

TMUNLP at the NTCIR-15 FinNum-2

Yu-Chi Liang, Yi-Hsuan Huang, Yu-Ya Cheng, Yung-Chun Chang

Taipei Medical University, Taiwan



Teammate Introduction



Yu-Chi Liang

Graduate Institute of Data Science
Taipei Medical University, Taiwan
m946108001@tmu.edu.tw



Yi-Hsuan Huang

Graduate Institute of Data Science
Taipei Medical University, Taiwan
m946108002@tmu.edu.tw



Yu-Ya Cheng

Graduate Institute of Data Science
Taipei Medical University, Taiwan
i906108009@tmu.edu.tw



Yung-Chun Chang

Graduate Institute of Data Science
Taipei Medical University, Taiwan
changyc@tmu.edu.tw

Outline

A

Task Introduction

B

Methodology

C

Results

D

Discussion

E

Conclusion

Task Introduction



FinNum-2

FinNum is a task for fine-grained numeral understanding in financial social media data.



Task Definition

Given a target numeral and a cashtag, and we formulate the problem as a binary classification to tell if the given numeral is related to the given cashtag.



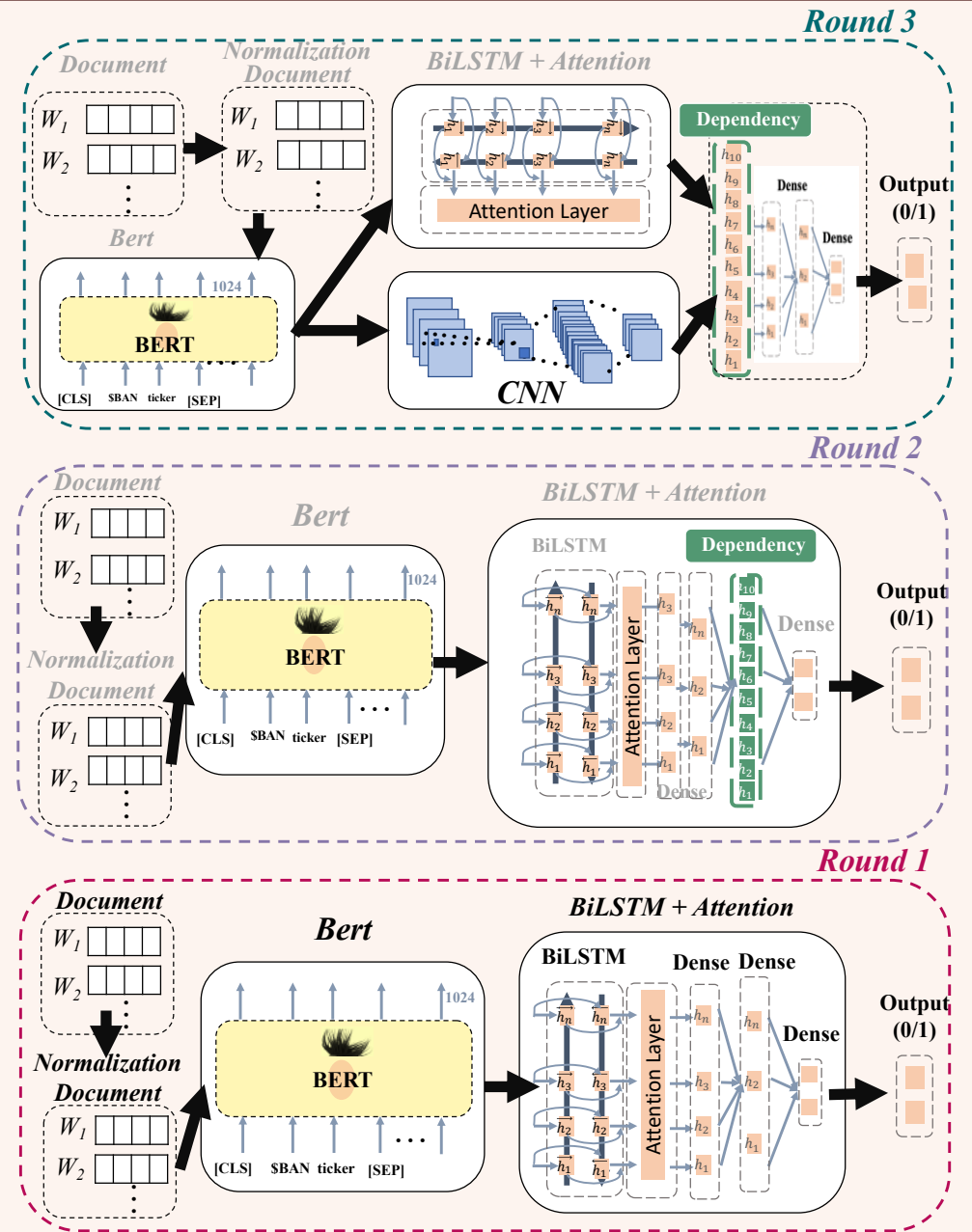
Datasets

Total: 10340
Training: 7187 (70%)
Development: 1044 (10%)
Testing: 2109 (20%)

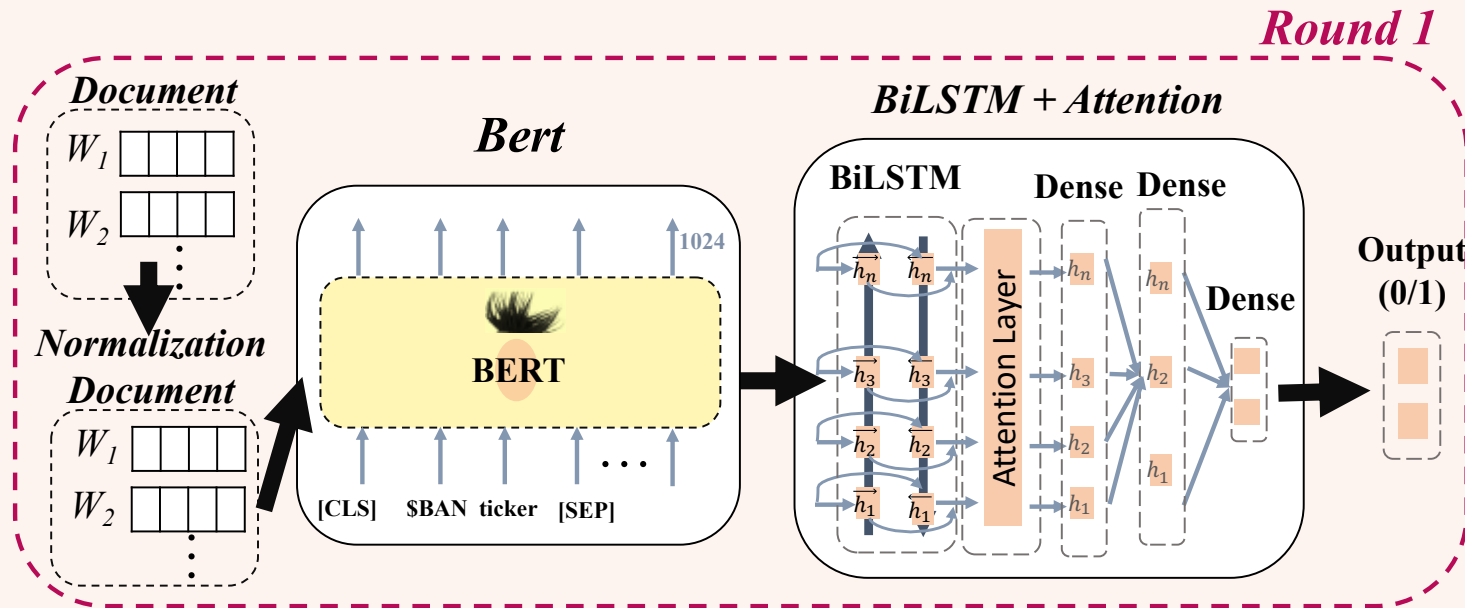
Methodology

Normalization

- 1) Replace the cashtag, target number and URLs in the tweet with "TICKER", "NUM" and "URL", respectively.
- 2) Remove the emoji in the tweet.

