

Fantastic Figures And How To Find Them

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Summary

The goal is to find **rhetorical figures in German** texts to automatically detect **hate speech, fake news, and persuasive arguments**.

We built an **ontology** for rhetorical figures in German. In combination with an **active learning** approach and a **web app**, we want to tackle the problem of the massive lack of labelled data.

Human annotators can then provide new labelled data or help in examples where the algorithm is not confident in the classification.

Introduction

Rhetorical figures help in discussions to make arguments more convincing, political speeches more persuasive and advertisement more memorable. But they can also be used to give fake news more credibility or to make hate speeches more hurtful:

Aposiopesis
Hate Speech
“When I get my hands on you...“, “People like you should be...”

Hyperbole
Fake News
“Pope shocks the world!“, “You won’t believe what happened!”

Antimetabole
Arguments
“You stood up for America, now America must stand up for you”

Based on the ontology of rhetorical figures in Serbian [1] that was inspired by [2], an ontology for rhetorical figures in German was built. A web app combined with the ontology shall help labelling data and support an active learning approach.

Methodology

The graph structure of the ontology is shown in Fig. 2 on the example “Alliteration” (“**v**eni, **v**idi, **v**ici”). For each figure is defined:

- Explanation of the figure
- Name in German, English, and Serbian (if existent)
- Linguistic group: semantic, morphologic, syntactic, etc.
- Rhetoric group: figure of sound/thought, trope, or scheme
- Affected Object: word, letter, etc.
- Affected Area: sentence, phrase, etc.
- Position: beginning, end, middle, etc.
- Operation: addition, reduction, repetition, figurative meaning, etc.

Currently, the ontology contains the formal descriptions, definitions, and examples for 107 German rhetorical figures and is written in the OWL language.

Obviously, figures containing structural peculiarities (e.g., repetition) are easier to detect than figures that demand a knowledge of context (e.g., figures of tropes like metaphors/comparisons: “you are bright as Alaska in December”). Labelled data is needed that does not exist yet for rhetorical figures in German.

Active Learning and Web App

An active learning approach can cope with a small set of training data. To obtain labelled examples, a small web app is created that not only serves to collect new examples but also supports the algorithm with examples it is not confident about. The ontology in the background supports in return the human in annotating the data.

Figure 1: Web App to find the right rhetorical figure.

Fig. 1 shows a simplified prototype of the web app and the process to find the right name for the figure. As the form of rhetorical figures almost always has a function, some of them are more likely to be used in hate speech, arguments, and fake news. In a later step, we want to focus especially on those. The difficulty lies not only in the detection of the figures itself but also in recognizing their function in the context and determining the argumentative power.

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References

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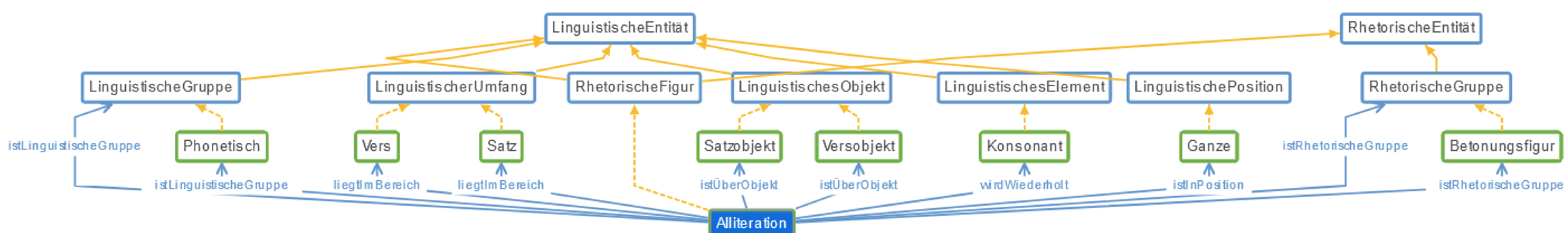


Figure 2: Ontology for the example “Alliteration”.