Inferring sentiment-based priors in topic models

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Abstract

© Springer International Publishing Switzerland 2015. Over the recent years, several topic models have appeared that are specifically tailored for sentiment analysis, including the Joint Sentiment/Topic model, Aspect and Sentiment Unification Model, and User-Sentiment Topic Model. Most of these models incorporate sentiment knowledge in the β priors; however, these priors are usually set from a dictionary and completely rely on previous domain knowledge to identify positive and negative words. In this work, we show a new approach to automatically infer sentiment-based β priors in topic models for sentiment analysis and opinion mining; the approach is based on the EM algorithm. We show that this method leads to significant improvements for sentiment analysis in known topic models and also can be used to update sentiment dictionaries with new positive and negative words.