

# Feature-based Compositionality Ratings for Noun Compounds

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The automatic prediction of multiword expression compositionality has been a long-standing task in natural language processing. Our focus of interest is on the compositionality of noun compounds such as *climate change* and *crocodile tears* in English, and *Ahornblatt* and *Fliegenpilz* in German, whose representation, processing and modelling has received an immense attention across disciplines and languages.

Developing computational models of compositionality typically goes hand in hand with creating reliable lexical resources to utilise as gold standards for repeated intrinsic evaluation. Not much research however has looked into whether and how much both the gold standards and the prediction models vary according to properties of the targets within the lexical resources. Our study provides two contributions to bring forward both theoretical and computational investigations of compositionality for noun compounds: (1) We created a novel collection of compositionality ratings for 1,099 German noun compounds where –differently to previous related work– we asked the human judges to provide (a) paraphrases of the compounds’ meanings, (b) features of constituents contributing to the compounds’ meanings, (c) judgements on the strength of hypernymy relations between the compounds and their head constituents, and (d) judgements on the strengths of the compounds’ and constituents’ concreteness, before they provided their judgements on the compounds’ degree of compositionality with regard to the respective constituents. (2) We present a series of analyses on (a) interactions of compound and constituent properties (such as frequencies, productivities, ambiguity, hypernymy and concreteness) with regard to the compounds’ degrees of compositionality, and (b) the influence of these compound and constituent properties on computational vector-space results for predicting compositionality. As basis for our study we rely on the predominantly used lexical resources of noun compound compositionality for English (Reddy et al., 2011; Cordeiro et al., 2019) and German (Schulte im Walde et al., 2016).

## References:

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