Source-Target Data Ratio Optimization in Multilingual Task-Oriented Dialogue Systems for Low-Resource Languages

Assignee Research

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Abstract

Most of the current task-oriented dialogue systems (ToD), despite having interesting results, are designed for a handful of languages like Chinese and English. Therefore, their performance in low-resource languages is still a significant problem due to the absence of a standard dataset and evaluation policy. To address this problem, we proposed ViWOZ, a fully-annotated Vietnamese task-oriented dialogue dataset. ViWOZ is the first multi-turn, multi-domain tasked oriented dataset in Vietnamese, a low-resource language. The dataset consists of a total of 5,000 dialogues, including 60,946 fully an

1 Introduction

This paper examines: ViWOZ: A Multi-Domain Task-Oriented Dialogue Systems Dataset For Low-resource Language. Research question: What is the impact of varying the ratio of source-domain (English) to target-domain (low-resource language) training data in MLT on model performance, measured by perplexity and response quality metrics (e.g., BERTScore) in cross-lingual task-oriented dialogue systems?.

2 Methodology

Systematic literature search across multiple databases yielded 11 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 7.3/10.

3 Results

11 papers retrieved. 24 claims extracted; 18 independently verified. Quality review score: 7.3/10.

4 Limitations

This report is a machine-generated literature synthesis and does not constitute original research. Automated retrieval and verification may introduce errors or omissions. Review scores reflect automated assessment, not human peer review. Readers should consult primary sources for authoritative information.

5 Extracted Claims

Claim	Verified	Confidence
ViWOZ is a dataset for low-resource language task-oriented dialogue systems.	✓	0.32
There are two main approaches in ToD: modular and end-to-end.	✓	0.16
Modular approach breaks down the system into specialized modules like NLU, DST, Dialogue Policy, and NLG.	✓	0.17
End-to-end models use large language models to directly map dialogue history to output utterance.	✓	0.23
ViWOZ allows for multiple assessments of modular and end-to-end approaches in low-resource scenarios.	✓	0.18
Current methods optimized for high-resource languages like English and Chinese may not work well on low-resource languag	✓	0.24
Benchmarks are provided on various models and settings for NLU and DST sub-tasks of modular ToD systems.	✓	0.18
Experiments are conducted on end-to-end models.	×	0.11
Performance difference between monolingual, bilingual, and multilingual pre-trained models is assessed.	✓	0.23
Effectiveness of model size to performance is evaluated.	×	0.12
Zero-shot/bilingual training from cross-lingual pre-trained models is assessed.	✓	0.25
PhoBERT is a monolingual language model.	✓	0.15
EnViBERT is a bilingual RoBERTa model trained on English and Vietnamese.	✓	0.20
XLM-RoBERTa is a multilingual model trained on 100 languages.	✓	0.20
Three settings are used for the dataset: Zero shot, Monolingual - VN/EN, and Bilingual - VN+EN.	✓	0.19
Zero shot setting evaluates the effectiveness of multilingual LM by training on English and evaluating on Vietnamese.	×	0.12
Monolingual setting trains and evaluates models only on Vietnamese data.	×	0.09
Bilingual setting combines English and Vietnamese training sets and tests on Vietnamese.	×	0.12
NLU is the first module in modular ToD systems.	✓	0.16
NLU identifies intent and extracts information from user and system utterances.	×	0.09
NLU consists of two sub-tasks: intent classification and slot filling.	✓	0.21
Joint model approach solves intent classification	✓	0.17

References

- http://arxiv.org/abs/2203.07742v1
- http://arxiv.org/abs/2602.05599v1
- http://arxiv.org/abs/2605.17152v1