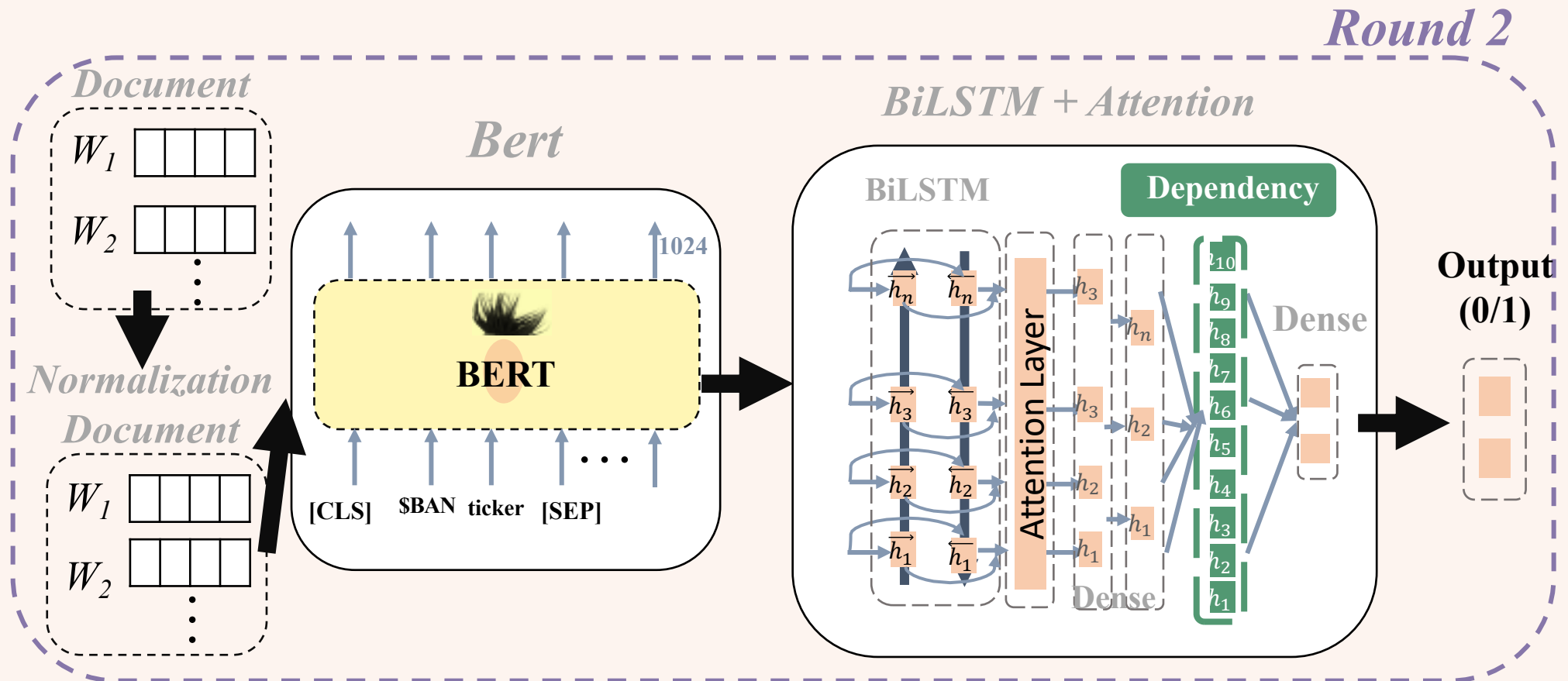


Round 1: BERT-BiLSTM with Attention Mechanism



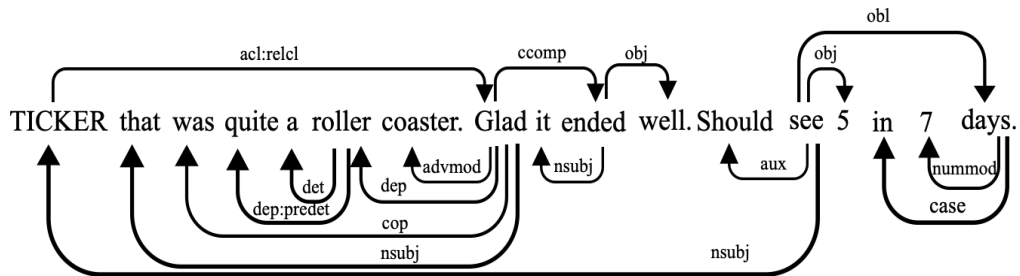
- 1) We use the BERT-Large Uncased model. Through this model, we can convert the preprocessed financial tweets into 1024-dimensional vectors.
- 2) In this round, the BERT embedding outputs are sent to the BiLSTM layer and then connected to the Attention layer.

