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# Focus-Latent Dirichlet Allocation for Aspect-Level Opinion Mining

**Authors :** Mohsen Farhadloo, Majid Farhadloo

**Abstract :** Aspect-level opinion mining that aims at discovering aspects (aspect identification) and their corresponding ratings (sentiment identification) from customer reviews have increasingly attracted attention of researchers and practitioners as it provides valuable insights about products/services from customer's points of view. Instead of addressing aspect identification and sentiment identification in two separate steps, it is possible to simultaneously identify both aspects and sentiments. In recent years many graphical models based on Latent Dirichlet Allocation (LDA) have been proposed to solve both aspect and sentiment identifications in a single step. Although LDA models have been effective tools for the statistical analysis of document collections, they also have shortcomings in addressing some unique characteristics of opinion mining. Our goal in this paper is to address one of the limitations of topic models to date; that is, they fail to directly model the associations among topics. Indeed in many text corpora, it is natural to expect that subsets of the latent topics have higher probabilities. We propose a probabilistic graphical model called focus-LDA, to better capture the associations among topics when applied to aspect-level opinion mining. Our experiments on real-life data sets demonstrate the improved effectiveness of the focus-LDA model in terms of the accuracy of the predictive distributions over held out documents. Furthermore, we demonstrate qualitatively that the focus-LDA topic model provides a natural way of visualizing and exploring unstructured collection of textual data.

**Keywords :** aspect-level opinion mining, document modeling, Latent Dirichlet Allocation, LDA, sentiment analysis
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