

SentiBERT:

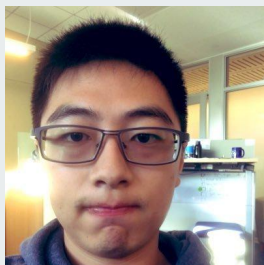
A Transferable Transformer-based Architecture for Compositional Sentiment Semantics



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¹*Peking University*

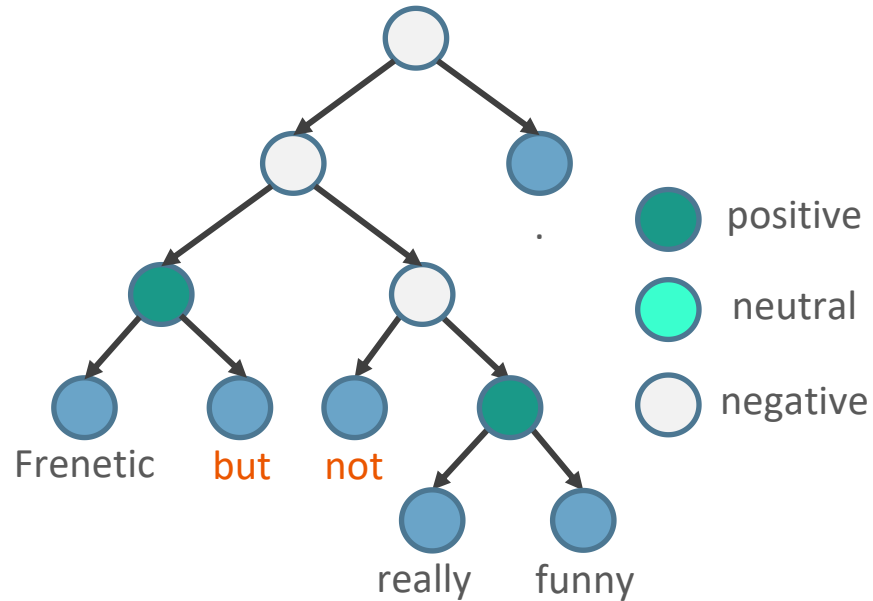
²*University of California, Los Angeles*



Motivation



- Sentiment composition is challenging.

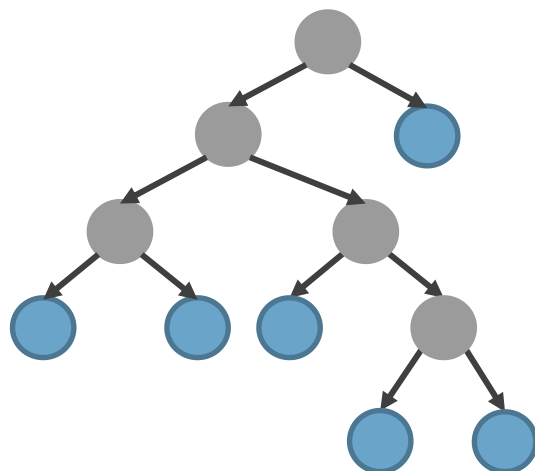


Frenetic but not really funny.

Motivation



- How to encode sentiment composition in a contextual encoder?
- Can semantic composition learned from SST transfer to related tasks?



