WUST at NTCIR-16 FinNum-3 Task

Yuxuan Liu, Maofu Liu, Mengjie Wu

Wuhan University of Science and Technology

liumaofu@wust.edu.cn

Contents

1. **Introduction**

2. **Models**

3. **Experiments**
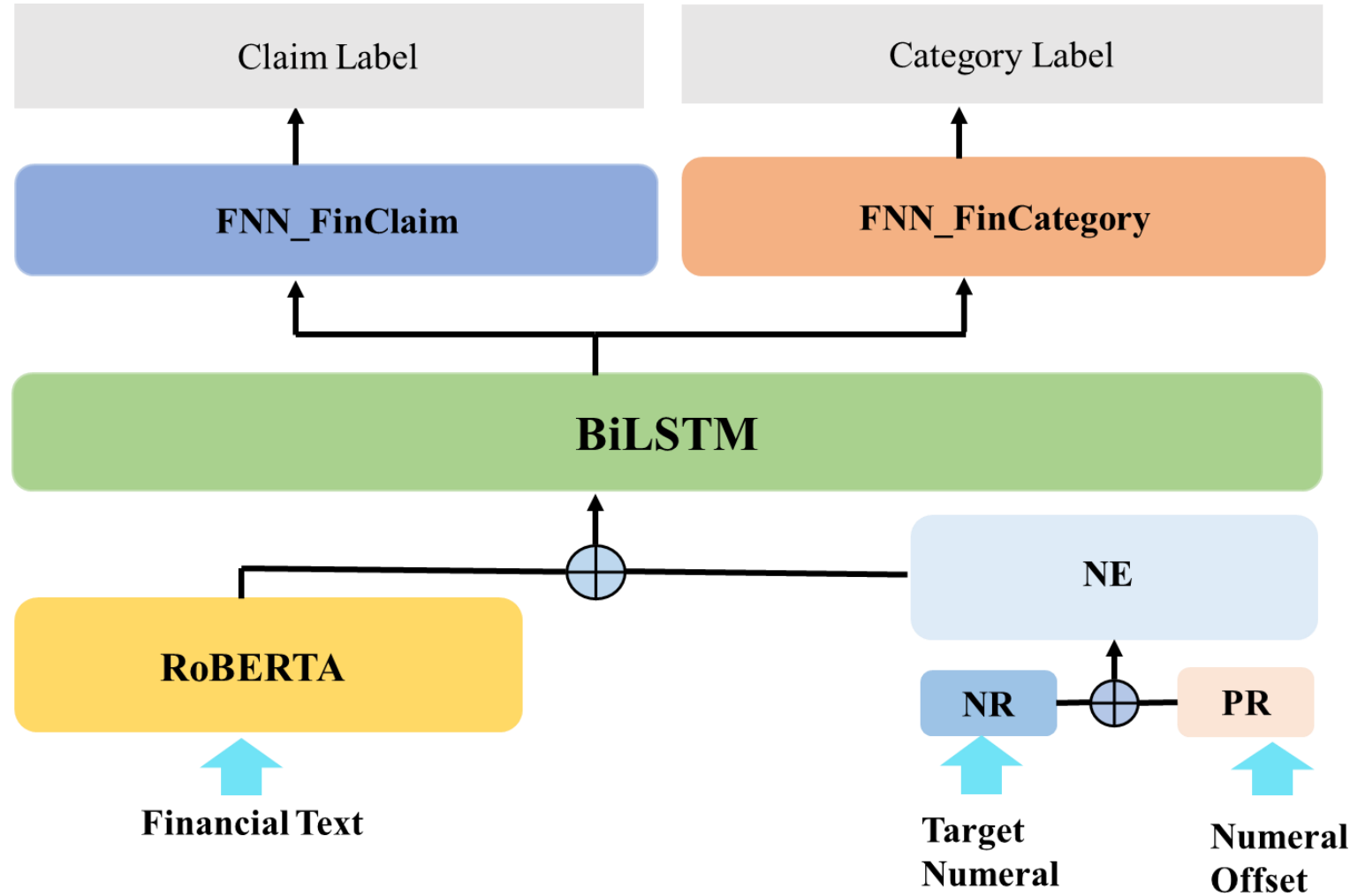
4. **Conclusions**

1. Introduction

Numeral-related information in financial text is the focus. Argument mining is a popular study direction in natural language processing.

In the FinNum-3, the novel task called NumClaim is introduced to detect whether the target numeral is in claim or not. Our team regards this task as a text classification problem.

