

Sense-Aware Neural Models for Pun Location in Texts

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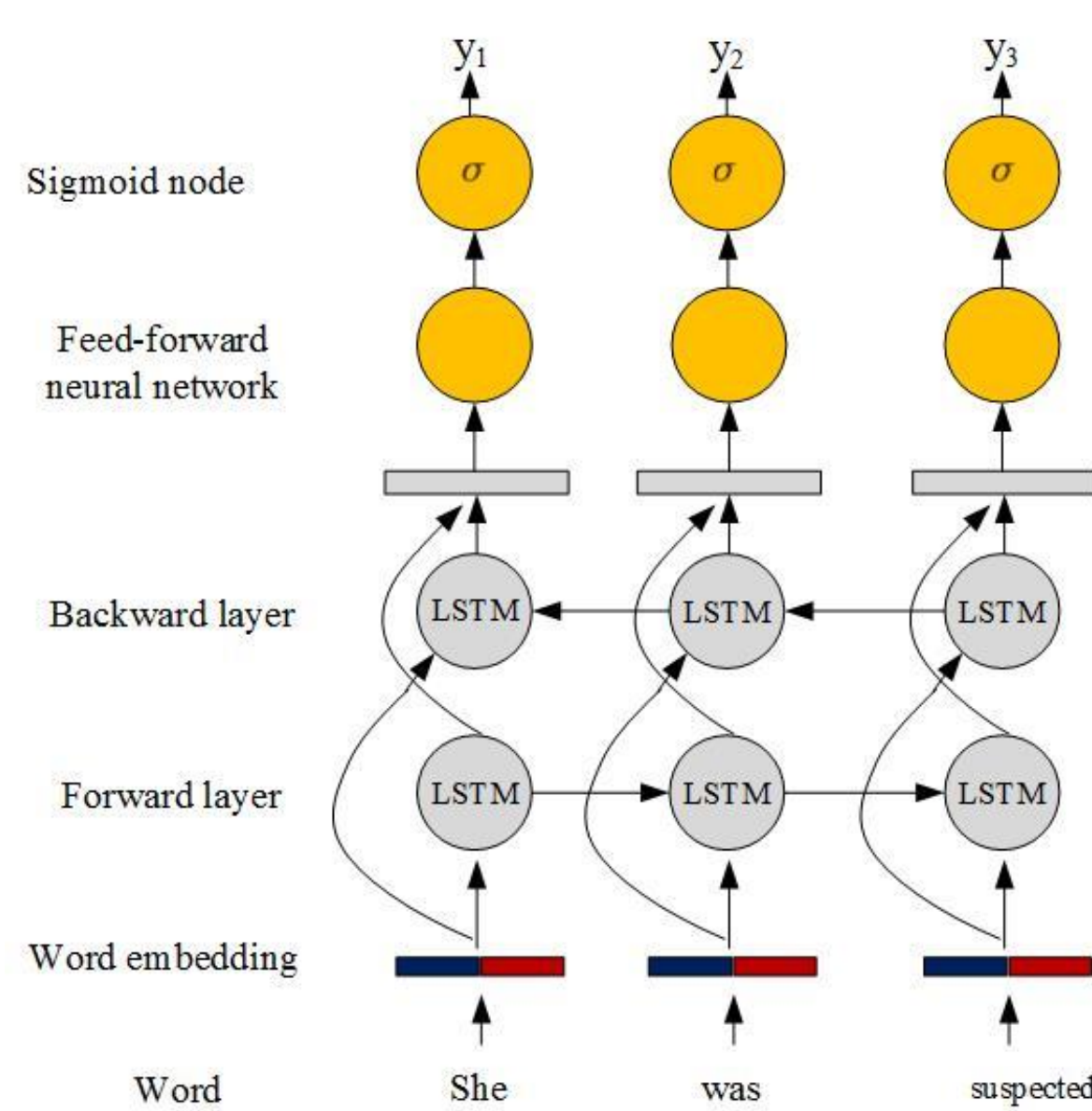


Introduction

- Homographic Pun
 - One word or phrase that can be interpreted as two different meanings
- Pun instance
 - I used to be a banker but I lost interest
 - interest(profit) or interest(devotion)