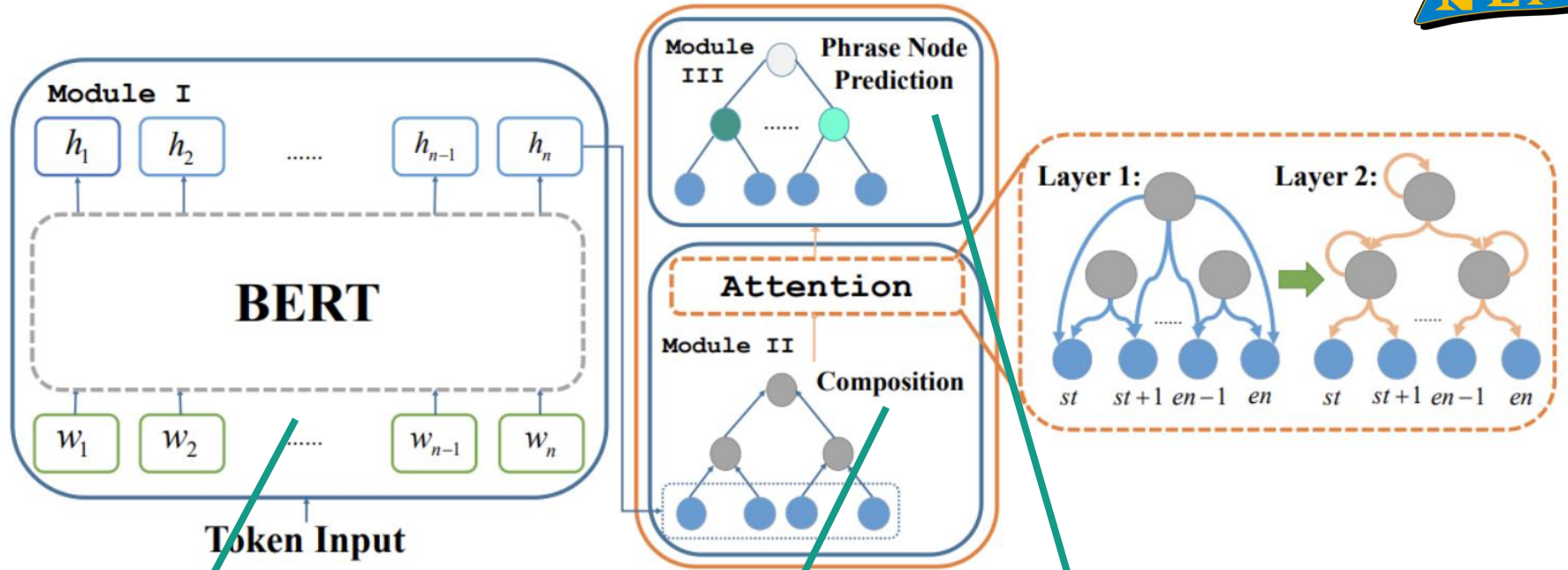
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Better capture
sentiment composition

Model



BERT

**Sentiment
Semantics
Composition**

**Phrase Node
Prediction**

Model

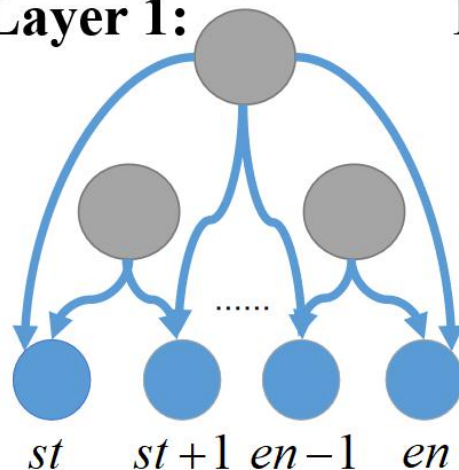


BERT

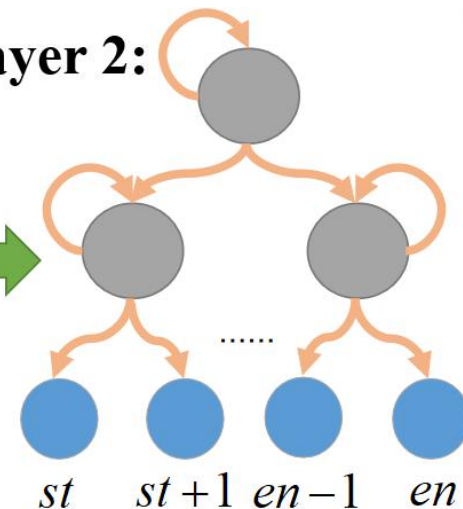
**Sentiment
Semantics
Composition**

**Phrase Node
Prediction**

Layer 1:

