Benchmarking Entity Linking for Question Answering over Knowledge Graphs

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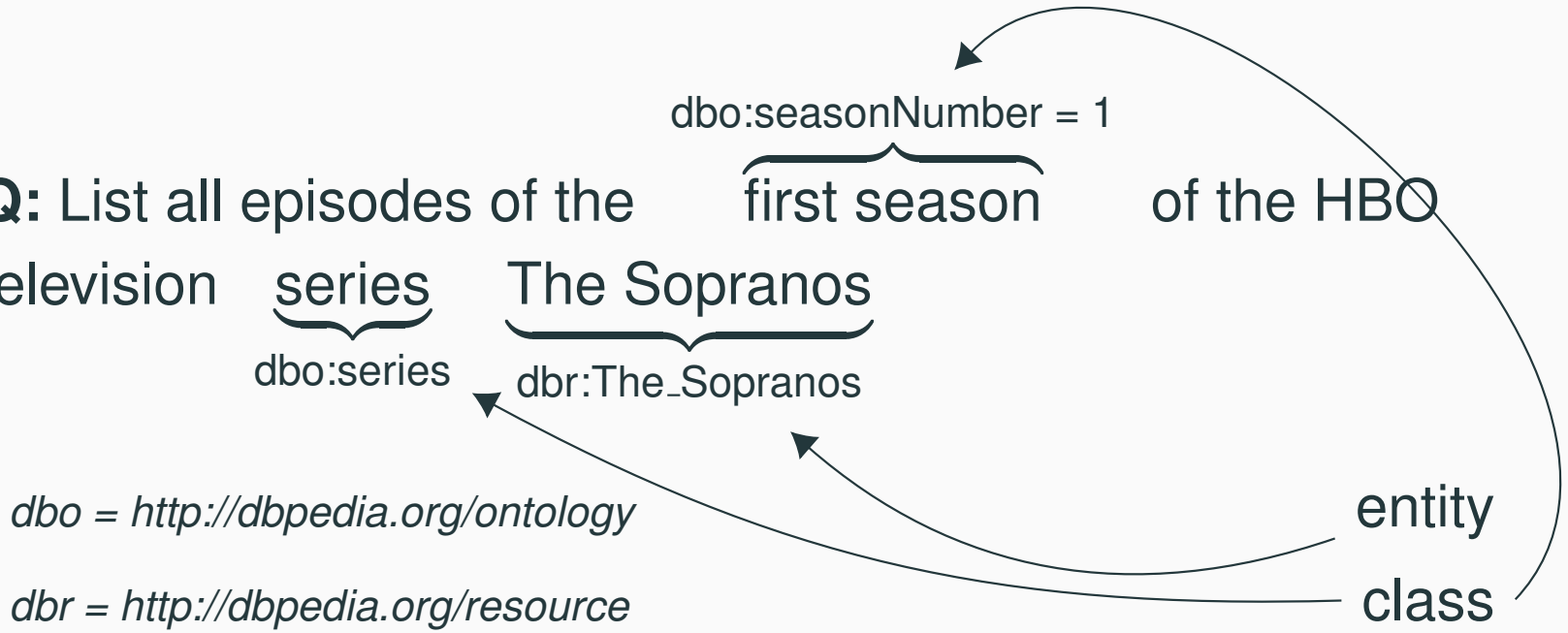
Introduction

Introduction

Entity Linking

Def: Link parts of a Natural Language passage to it's corresponding node in a Knowledge Graph. Usually comprises:

- Recognize the entity mention in the text.
- Disambiguate the mention.



Introduction

Motivation

- Asses the impact of Entity Linking on a Question Answering task over a KG.
- Actual collections for QA are easy for Entity Linking.

Outcomes

Outcomes

Our main contributions are:

- QA Datasets characterization
- Semi-automatic method to generate EL dataset.
- Release large benchmark dataset and baseline for EL in QA.

Experiments

Experiments

Datasets

- QALD $\{1\text{-}4\}$ Unger et al. 2014) $\leq$ 200 QA pairs each
- LC-QuAD (Trivedi et al. 2017) 5K QA pairs

Example

Q: List all episodes of the first season of the HBO television series $\underbrace{\text{The Sopranos}}_{\text{dbr:The\_Sopranos}}$

Difficulty

- Given the Question, how easy is the Entity Linking?

Cases Total	**QALD-1** **15**	**QALD-2** **84**	**QALD-3** **89**	**QALD-4** **202**
Identical to DBP uri	73.33	85.71	84.27	79.21
Missing tokens		4.76	5.62	9.9
Additional tokens	20.0	1.19	1.12	0.5
Lexical variation	6.67	5.95	5.62	8.42
Other		2.38	3.37	1.98

Objective: Complex dataset for Entity Linking

Strategy

1. Develop baseline to detect as much mentions as possible
2. Remove items from collection

Baselines

- Trigram based mention detection
- Distance based mention detection

Results

Released Datasets

- **QALD-{1-4}-EL**: QALD-X version for EL $\leq$ 45 samples each.
- **LC-QuAD-EL**: LC-QuAD version for EL $\leq 1.3K$ samples.
- **C-EL4QA**: Compilation of EL versions $\leq 1.5K$ samples.

Baseline removed 70% of the dataset in the worst case!

Discussion

Discussion

Research Questions

- If Entity Linking were more difficult, how QA system would perform?
- Datasets should be created more carefully.

Questions?

References

References

Priyansh Trivedi et al. “Lc-quad: A corpus for complex question answering over knowledge graphs”. In: *International Semantic Web Conference*. Springer. 2017, pp. 210–218.

Christina Unger et al. “Question Answering over Linked Data (QALD-4)”. In: (2014). URL: https://hal.inria.fr/hal-01086472/.