Round 2: Dependency Grammars-infused BERT-BiLSTM with Attention Mechanism



Round 2: Dependency Grammars-infused BERT-BiLSTM with Attention Mechanism

Example



"TICKER that was quite a roller coaster. Glad it ended well.
I. Should see 5 in 7 days."



"TICKER see 5."

A Shortest Dependency Paths (SDP)

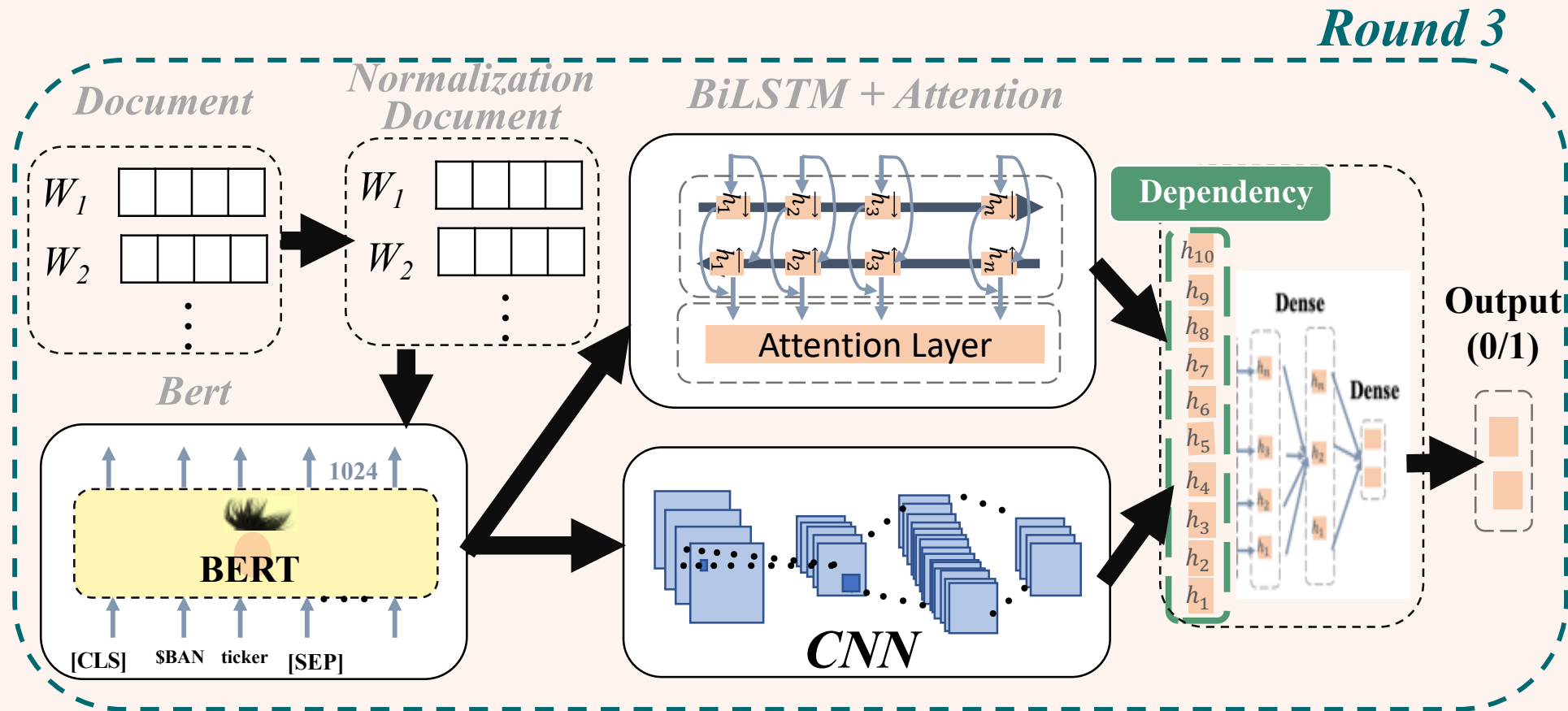
- **Dependency**

Dependency parser analyzes the relationship between each word in a sentence.