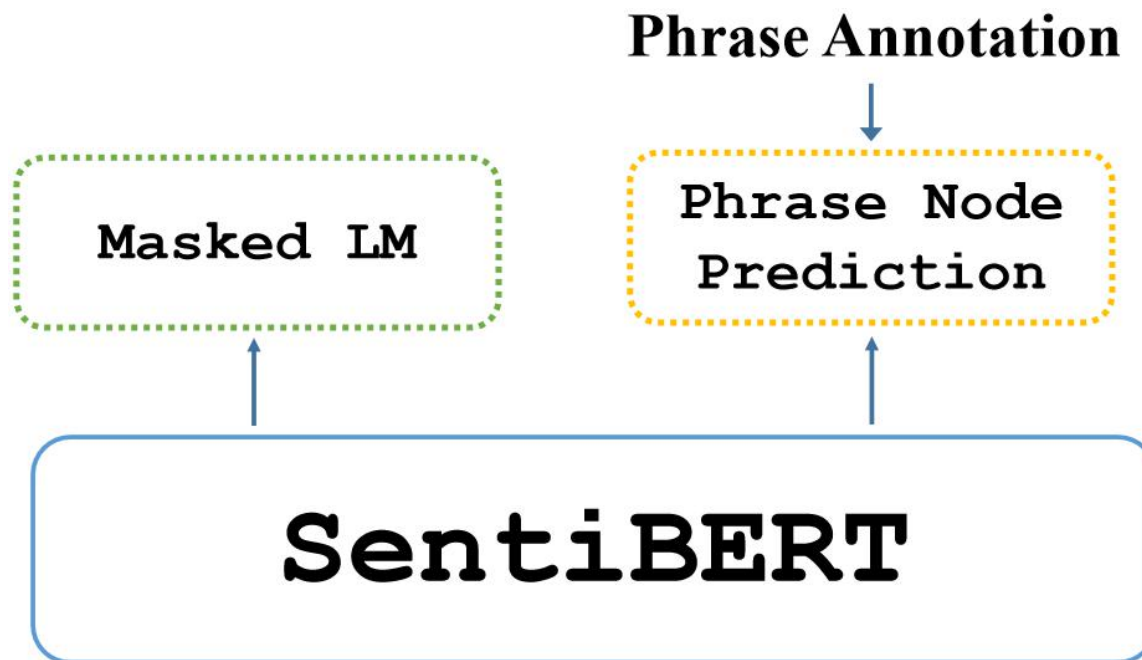
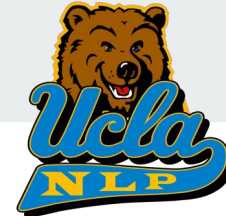


Layer 2:



- Layer 1: Attention to Tokens
- Layer 2: Attention to Children

Training Objectives



Experiments



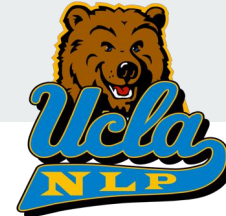
- Tasks:

- SST-phrase
- SST-5
- SST-2, SST-3
- Twitter Sentiment Analysis
- Contextual Emotion Detection (EmoContext)
- Emotion Intensity Classification (EmoInt)

