.4	82.6	70.3	97.1	92.3	94.7	89.9
	w. Cofe	**90.1**	**53.3**	**67.0**	**50.4**	**93.0**	**76.7**	**84.1**	**72.5**	**97.7**	**94.1**	**95.9**	**92.0**
	BiLSTM	**95.1**	48.3	64.1	47.2	94.4	**77.9**	85.4	74.4	97.7	**94.1**	95.9	92.0
	w. CRF	88.0	55.0	67.7	51.2	94.2	75.6	83.9	72.2	97.6	92.8	95.1	90.7
	w. Cofe	90.5	**55.8**	**69.1**	**52.8**	**98.5**	75.6	**85.5**	**74.7**	**98.6**	**94.1**	**96.3**	**92.9**
	BiLSTM-L2	84.5	59.2	69.6	53.4	**95.6**	75.6	84.4	73.0	**98.1**	92.8	95.4	91.1
	w. CRF	88.0	55.0	67.7	51.2	**95.6**	75.6	84.4	73.0	**98.1**	92.8	95.4	91.1
	w. Cofe	**90.1**	**60.8**	**72.6**	**57.0**	94.4	**77.9**	**85.4**	**74.4**	97.2	**94.1**	**95.6**	**91.6**
	BERT	81.1	75.0	77.9	63.8	94.7	83.7	88.9	80.0	97.7	95.5	96.6	93.4
	w. CRF	**90.4**	70.8	79.4	65.9	**95.8**	79.1	86.6	76.4	**98.6**	94.1	96.3	92.9
	w. Cofe	83.6	**85.0**	**84.3**	**72.9**	92.5	**86.1**	**89.2**	**80.4**	96.9	**97.3**	**97.1**	**94.3**
PoliticsZH	Rule	83.1	75.9	79.3	65.7	**89.5**	74.4	81.2	68.4	64.1	3.7	7.0	3.6
	CoreNLP	70.5	27.4	39.5	24.6	-	-	-	-	3.6	1.6	2.2	1.1
	CRF	84.7	83.3	84.0	72.3	81.7	79.2	80.4	67.2	55.2	44.3	49.1	32.6
	Cofe	**88.8**	**91.1**	**89.9**	**81.7**	86.6	**85.9**	**86.3**	**75.8**	**80.0**	**78.6**	**79.3**	**65.7**
	CNN	86.8	88.8	87.8	78.2	84.6	82.5	83.6	71.8	80.9	69.1	74.5	59.4
	w. CRF	87.2	89.1	88.2	78.8	83.9	81.8	82.9	70.7	75.4	76.3	75.9	61.1
	w. Cofe	**88.4**	**90.8**	**89.6**	**81.1**	**86.2**	**87.5**	**86.8**	**76.7**	**82.4**	**81.7**	**82.0**	**69.5**
	GRU	87.0	89.7	88.3	79.1	84.4	84.8	84.6	73.3	80.0	79.6	79.8	66.4
	w. CRF	**89.9**	88.1	89.0	80.2	86.0	85.9	86.0	75.4	**81.8**	80.8	81.3	68.5
	w. Cofe	88.8	**91.5**	**90.1**	**82.0**	**87.2**	**86.8**	**87.0**	**77.0**	81.0	**82.8**	**81.9**	**69.3**
	LSTM	87.8	88.9	88.4	79.2	84.4	84.8	84.6	73.3	**83.6**	80.4	**82.0**	**69.5**
	w. CRF	**88.5**	90.6	89.5	81.1	**86.4**	86.3	86.3	76.0	80.2	78.5	79.3	65.7
	w. Cofe	87.4	**92.7**	**90.0**	**81.8**	84.4	**88.4**	**86.3**	**76.0**	77.0	**82.4**	79.6	66.1
	BiLSTM	91.3	91.4	91.3	84.0	87.8	89.5	88.6	79.6	**83.9**	79.7	81.8	69.1
	w. CRF	89.6	93.5	91.5	84.4	**89.0**	**89.6**	**89.3**	**80.7**	79.7	81.0	80.3	67.1
	w. Cofe	**91.4**	**93.6**	**92.5**	**86.0**	88.2	89.1	88.7	79.6	81.8	**82.1**	**82.0**	**69.4**
	BiLSTM-L2	**90.7**	92.7	91.7	84.6	**87.6**	88.9	88.2	78.9	**84.0**	81.6	82.8	70.7
	w. CRF	90.2	93.4	91.8	84.8	87.6	**90.3**	**88.9**	**80.1**	80.4	81.1	80.8	67.7
	w. Cofe	**90.7**	**95.0**	**92.8**	**86.6**	87.5	89.4	88.4	79.2	82.3	**84.2**	**83.3**	**71.3**
	BERT	92.9	94.5	93.7	88.1	90.4	91.2	90.8	83.2	80.3	87.1	83.6	71.8
	w. CRF	92.1	**96.0**	94.0	88.7	89.3	**92.0**	90.6	82.8	83.6	86.4	85.0	73.9
	w. Cofe	**92.9**	**96.0**	**94.4**	**89.4**	**90.7**	91.5	**91.1**	**83.6**	**86.1**	**87.7**	**86.9**	**76.8**

Table 3: J(accard) on PolNeAR, Riqua and PoliticsZH datasets.

Model	PolNeAR			Riqua			PoliticsZH		
	Source	Cue	Content	Source	Cue	Content	Source	Cue	Content
Rule	8.8	14.4	6.1	11.2	22.3	2.4	66.8	69.7	3.7
CoreNLP	11.1	-	12.8	17.9	-	46.9	24.3	-	4.3
CRF	42.1	44.1	42.3	32.9	46.6	62.2	72.2	68.5	66.3
Cofe	**52.3**	**52.4**	**52.3**	**45.3**	**71.4**	**88.8**	**81.8**	**77.5**	**80.9**
CNN	45.1	49.4	30.2	39.6	**74.2**	58.5	76.5	72.1	46.7
w. CRF	53.1	**53.0**	49.5	38.5	70.7	58.8	78.6	72.6	72.7
w. Cofe	**53.3**	52.5	**52.2**	**47.6**	72.5	**86.1**	**81.3**	**78.2**	**80.3**
GRU	36.7	48.8	51.3	43.4	62.8	89.6	78.1	73.6	71.5
w. CRF	56.1	55.5	**57.5**	39.5	67.4	90.4	80.1	76.6	81.0
w. Cofe	**56.4**	**56.3**	57.5	**49.7**	**72.2**	**92.3**	**82.1**	**78.5**	**83.9**
LSTM	35.7	47.9	50.8	39.8	65.2	90.3	78.1	74.0	74.1
w. CRF	55.2	54.6	56.2	45.8	70.3	89.2	81.1	77.7	81.6
w. Cofe	**56.6**	**55.0**	**56.8**	**48.7**	**72.5**	**91.7**	**82.2**	**77.9**	**82.7**
BiLSTM	60.7	57.3	59.6	51.7	73.0	90.8	83.8	79.8	77.5
w. CRF	63.1	58.0	62.9	49.8	73.0	90.1	85.2	81.1	84.2
w. Cofe	**65.1**	**58.6**	**64.7**	**54.6**	**74.4**	**91.3**	**87.0**	**81.4**	**86.1**
BERT	74.8	67.4	70.0	62.4	80.0	92.9	88.2	84.0	84.4
w. CRF	75.6	68.9	72.7	66.1	76.4	92.5	89.3	84.7	88.3
w. Cofe	**76.4**	**69.4**	**73.2**	**72.6**	**80.4**	**94.1**	**89.8**	**85.4**	**88.7**