Journal of Universal Computer Science, vol. 22, no. 3 (2016), 298-301
submitted: 12/2/16, accepted: 20/2/16, appeared: 1/3/16 © *J.UCS*

Analyzing and Mining Social Networks for Decision Support

J.UCS Special Issue

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1 Introduction

Mining and analyzing social networks is now becoming a very popular research area not only for data mining and web mining but also social network analysis. Data mining is a technique that has the ability to process and analyze large amounts of data and by this to discover valuable information from the data. In recent years, due to the booming of social communications and social network-based web services, data mining has become a very important and powerful technique to process and analyze such large amounts of data.

Recently, many researchers are focusing on developing new data mining techniques and algorithms, or devoting themselves to improve traditional mining techniques for social network analysis. However, this is meaningless, if the discovered valuable and useful data have not been applied in real environment of application. Social data are the aggregations of communication interaction and experience of people, and it is useful to leverage this type of data for decision-making, such as data from Facebook or Twitter. Thus, it could be an important time to shift the research focus to an application area, such as decision support.

This special issue invited papers of the following topics:

- Mining and analyzing social data for decision support
- Mining social web services for decision support
- Algorithms for mining social networks for decision support
- Matching engines and interfaces for decision support systems
- System architectures
- Intelligent and multi-agent based decision support systems
- Social decision support systems
- Semantic Analysis for Decision Support
- Opinion Mining and Sentiment Analysis
- Big Data Issue in Mining and analyzing social data for decision support

- Visualization
- Experiment and implementation
- Leveraging social data for decision support in healthcare
- Case studies and empirical studies

2 Contributions to the Special Issue

In this special issue, we invited authors to submit extended version of their papers, which are selected top quality papers from MISNC 2015 (The 2nd Multidisciplinary International Social Networks Conference, Matsuyama, Japan), MSNDS 2015 (The 6th International Workshop on Mining and Analyzing Social Networks for Decision Support, Paris, France) and ASE SocialInformatics 2015 (Kaohsiung, Taiwan). In addition to the invited papers, we also called for public submissions. Totally, we have received 34 submissions for this special issue and 8 papers are finally accepted (the acceptance rate is 24%). Each submission was reviewed by at least three experts and revised according to reviewers' comments to ensure the quality of the papers.

The first paper is entitled "Calculating Exact Diameter Metric of Large Static Graphs" and was authored by Masoud Sagharichian, Morteza Alipour Langouri and Hassan Naderi. The authors propose an algorithm to calculate the diameter of social graph. Diameter is a very important measurement in the area of social networks analysis that can be used to measure how close the nodes in a social network. The experiment shows the proposed algorithm can quickly detect exact diameter of large-scale real world graph with a few number of breadth-first searches.

The second paper is entitled "A Domain Ontology in Social Networks for Identifying User Interest for Personalized Recommendations" and was authored by Rung-Ching Chen, Hendry and Chung-Yi Huang. The authors design an ontology combine with social network by using user interests and community influences. The cold-start problem can be well solved through the ontology and recommendation system. Cold-start is a critical problem for most recommendation system and therefore the contribution of this paper is significant.

The third paper is entitled "Going beyond your Personal Learning Network, using Recommendations and Trust through a Multimedia Question-Answering Service for Decision-support: a Case Study in the Healthcare" and was authored by Patricia Santos, Sebastian Dennerlein, Dieter Theiler, John Cook, Tamsin Treasure-Jones, Debbie Holley, Micky Kerr, Graham Attwell, Dominik Kowald and Elisabeth Lex. The authors study three healthcare networks to understand how to enable the building, maintaining and activation of new contacts at work and the exchange of knowledge. A case has been studied to show the importance of scaffolding strategies as well as strategies to aggregate trust when sharing resources and decision support.

The fourth paper, entitled "Dynamic Model of Reposing Information Propagation based on Empirical Analysis and Markov Process" was authored by Gui-Xun Luo Yun Liu and Zhi-Yuan Zhang. The authors use data from Sina Weibo for empirical study and according to the results build a dynamic information propagation model. The proposed model shows better adaptability and predictability than traditional information diffusion models.

The fifth paper, entitled "Social Media Battles: Their Impact during the 2014 Greek Municipal Elections" was authored by Georgios Lappas, Amalia Triantafillidou, Prodromos Yannas, Anastasia Kavada, Alexandros Kleftodimos and Olga Vasileiadou. The authors present an interesting study to examine the use of social media by candidates running for the 2014 Greek municipal election. The authors conclude some interesting findings, for example, challengers seem to prefer Facebook and Twitter as campaign tools. Another important finding is that a candidate's Facebook page and YouTube channel popularity indicates the candidate's vote share.

The sixth paper, entitled "Mining Social Networks for Calculation of SmartSocial Influence" and authored by Vanja Smailovic and Vedran Podobnik proposes an approach to focus on a research challenge about the identification of the most influential actors in a social network. The approach combines relationships among same actors in communication domain and social networking service domain.

The seventh paper, entitled "Fuzzy Modeling of User Behaviors and Virtual Goods Purchases in Social Networking Platforms" was authored by Jarosław Jankowski Kostas Kolomvatsos Przemysław Kazienko and Jarosław Wątróbski. The authors present a so-called Fuzzy logic inference model to analyze purchases based on the types of past transactions and social activity**.** The model is helpful to understand more about customers' purchase behaviors, as well as for decision making.

The eighth paper, entitled "Detection of the Spiral of Silence Effect in Social Media" was authored by I-Hsien Ting. The author proposes a methodology to discover the spiral of silence effect in social media, such as Facebook and Twitter. The effect of the spiral of silence is created when users discover their opinion is not the major one in the social media and they will start to keep silent. The proposed methodology is very helpful to improve the quality and accuracy of opinion mining.

3 List of Referees

The special issue guest editors would like to express their gratitude to the following referees who help to input high quality reviews. Their reviews are very helpful for authors to improve the quality of the paper. The guest editors would also like to thank the ***Taiwanese Association for Social Networks*** for its support to make the publication of this special issue possible.

- Babiga Birregah, University of Technology of Troyes, France
- Rung-Ching Chen, Chaoyang University of Technology, Taiwan
- Pablo Garaizar, Universidad de Deusto, Spain
- Mariluz Guenaga, University of Deusto, Spain
- Jaroslaw Jankowski, West Pomeranian University of Technology, Poland
- Koquilamballe K, Easwari Engineering College, India
- Chutisant Kerdvibulvech, National Institute of Development Administration (NIDA), Thailand
- Morteza Alipour, Langouri, Iran university of science and technology, Iran
- Georgios Lappas, Technological Educational Institute (T.E.I.) of Western Macedonia, Kastoria Campus, Greece
- Elisabeth Lex, Know-Center GmbH, Austria

- Vedran Podobnik, University of Zagreb, Croatia
- Vanja Smailovic, Ericsson, Croatia
- Amalia Triantafillidou, Technological Educational Institute of Western Macedonia, Kastoria Campus, Greece