} Evaluated under supervised learning protocol

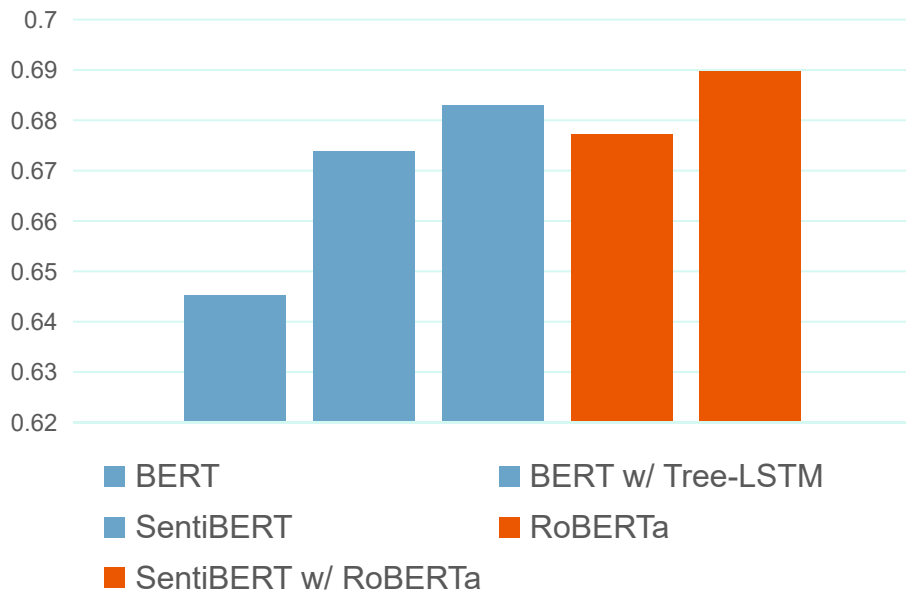
} Test transferability

Experiments

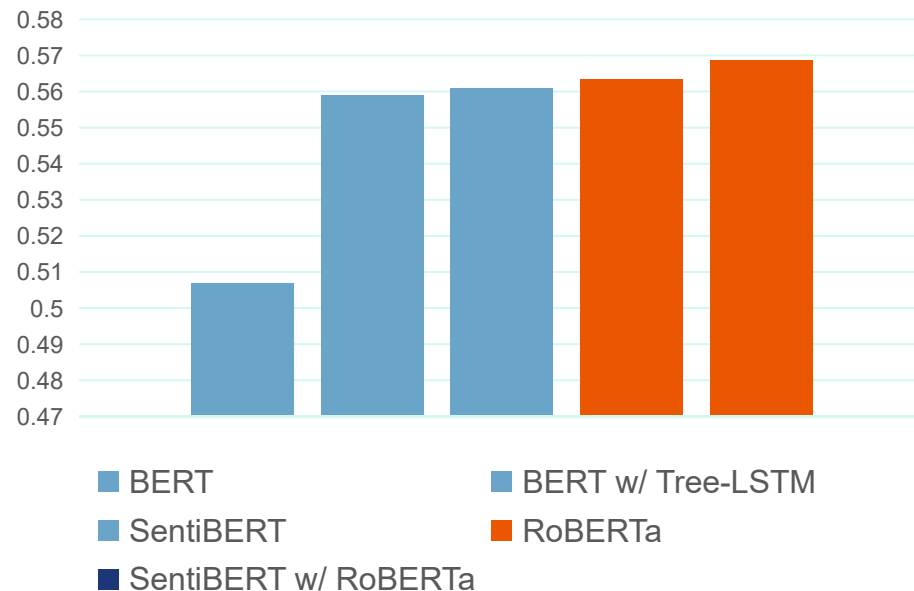


- Results:
 - For sentiment semantic composition:

SST-phrase (Accuracy)

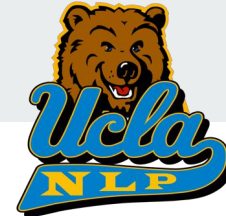


SST-5 (Accuracy)



