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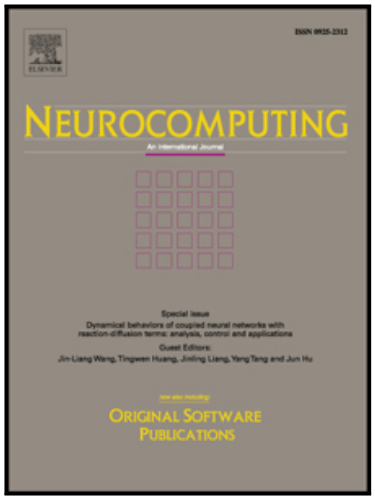

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A Short Text Sentiment-Topic Model for Product Reviews

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Abstract

Topic and sentiment joint modelling has been successfully used in sentiment analysis for product reviews. However, the problem of text sparse is universal with the widespread smart devices and the shorter product reviews. In this paper, we propose a joint sentiment-topic model WSTM (Word-pair Sentiment-Topic Model) for the short text reviews, detecting sentiments and topics simultaneously from the text, especially considering the text sparse problem. Unlike other topic models modelling the generative process of each document, our directly models the generation of the word-pair set from the whole global corpus. In the generative process of WSTM, all of the words in a sentence have the same sentiment polarity, and two words in a word-pair have the same topic. We apply WSTM to two real-life Chinese product review datasets to verify its performance. In three experiments, compared with the existing approaches, the results demonstrate WSTM is quantitatively effective on both topic discovery and document level sentiment.

1. Introduction

Online product reviews mining aims to determine the attitude of the reviewers about some topic or the polarity (positive, negative and neutral) at the document, sentence, or aspect level. In recent year, it has attracted more and more attentions [19, 18, 4, 10, 17, 28]. Especially in online shopping, one cannot touch nor check the quality by hand, the reviews from other consumers are more essential for decision making.

For product reviews, the descriptions of specific aspects of one product and the polarity of each aspect are quite informative. However, the same sentiment expression will bring different polarity in different topics. As shown in Figure 1,

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