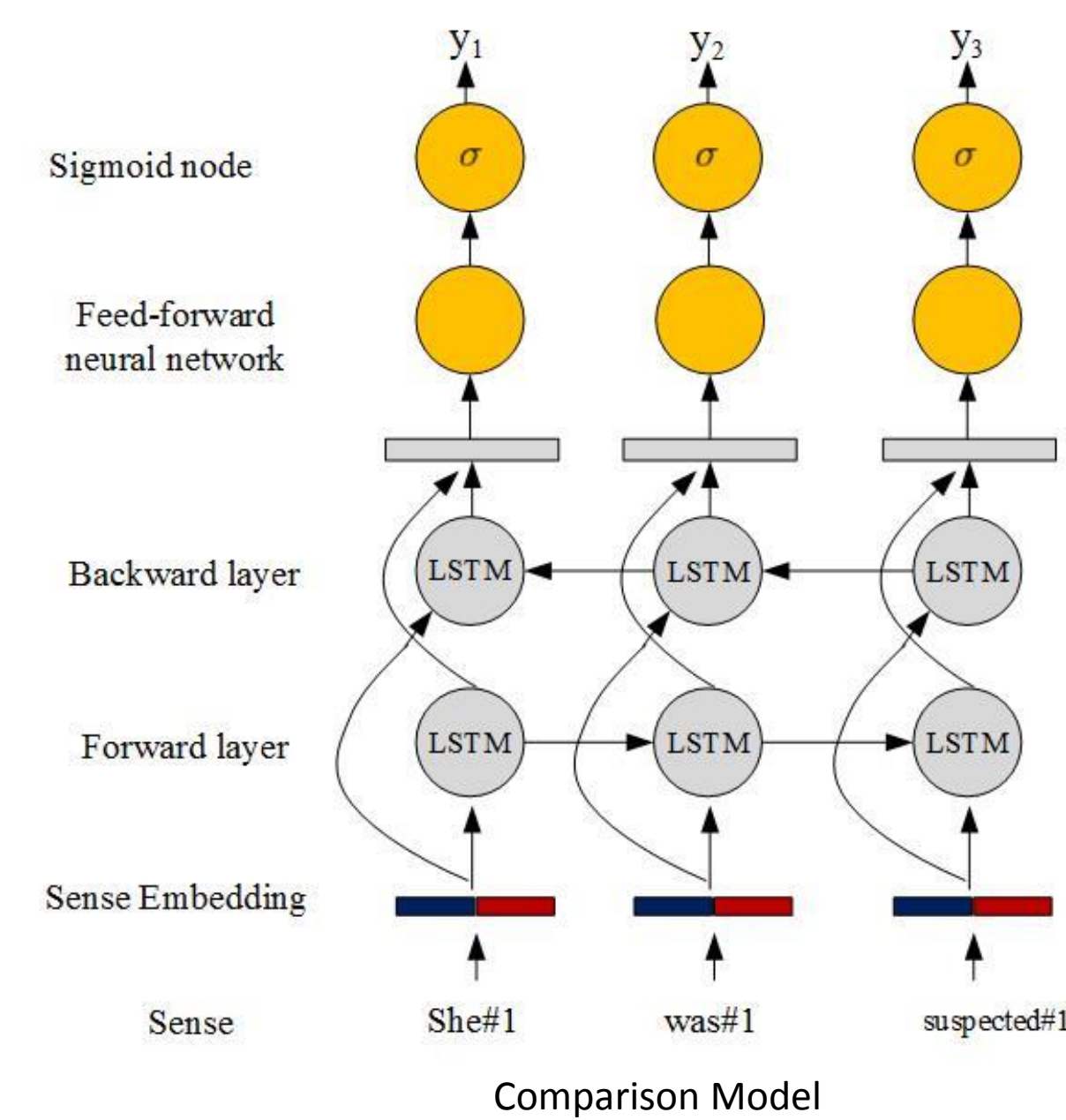
Baseline Model (BM)

- Words belong to n. v. adj. adv. are sent to a two-layer feed-forward neural network
- Pun word prediction
 - $\text{argmax}(y_i)$ and $y_i > 0.5$