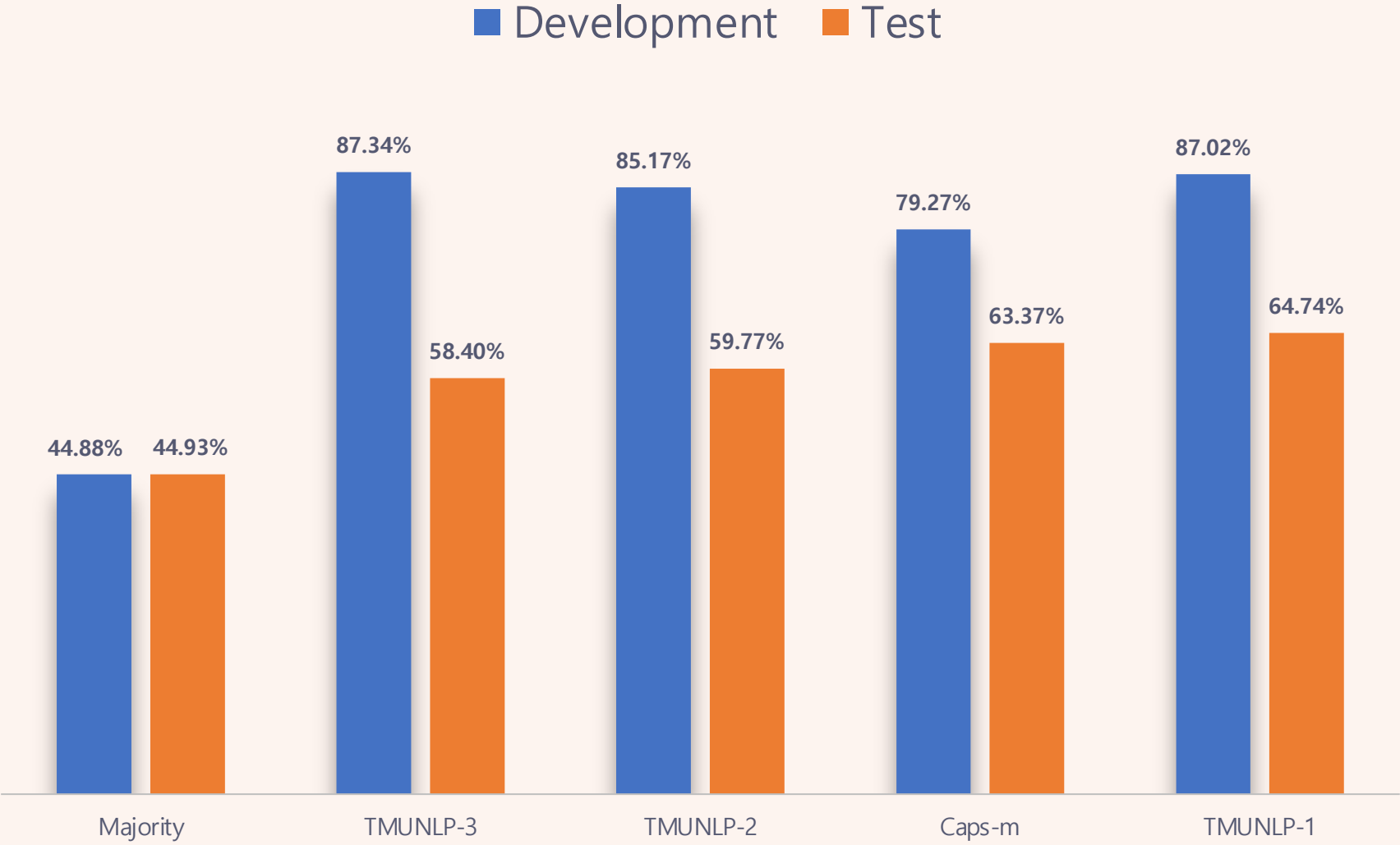
- **Shortest paths**

There are total of 19 relationships in all the shortest paths. Using these relationships, we can convert the shortest path into a 10-dimensional vector called the Dependency matrix.

