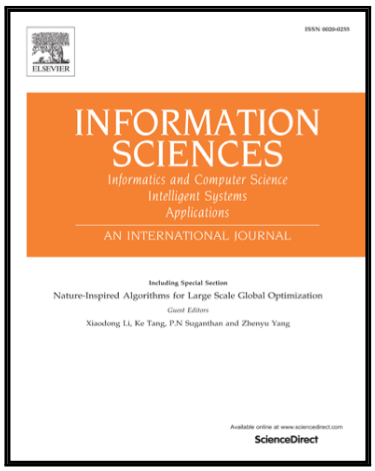

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Incorporating Product Description to Sentiment Topic Models for Improved Aspect-based Sentiment Analysis

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Abstract

Sentiment topic models are used as unsupervised methods to solve the specific problems of the general aspect-based sentiment analysis (ABSA) problem. One of the main problems of the technique is its substandard aspect term extraction, which leads to difficulties in aspect label determination. This paper is focused on improving the aspect term extraction of topic models by incorporating product descriptions to the current state-of-the-art sentiment topic model, Aspect Sentiment Unification Model (ASUM). We present two models that extend from ASUM differently to leverage on the information found in the product description: Seller-aided Aspect-based Sentiment Model (SA-ASM) and Seller-aided Product-based Sentiment Model (SA-PSM). SA-ASM has its topic distribution inside the review while SA-PSM has its topic distribution inside the product description. Based on experiments conducted to reviews of laptops and mobile phones, results show that SA-ASM performs better in micro-level problems such as sentiment classification and aspect assignment and SA-PSM performs better in macro-level problems like aspect category detection. Both models achieve better performances compared to current topic modeling methods for the ABSA problem.

Keywords: aspect-based sentiment analysis, aspect extraction, topic models, product description

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