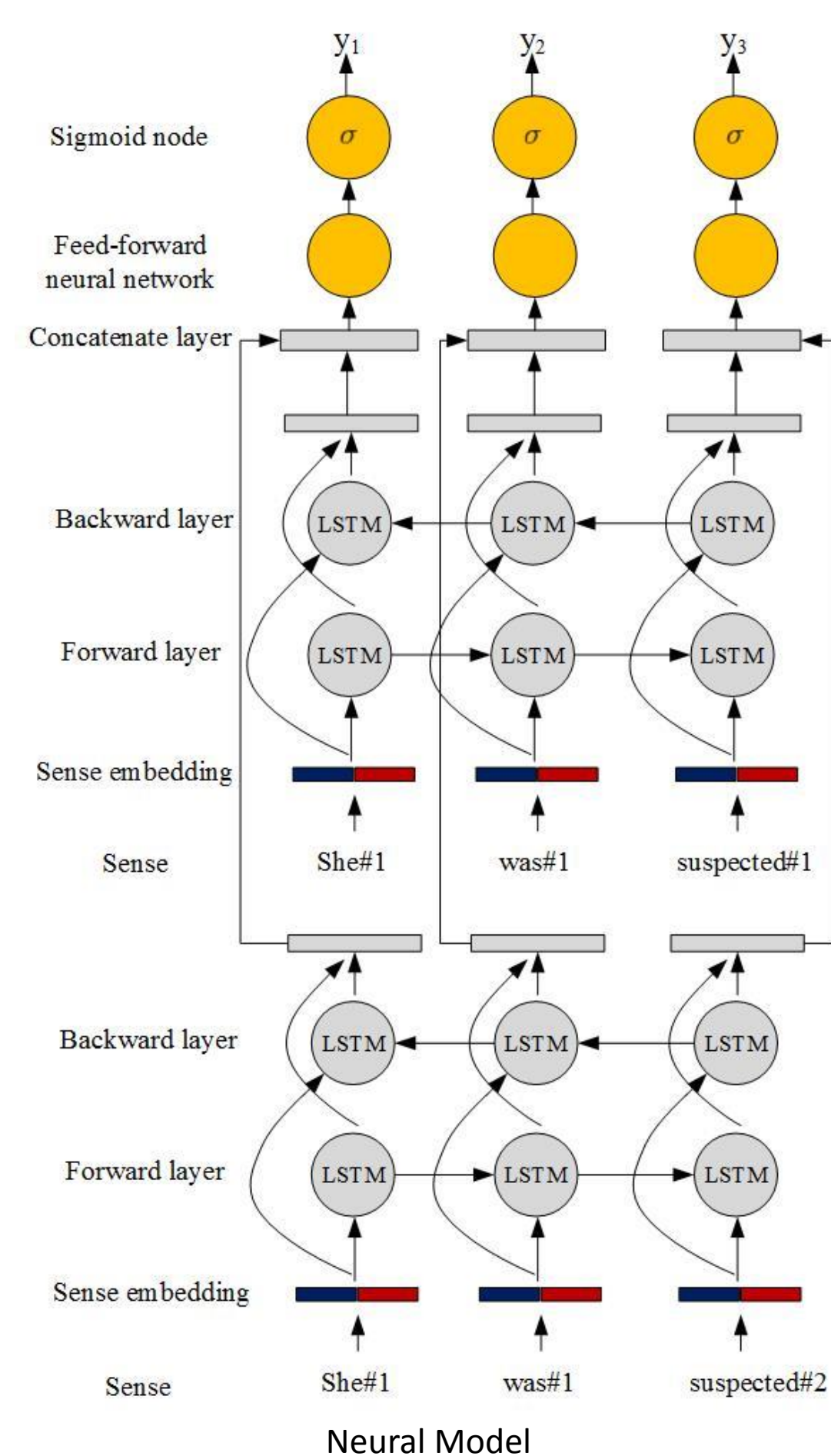
➤ Comparison Model (CM)

- Use sense embedding and WSD results instead of word embedding and context
- Do not concatenate different neural model with different WSD results



Sense-Aware Neural Model (SAM)

- Sense Embedding and WSD
 - Sense Embedding and WSD results obtained by SenseGram (Pelevina et al. 2016)
 - Four WSD results based on different settings and different WSD methods are applied
- Neural Model
 - Replace word embedding and context by sense embedding and WSD results
 - Concatenate different neural model with different WSD results at each time step



Results

Method	Precision	Recall	F-score
SVM	0.717	0.717	0.717
CRF	0.759	0.759	0.759
BM	0.751	0.617	0.677
CM *	0.754	0.745	0.750
SAM *	0.815	0.747	0.780
Idiom Servant **	0.664	0.664	0.664

* There are many different model trained with different combination of WSD results. The performance here are the top performance of each model.

** The best system of SemEval 2017 task 7 subtask 2.

- Our proposed SAM model with different groups of WSD results can improve the performance, because different WSD results may provide complementary information for pun location.

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