More results and discussion are in the paper

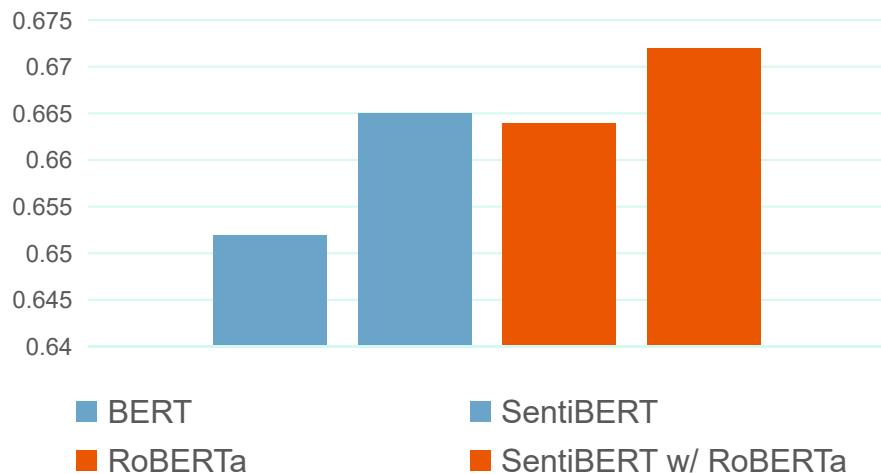
Experiments



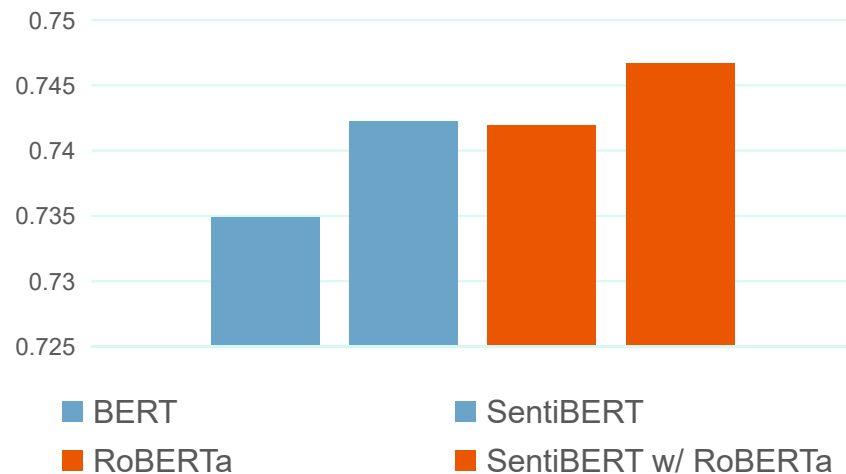
- Results:

- For transferability:

EmoInt (Pearson Correlation)

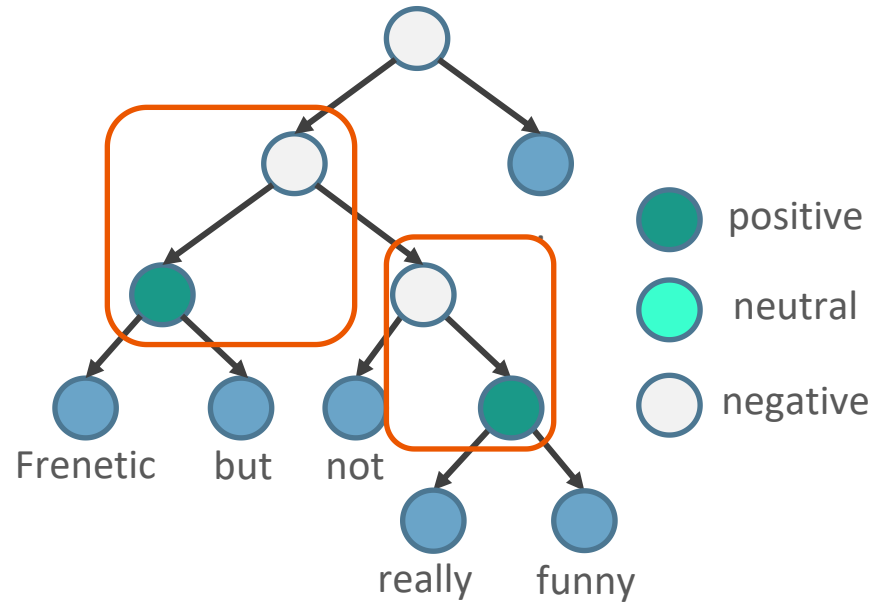


EmoContext (F1)



