

Research Talk

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“Using grammatical dependency of words in text modeling – a marketing application”

Extant methods to statistically model text data rely heavily on word occurrence. That is, the (joint) occurrence of certain words within a corpus of documents is exploited to conduct inference regarding latent features of text. Such features have been shown to be related to (various aspects of) consumer behavior, market structure or the market capitalization of firms. Models differ with respect to the assumed boundaries of co-occurrence. Whereas neural network type models such Word2Vec and GloVe assume boundaries to be highly local, topic models assume that co-occurrence resides on the document level (“bag of words”). Most recent advances in text modeling marry features of neural networks with aspects of topic modeling.

Whatever the assumed boundaries, word co-occurrence can carry inference based on text models only so far. Readable text exhibits a rule-based, grammatical structure which can assist inference from text models. Towards this end, the talk presents a novel way to incorporate the (observed) grammatical dependency of words within sentences into a model of topic dependency of words. We show that this approach yields several advantages. It renders pre-processing of text data (e.g. eliminating stop words) largely obsolete. It facilitates topic discovery based on phrases instead of words which seems a more natural way of expressing high-level features of text. It results in inference regarding latent features of text which have higher predictive power with respect to relevant consumer outcomes (satisfaction). Most importantly, we find that the underlying grammatical structure facilitating these results to be largely unrelated to boundary assumptions popular in text modeling.

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Date	Time	Room
January 26 th , 2023	15:00 - 16:30 h	F3290