Round 3: Dependency Grammars-infused BERT-CNN-BiLSTM with Attention Mechanism



Results



Discussion

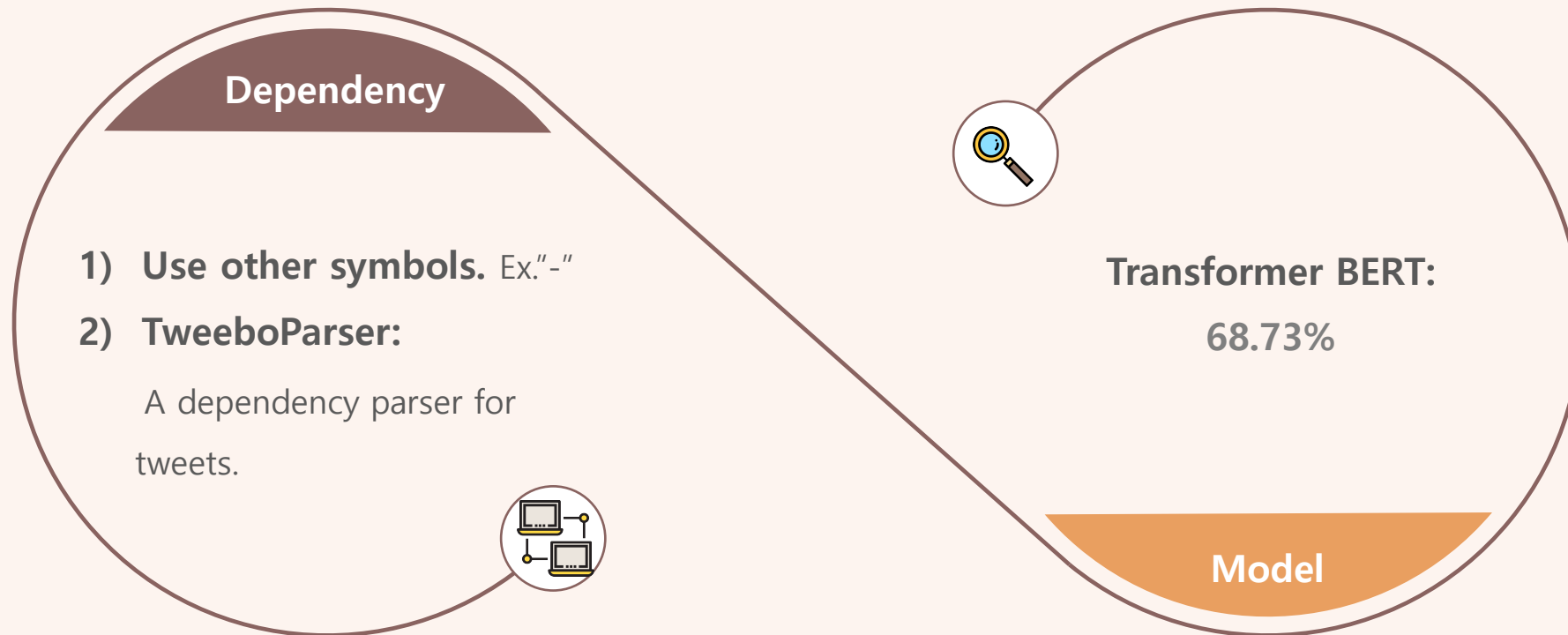
Large difference

There is a large difference between the performances of each of our models in predicting the development set and the test set.

The result is contrary to expectations

In our expectation, the performance of round3 (TMUNLP-3) should be the best, followed by round2 (TMUNLP-2) and finally round1 (TMUNLP -1). It is surprising to see that the final result is contrary to what we have expected.

Conclusion



Thank you ! 