More results and discussion are in the paper

Analysis -- Performance v.s. Sentiment Switch

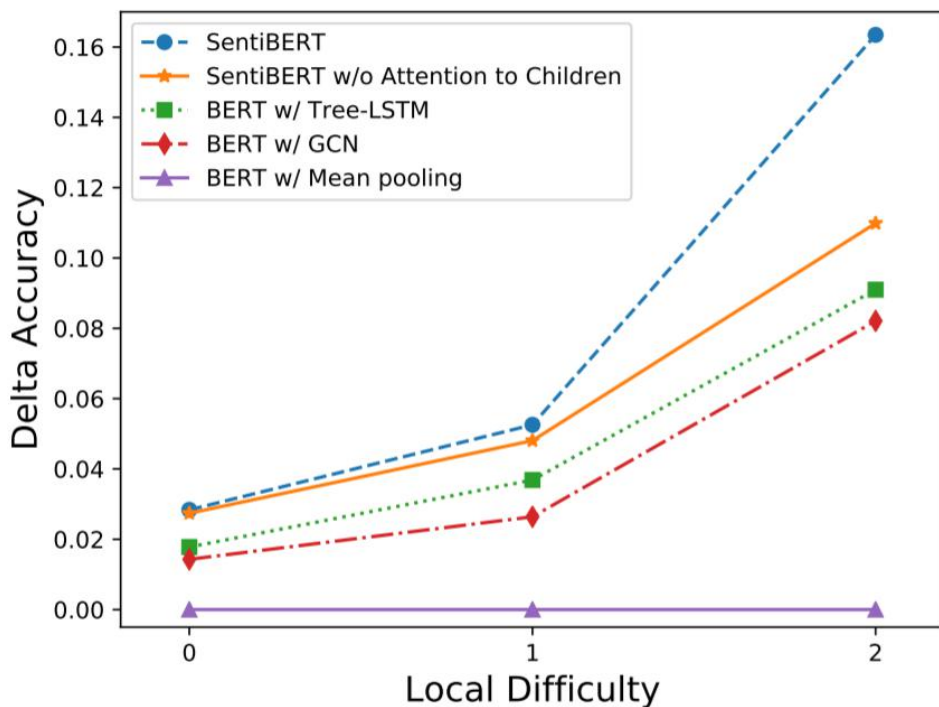


- **Local difficulty:** the number of sentiment switches between a phrase and its children
- **Global difficulty:** the number of sentiment switches in the entire constituency tree

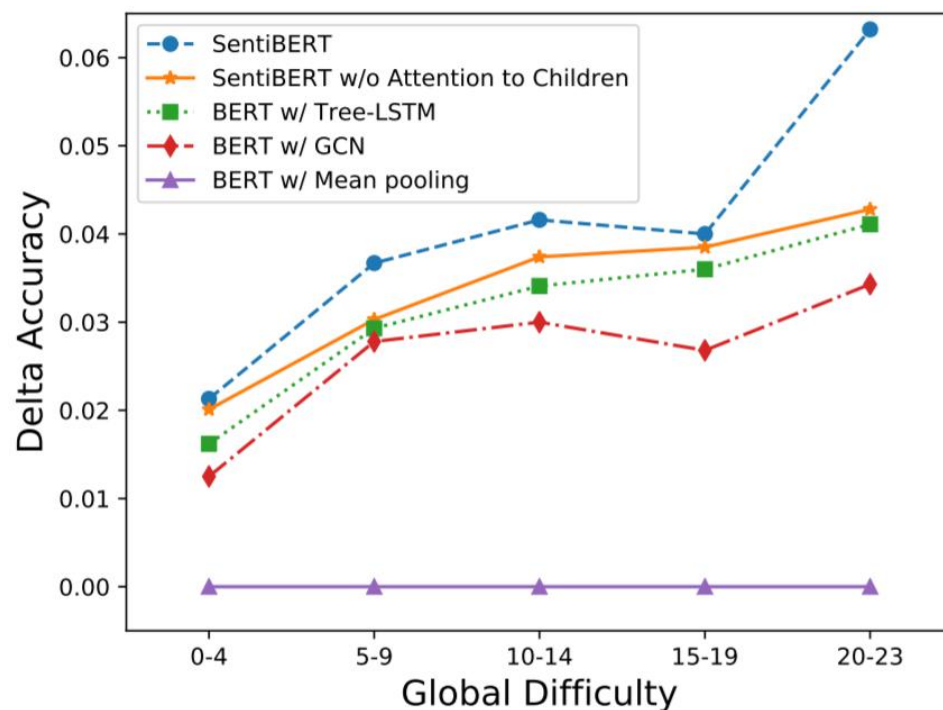
Analysis



- Results:



