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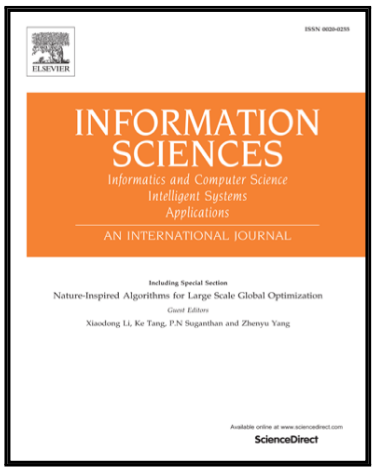

A Topic-Enhanced Word Embedding for Twitter Sentiment Classification

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A Topic-Enhanced Word Embedding for Twitter Sentiment Classification

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Abstract

Word representation is crucial to lexical features used in Twitter sentiment analysis models. Recent work has demonstrated that dense, low-dimensional and real-valued word embedding gives competitive performance for Twitter sentiment classification. We follow this line of work, and propose a topic-enhanced word embedding for the task, which is generally neglected in previous work. Firstly, we exploit a recursive autoencoder framework to learn topic-enhanced word embedding, where topic information is generated through topic modeling based on an effective implementation of Latent Dirichlet Allocation (LDA). Then we use a uniform framework by adopting Support Vector Machine (SVM) classifier, to compare existing word representation methods with our method. Experimental results on the dataset show that topic-enhanced word embedding is very effective for Twitter sentiment classification.

Keywords: word embedding, recursive autoencoder, latent dirichlet allocation, twitter sentiment classification

1. Introduction

Twitter sentiment classification, which aims to classify the sentiment polarity of a tweet as positive, neutral or negative, has been intensively researched in recent years [16, 17, 18, 24, 29, 43, 49]. Most work follows Pang et al. (2002)' work, building a classifier based on annotated corpus with manually-designed sophisticated features [37].

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