

Table 6: 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 7: 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 8: $J(\text{accard})$ 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