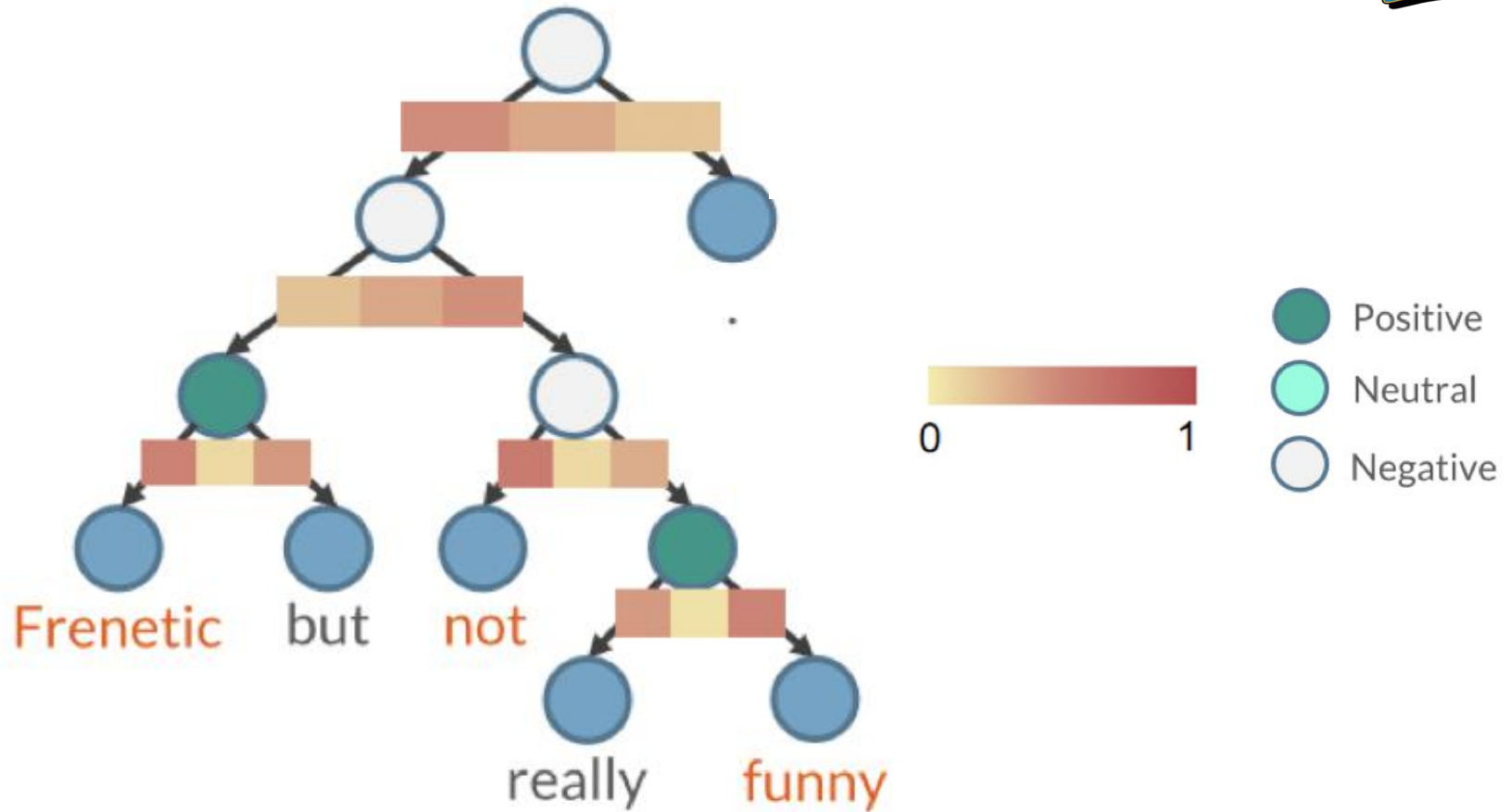
Local Difficulty



Global Difficulty

More results and discussion are in the paper

Case Study



More examples are in the paper

Conclusion



- We present SentiBERT to better capture compositional sentiment semantics
- SentiBERT can transfer the compositional sentiment semantics learned on SST to other related tasks

Thanks!

GitHub: <https://github.com/WadeYin9712/SentiBERT>