

GRhOOT: Ontology of Rhetorical Figures in German

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Summary

GRhOOT, the **German Rhetorical Ontology**, is a domain ontology of 110 **rhetorical figures** in the German language. The **formal representation** shall **facilitate their detection**, thus improving sentiment analysis, argument mining, detecting hate speech/fake news, and many other tasks where **non-literal language** is important.

We show completeness and consistency with **DL and SPARQL-queries**. **Decision trees** and **interactive web apps** are use cases for the ontology.

Introduction

Rhetorical figures make arguments more convincing, hate speech more hurtful, and give fake news more credibility:



To improve sentiment analysis, argumentation mining, hate speech/fake news detection, it is necessary to automatically detect rhetorical figures in text. We need a formal description of each figure!

Formalization and categorization is difficult, as no unified view on rhetorical figures exist.

Our contributions:

- Development of an ontology of 110 German rhetorical figures
- Formulation of five competency questions for design process
- Modular design, aligned with Serbian ontology RetFig [1]
- Establishing foundation for creating annotated datasets

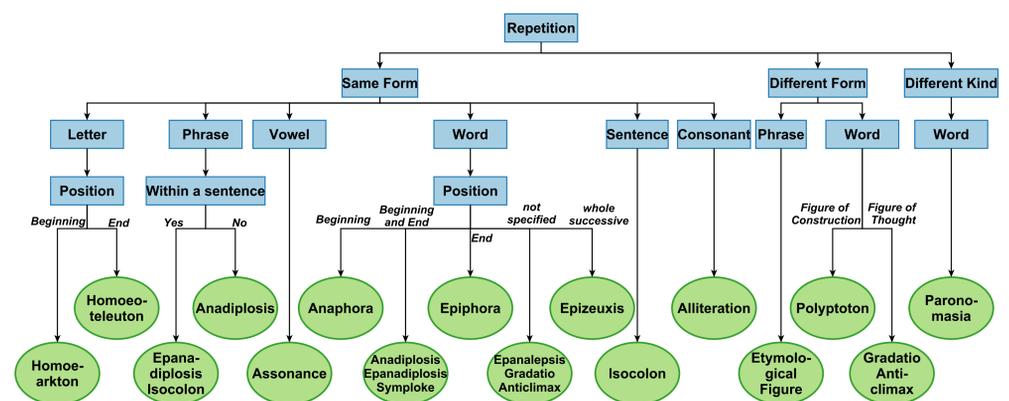
Methodology

- Comparing each figure from the RetFig [1] ontology if it exists in German
- Together with German linguist and reference books, we evaluated if the properties are the same
- Modeled 36 additional figures + example sentences
- Completeness Check: Competency questions [2] as DL and SPARQL queries to ensure expected output
- Ontology modeled in Protégé, see Fig. 1 for the example “Alliteration” (“two terrible tigers”)

Possible Applications

Figures containing structural peculiarities (e.g., repetition) are easier to detect than figures dependent on context (e.g., tropes like metaphors/comparisons: “you are bright as Alaska in December”). Labelled corpora are necessary, but do not exist yet. A decision tree can guide human annotators, shown here for figures of repetition.

Guess the figure(s): “I like Salami Pizza! You like every Pizza!”



Pizza: (Repetition = yes) \wedge (SameForm = Word) \wedge (isInPosition = End) \rightarrow Epiphora

like: (Repetition = yes) \wedge (SameForm = Word) \wedge (isInPosition = notSpecified) \rightarrow Epanalepsis/Gradatio/Anticlimax

We drafted a web app that interactively guides users. In the background, the ontology helps to find the right name of a figure. In combination with an active learning approach, annotated text corpora will be created.

Conclusion and Future Work

We built a domain ontology of rhetorical figures in German. Future work includes the extension of the ontology (e.g., adding functions, hierarchical relations between figures), its translation to other languages, and using it to automatically detect rhetorical figures.

Acknowledgement



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References

- [1] Miljana Mladenović and Jelena Mitrović. Ontology of rhetorical figures for serbian. In Ivan Habernal and Václav Matoušek, editors, *Text, Speech, and Dialogue*, pages 386–393, Berlin, Heidelberg, 2013. Springer Berlin Heidelberg.
- [2] Michael Grüninger and Mark S Fox. Methodology for the design and evaluation of ontologies. 1995.

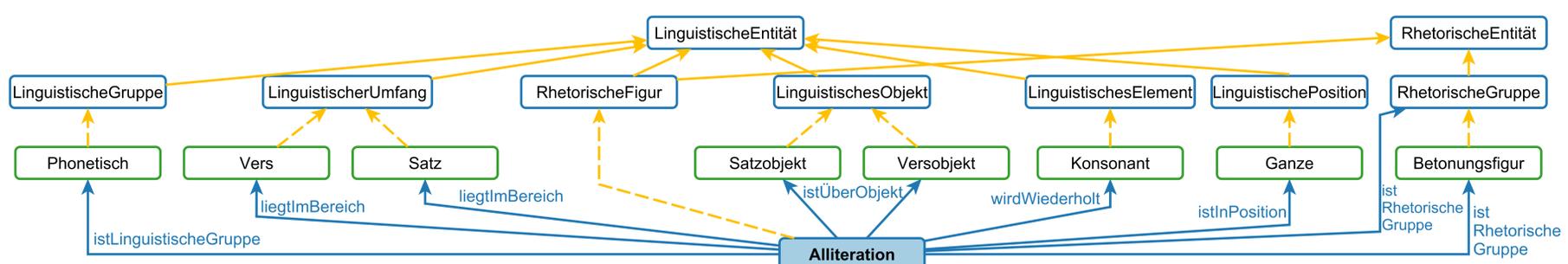


Figure 1: “Alliteration” in the GRhOOT ontology.