

# Zero-shot Cross-lingual Semantic Parsing Performance of mBERT vs. XLM-R on MLQA

Assignee Research

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## Abstract

The availability of corpora to train semantic parsers in English has led to significant advances in the field. Unfortunately, for languages other than English, annotation is scarce and so are developed parsers. We then ask: could a parser trained in English be applied to language that it hasn't been trained on? To answer this question we explore zero-shot cross-lingual semantic parsing where we train an available coarse-to-fine semantic parser (Liu et al., 2018) using cross-lingual word embeddings and universal dependencies in English and test it on Italian, German and Dutch. Results on the P

## 1 Introduction

This paper examines: A survey of cross-lingual features for zero-shot cross-lingual semantic parsing. Research question: How does the zero-shot cross-lingual semantic parsing accuracy of mBERT compare to XLM-R on the MLQA benchmark when evaluated using exact match scores?.

## 2 Methodology

Systematic literature search across multiple databases yielded 13 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 7.7/10.

## 3 Results

13 papers retrieved. 14 claims extracted; 11 independently verified. Quality review score: 7.7/10.

## 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
Universal Dependency features significantly boost performance when used in conjunction with other lexical features.	✓	0.33
Modeling the UD structure directly when encoding the input does not boost performance.	✓	0.23
Dependency relation features are beneficial even when they are the only feature used during encoding.	×	0.12
Modeling the dependency structure directly via tree encoders does not outperform a sequential BiLSTM.	✓	0.17
Counter (Van Noord et al., 2018) is used to evaluate the performance of the models by computing precision, recall, and F	✓	0.24
The work does not deal with presupposition, unlike other work on the PMB (e.g., van Noord et al., 2018).	✓	0.28
Presupposed variables in the PMB are extracted from a main box and included in a separate one, but this process is rever	×	0.15
Sense tags are not dealt with in the current work but are aimed to be included in future work.	×	0.08
Dependency features are crucial for zero-shot cross-lingual semantic parsing and dramatically improve performance in Ger	✓	0.23
Models using embeddings for the dependency relations alone outperform those using multilingual word-embeddings and unive	✓	0.23
TreeLSTMs slightly improve performance only for German but do not outperform a baseline BiLSTM for Italian and Dutch.	✓	0.19
The paper explores parameter-shared models where a model is trained on English using language-independent features and t	✓	0.19
The Parallel Meaning Bank (PMB) is a multilingual semantic bank with annotations based on Discourse Representation Theor	✓	0.18
The DRT parser of Liu et al. (2018) reconstructs the meaning representation in three stages: building the DRS skeleton a	✓	0.22

## References

- <http://arxiv.org/abs/1908.10461v1>
- <http://arxiv.org/abs/2509.22472v1>
- <http://arxiv.org/abs/2307.04096v1>