

# Accepted Manuscript

A Multi-Relational Term Scheme for First Story Detection

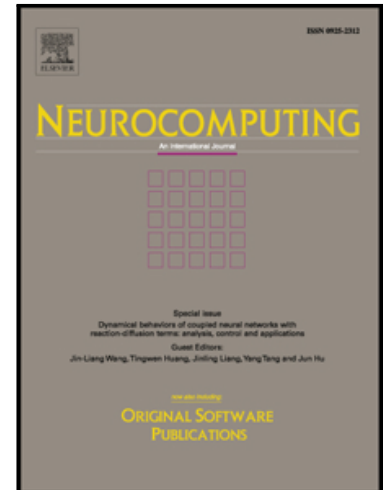
Yanghui Rao, Qing Li, Qingyuan Wu, Haoran Xie, Fu Lee Wang,  
Tao Wang

PII: S0925-2312(17)30399-5  
DOI: [10.1016/j.neucom.2016.06.089](https://doi.org/10.1016/j.neucom.2016.06.089)  
Reference: NEUCOM 18149

To appear in: *Neurocomputing*

Received date: 31 January 2016  
Revised date: 17 June 2016  
Accepted date: 28 June 2016

Please cite this article as: Yanghui Rao, Qing Li, Qingyuan Wu, Haoran Xie, Fu Lee Wang, Tao Wang, A Multi-Relational Term Scheme for First Story Detection, *Neurocomputing* (2017), doi: [10.1016/j.neucom.2016.06.089](https://doi.org/10.1016/j.neucom.2016.06.089)



This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

## A Multi-Relational Term Scheme for First Story Detection<sup>☆</sup>

Yanghui Rao<sup>a</sup>, Qing Li<sup>b</sup>, Qingyuan Wu<sup>c</sup>, Haoran Xie<sup>d,\*</sup>,  
Fu Lee Wang<sup>e</sup>, Tao Wang<sup>f</sup>

<sup>a</sup>*School of Data and Computer Science, Sun Yat-Sen University, Guangzhou, China*

<sup>b</sup>*Department of Computer Science, & Multimedia software Engineering Research Centre,  
City University of Hong Kong, Hong Kong*

<sup>c</sup>*School of Management, Beijing Normal University, Zhuhai, China*

<sup>d</sup>*Department of Mathematics and Information Technology, The Hong Kong Institute of Education,  
Tai Po, New Territories, Hong Kong*

<sup>e</sup>*Caritas Institute of Higher Education, New Territories, Hong Kong*

<sup>f</sup>*Department of Economics, University of Southampton, UK*

---

### Abstract

First Story Detection (FSD) aims to identify the first story for an emerging event **previously unreported**, which is essential to practical applications in news analysis, intelligence gathering, and national security. Compared to information retrieval, text clustering, text classification, and other subject-based tasks, FSD is event-based and thus faces the challenging issues of multiple events on the same subject and the evolution of events. To tackle these challenges, several schemes **for** exploiting temporal information, named entity, and topic modeling, have been proposed for FSD. In this paper, we present a new term weighting scheme called LGT, which **jointly** models the **L**ocal element, **G**lobal element, and **T**opical association of each story. An unsupervised algorithm based on LGT is then devised and applied to FSD. We evaluate **4** feature reduction strategies **and test our LGT scheme on an** online model. Experiments show that our approach yields better results than existing baseline schemes on **both** retrospective and online FSD.

---

<sup>☆</sup>This paper is an extension of our previous work [26]. Compared to our previous work, we have added the following new contents in this paper: (1) the LGT is elaborated and compared theoretically in section 3.2.1; (2) three existing strategies and a newly proposed nonparametric method of feature reduction are included in section 3.2.2; (3) the experimental part is further extended by analyzing the performance with different topic numbers in section 4.4.1; (4) four feature reduction methods are evaluated and compared on two datasets in section 4.4.2; and (5) we have added more discussions on related studies in section 2, and made many improvements on the introduction, method, experimental analysis, conclusion, and future research directions.

\*Corresponding author. Tel.: +852 68502340

Email address: hrxie2@gmail.com (Haoran Xie)

متن کامل مقاله

دریافت فوری ←

**ISI**Articles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات