

Nugget Proposal Network for Chinese Event Detection

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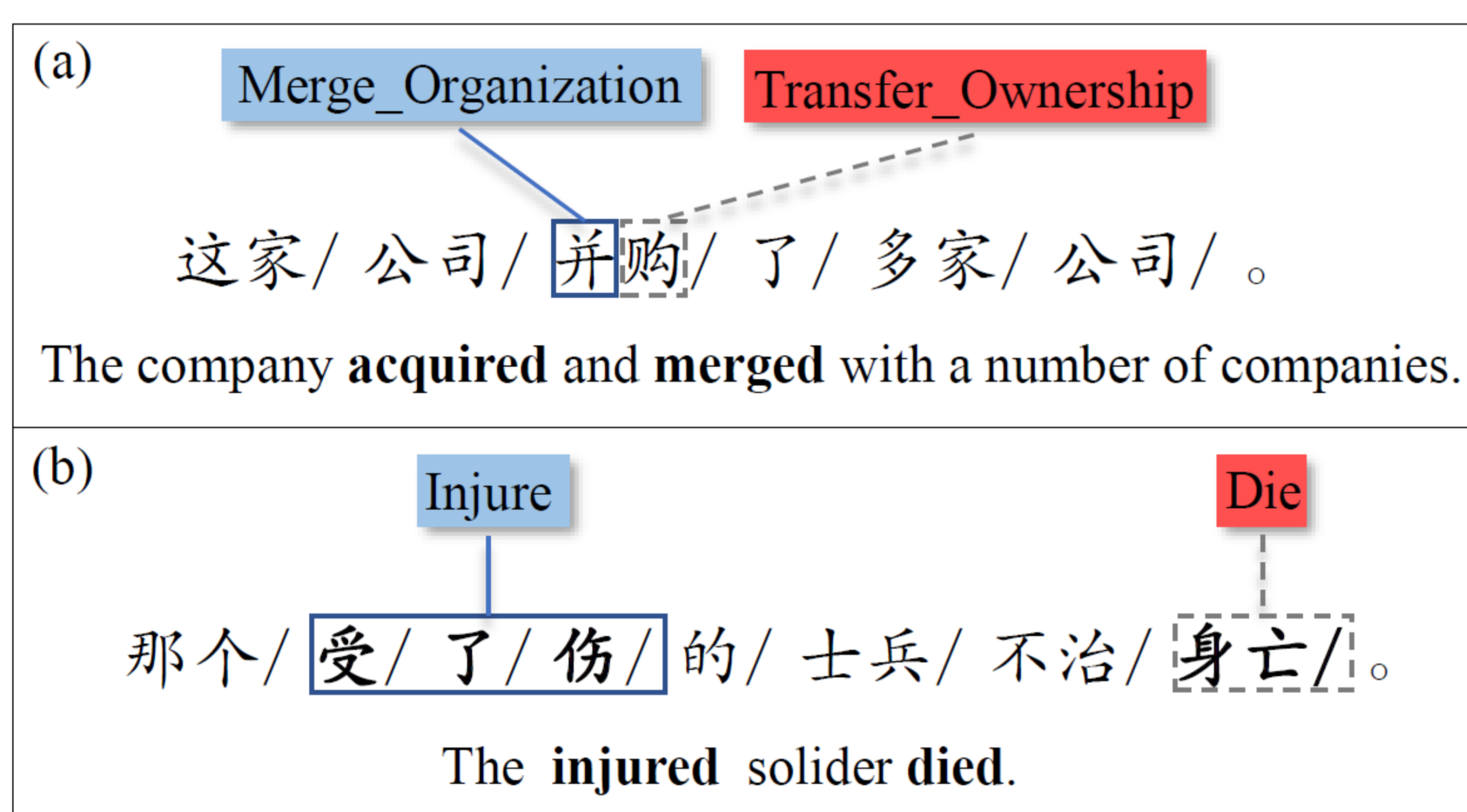
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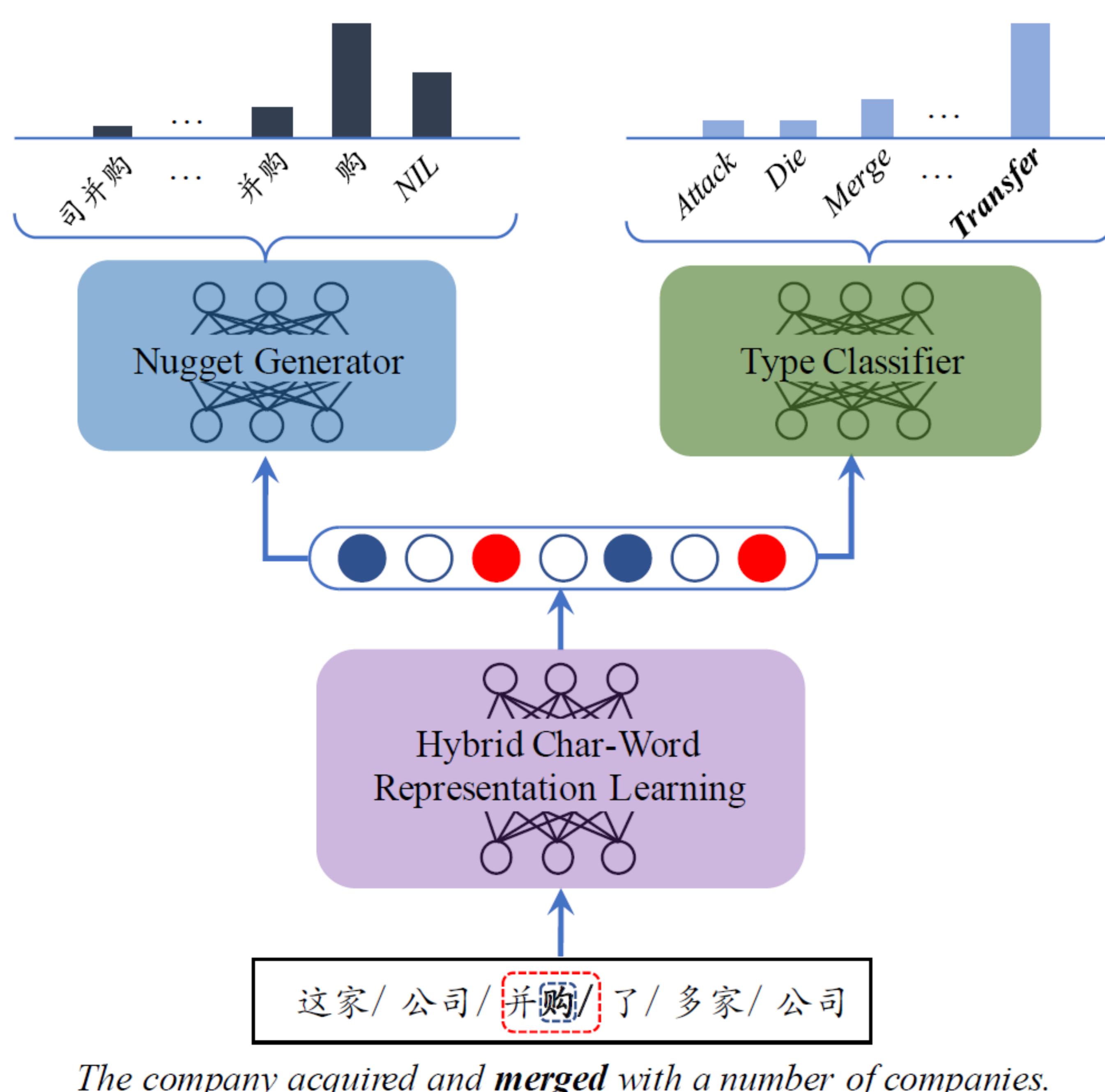
Motivation

- Deep Learning methods have shown significant progress in event detection
- The SOTA models transform event detection into a word-wise classification task
- Suffer from word-trigger mismatch in languages without natural word delimiters



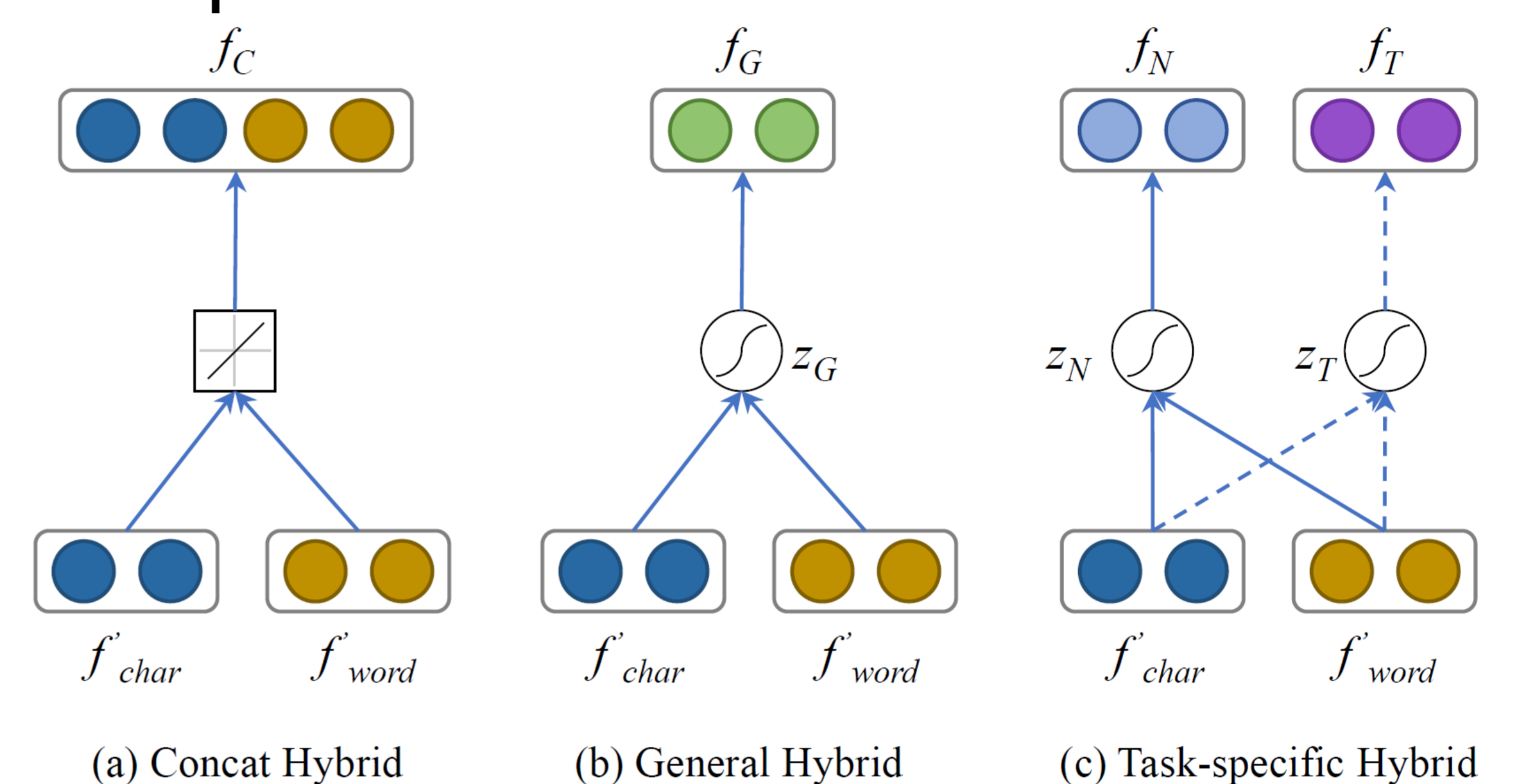
Nugget Proposal Networks

- Directly propose entire trigger nuggets at each character regardless of word-boundary
- Modeling and exploiting the compositional structure of triggers in Chinese
- Using a hybrid representation of characters and words



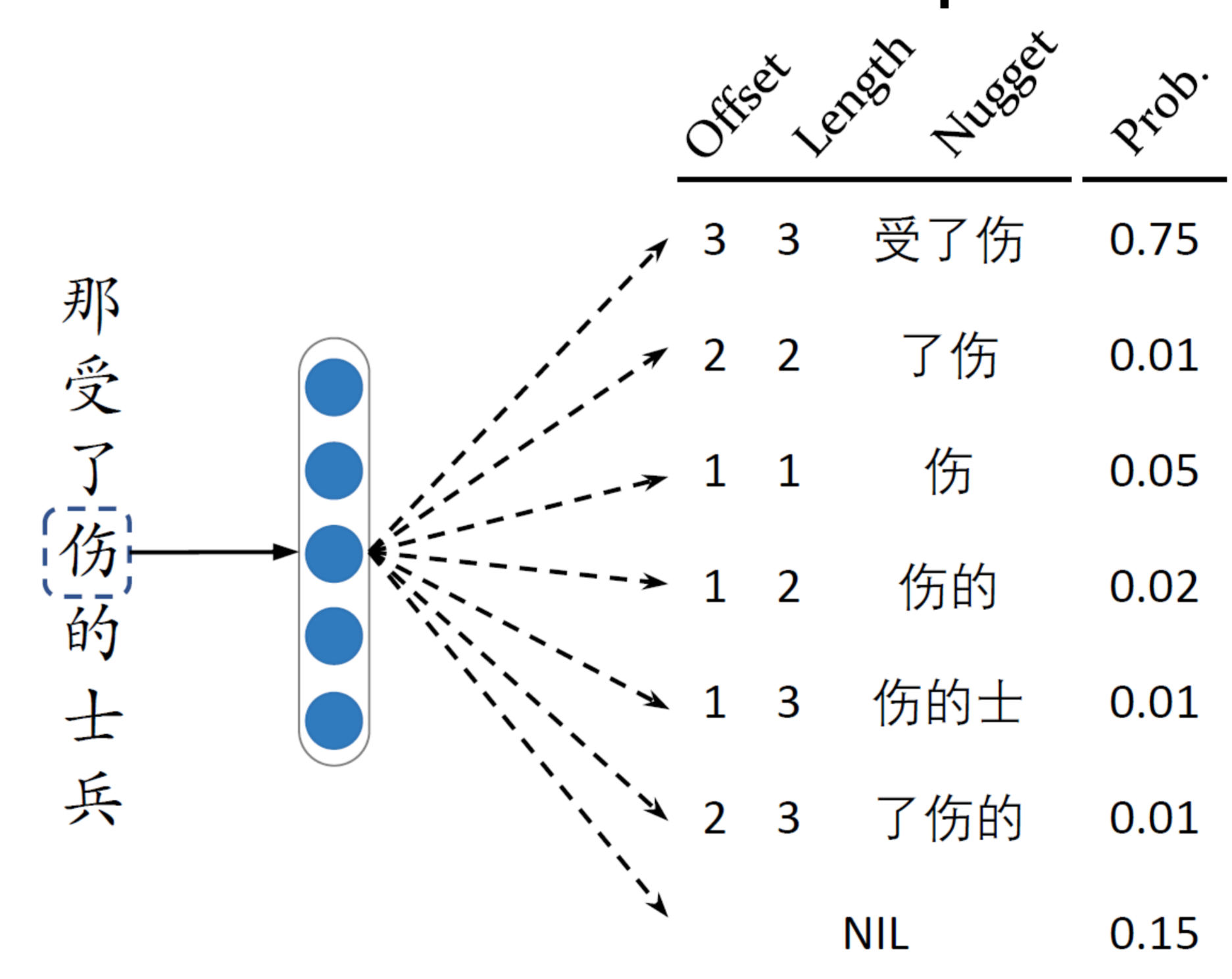
Hybrid Representation Learning

- First learn a character-level and a word-level representation respectively
- Three hybrid methods: Concat, General, Task-specific



Trigger Nugget Generator

- Predict entire trigger nugget at each character
- Using a redundant prediction strategy to deal with conflicts between predictions



Experiments

- Significant improvements on Both ACE2005 and KBP2017 datasets

Model	ACE2005						KBPEval2017					
	Trigger Identification			Trigger Classification			Trigger Identification			Trigger Classification		
	P	R	F1	P	R	F1	P	R	F1	P	R	F1
FBRNN(Char)	61.3	45.6	52.3	57.5	42.8	49.1	57.97	36.92	45.11	51.71	32.94	40.24
DMCNN(Char)	60.1	61.6	60.9	57.1	58.5	57.8	53.67	49.92	51.73	50.03	46.53	48.22
C-BiLSTM*	65.6	66.7	66.1	60.0	60.9	60.4	-	-	-	-	-	-
FBRNN(Word)	64.1	63.7	63.9	59.9	59.6	59.7	65.10	46.86	54.50	60.05	43.22	50.27
DMCNN(Word)	66.6	63.6	65.1	61.6	58.8	60.2	60.43	51.64	55.69	54.81	46.84	50.51
HNN*	74.2	63.1	68.2	77.1	53.1	63.0	-	-	-	-	-	-
Rich-C*	62.2	71.9	66.7	58.9	68.1	63.2	-	-	-	-	-	-
KBP2017 Best*	-	-	-	-	-	-	67.76	45.92	54.74	62.69	42.48	50.64
NPN(Concat)	76.5	59.8	67.1	72.8	56.9	63.9	64.58	50.31	56.56	59.14	46.07	51.80
NPN(General)	71.5	63.2	67.1	67.3	59.6	63.2	63.67	51.32	56.83	57.78	46.58	51.57
NPN(Task-specific)	64.8	73.8	69.0	60.9	69.3	64.8	64.32	53.16	58.21	57.63	47.63	52.15