WordNet and Distributional Semantics for Computational Rhetoric

Jelena Mitrović, Siegfried Handschuh

Faculty of Computer Science and Mathematics, University of Passau

Computational rhetoric (CR) is an area of Natural Language Processing (NLP) dealing with computational approaches to modelling and detection of rhetorical figures, as well as rhetorical relations which, in turn, might aid tasks such as Sentiment and Opinion Mining and Analysis, Argument mining, Argumentation modelling, Analysis of political argumentation etc. (Mitrović, et al., 2017). In this poster, we present some recent advances in CR relating to using WordNet as a starting point and a valuable resource, as well as future directions in this regard, relating to the paradigm of Distributional semantics.

Ontological modelling of rhetorical figures (Mladenović and Mitrović, 2013) and rhetorical relations (Groza et al. 2016) is one approach to salient CR solutions. On the other hand, WordNet can successfully be used in CR. For figures Irony and Sarcasm Serbian WordNet ontology (SWN) was used, enhanced with new semantic relations *specificOf /specifiedBy* which connect adjective and noun synsets and play the semantic role of the figure *Simile* (Mladenović et al., 2016; Mladenović et al., 2017; Mitrović, 2018). Detection of rhetorical figures was performed in a Machine learning system shown in Figure 1.
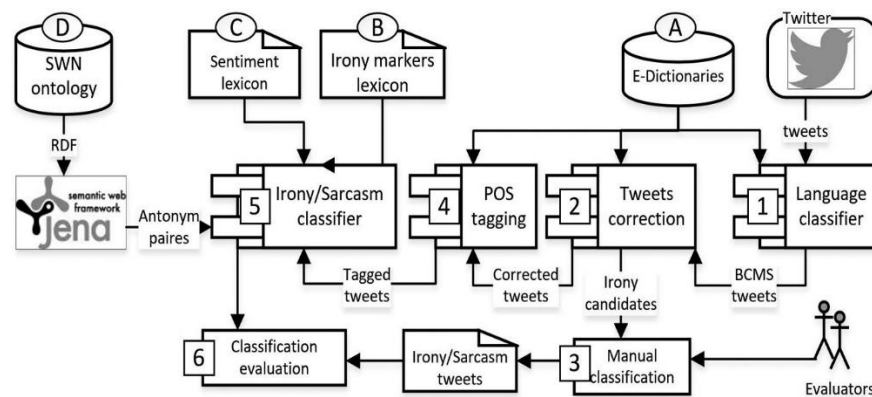

Figure 1 Detection of Irony and Sarcasm using WordNet

Distributional semantics models and distributional representations, such as word embeddings, have been a hot topic in NLP and CR recently. Khodak et al. (2017) have used word embeddings to construct Wordnets in French and Russian and their approach can be extended to other languages. Gutierrez et al. (2016) investigate compositional distributional semantic models for literal and metaphorical senses. O'Reilly and Harris (2017) describe a multi-dimensional vector-space to imagine and calculate the rhetorical figure Antimetabole, which has been seen as an important figure in political argumentation (Mitrović et al., 2017). Likewise, Zayed et al. (2018) identify metaphors on the phrase level using distributed representations of word meaning. All these works pave the way to a plethora of possibilities for hybrid approaches

to using WordNet and its distributed representation for Computational rhetoric purposes. We envision exciting research directions stemming from Distributional semantics and WordNet modelling, to harness the deeper semantics of lexico-semantic networks and allow for new NLP and CR approaches.

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