Main task: claim detection
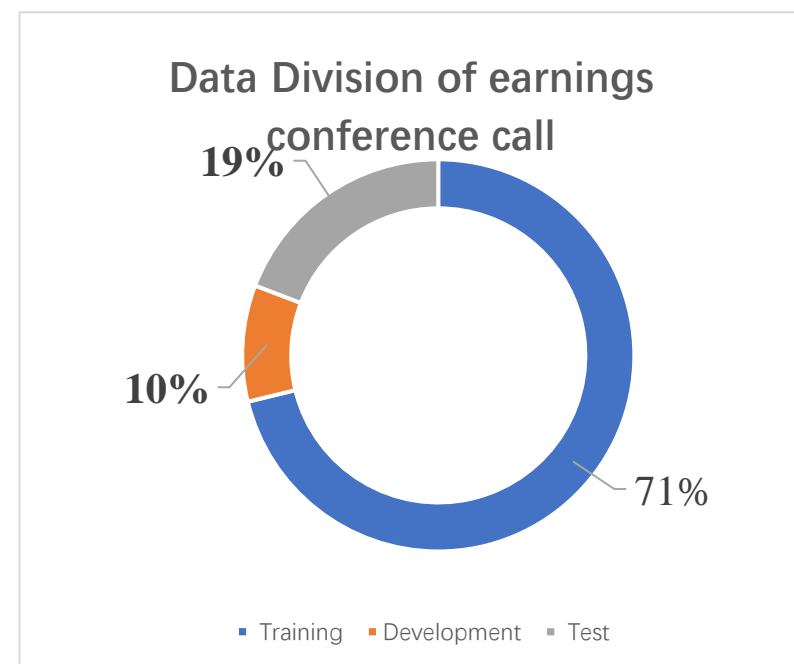**Auxiliary task:** numeral category classification
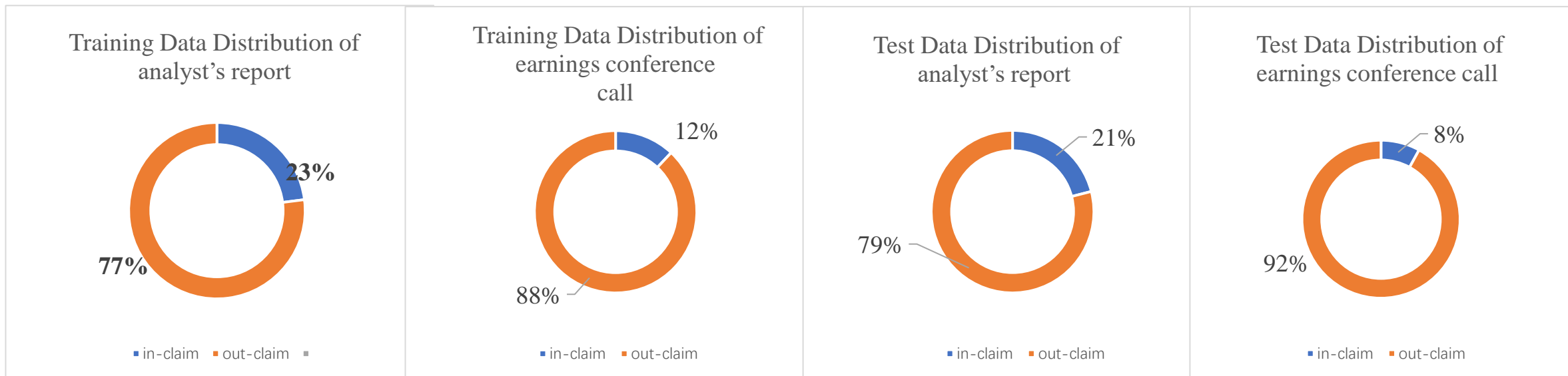
We used the NumClaim datasets which are analyst's report in Chinese and earnings conference call in English proposed by NTCIR-16.

Data Division of analyst's report

48%   43%

9%

■ Training ■ Development ■ Test

Data Division of earnings conference call

19%

10%

71%

■ Training ■ Development ■ Test

Training Data Distribution of analyst's report — in-claim 23%, out-claim 77%

Training Data Distribution of earnings conference call — in-claim 12%, out-claim 88%

Test Data Distribution of analyst's report — in-claim 21%, out-claim 79%

Test Data Distribution of earnings conference call — in-claim 8%, out-claim 92%
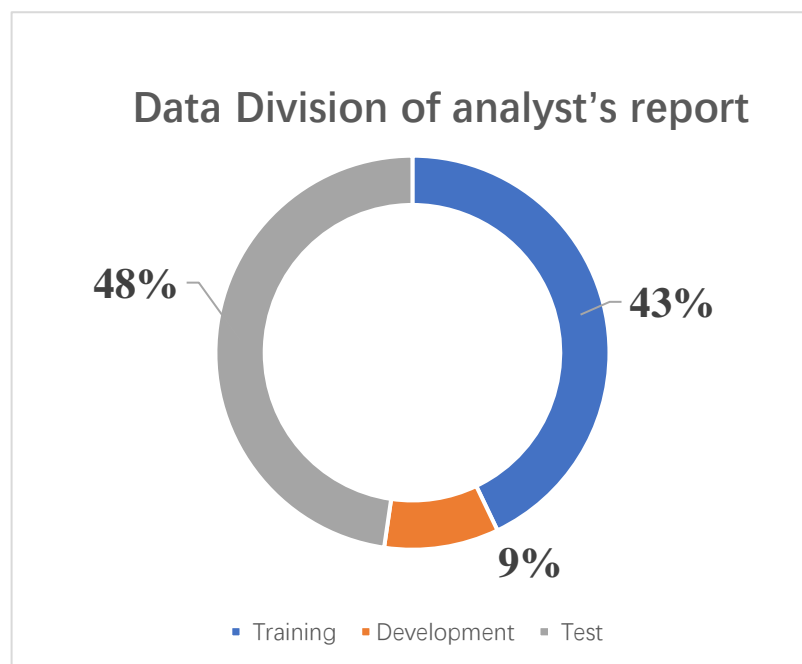
The data distribution of the two tasks is uneven.

We use Adam as the optimizer, and the learning rate is set to 0.0001, the batch size is set to 64. According to official evaluation criteria, we use the micro-F1 and macro-F1 score to evaluate the experimental results.

3. Experiments

Table 1 and Table 2 show the results of the two data sets respectively. Our results are WUST_ 1.

Table 1: Experimental results on analyst's report.

Submission	Claim Detection		Numeral Category	
	Micro-F1	Macro-F1	Micro-F1	Macro_F1
CapsNet	80.32%	69.9%	62.59%	20.99%
WUST_1	**84.89%**	**75.70%**	**56.13%**	**17.35%**
CYUT_2	91.73%	86.76%	-	-
TMUNLP_2	91.11%	87.76%	94.03%	72.99%
CYUT_3	92.16%	88.20%	-	-
CYUT_1	92.11%	88.80%	-	-
TMUNLP_1	92.82%	89.56%	94.31%	73.68%
TMUNLP_3	92.75%	89.68%	94.67%	73.89%
IMNTPU_2	94.14%	91.64%	-	-
IMNTPU_3	95.20%	92.91%	-	-
IMNTPU_1	95.31%	93.18%	-	-

Table 2: Experimental results on earnings conference call.

Submission	Claim Detection		Numeral Category	
	Micro-F1	Macro-F1	Micro-F1	Macro-F1
CapsNet	89.97%	56.36%	49.64%	26.50%
BERFIN_2	85.10%	68.26%	-	-
WUST_1	**93.37%**	**71.72%**	**48.76%**	**24.02%**
BERFIN_1	94.67%	80.26%	-	-
LIPI_2	95.17%	81.33%	-	-
LIPI_1	95.09%	82.82%	-	-
LIPI_3	95.59%	84.73%	-	-
CYUT_1	94.67%	85.53%	-	-
Passau21_1	96.01%	87.12%	-	-
CYUT_2	95.64%	87.49%	-	-
CYUT_3	96.43%	87.88%	-	-
IMNTPU_1	96.18%	88.39%	-	-
JRIRD_2	96.73%	89.55%	89.76%	72.84%
IMNTPU_2	96.73%	89.86%	-	-
JRIRD_1	97.15%	90.80%	89.68%	72.94%
JRIRD_3	97.27%	91.03%	89.26%	69.11%

4. Conclusions

- We employ the **BiLSTM architecture** to detect if the target numeral is in or not in claim with **multi-task learning** of the **target numeral category classification**.

- We proposed a certain representation method which can be realized by neural networks to represent the target numeral information.

- Regretfully, since we do not adopt methods or measures to handle the problem of **uneven data distribution**, our results are not good and have a big gap between Macro-F1 score and Micro-F1 score.

- The experimental results show that our model could understand the task through **the learning of context semantics**.

Thanks for your participation!

Q&A

liumaofu@wust.edu.cn