

Guest editorial: Special issue on algorithms, systems and applications in mobile social networks

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Social Networks are a massively successful phenomenon, used by billions of users to interact. A new trend has appeared that social networks are undergoing the transition from traditional web-based social networking to mobile social networking by exploiting ubiquitous access of mobile Internet and mobile computing/communications as well as cloud-based applications and services. Research in network science and its application to the Internet has highlighted the interplay between technological networks and social networks. This interplay suggests a paradigm shift in the design of wireless communication systems and networks to incorporate social network theory and applications into such design. However, there are still significant technological challenges in the development of algorithms, systems, and applications for mobile social networks, and the purpose of this special issue is to highlight recent advances in this field.

Ten papers have been accepted from the open call or selected from the outstanding papers from WASA'2015, which requires a significant improvement in terms of technical contribution. Their brief summaries are listed below.

“Delivering Mobile Social Content with Selective Agent and Relay Nodes in Content Centric Networks” by Zejun Xu, Zhou Su, Qichao Xu, Qifan Qi, Tingting Yang, Jintian Li, Dongfeng Fang, and Bo Han, designs the next generation mobile social networks with content centric architecture by presenting a novel scheme to deliver the mobile social content by the selective agent nodes and relay nodes.

“A Method for Defending Against Multi-source Sybil Attacks in VANET” by Xia Feng, Chun-yan Li, De-xin Chen, and Jin Tang, proposes an event based reputation system, which is expected to detect Sybil attacks with fabricated identities and stolen identities in the vehicular based mobile social networks.

“An Adaptive Resource Allocation Model in Anti-Money Laundering System” by Xintao Hong, Hongbin Liang, Zengan Gao, Hongwei Li, presents a novel Adaptive Anti-Money Laundering (AML) Resource Allocation Model based on Semi-Markov Decision Process, which is expected to allocate AML resources optimally in AML resource allocation domain to analyze the suspicious transaction report sent from Financial Institutions in mobile social networks.

“Serial Number Based Encryption and Its Application for Mobile Networks” by Rong Ma, Zhenfu Cao, presents a lightweight functional public key encryption scheme and shows how to use it to enhance the security and privacy of applications in mobile networks.

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“Privacy-Preserving Design for Emergency Response Scheduling System in Medical Social Networks” by Wenbin Yu, Zhe Liu, Cailian Chen, Bo Yang, Xinping Guan, presents a privacy-preserving based scheduling scheme for emergency response system, which is expected to protect physiological data privacy, location privacy and personal attribute privacy in mobile social networks.

“Characterizing User Behaviors in Location-Based Find-and-Flirt Services: Anonymity and Demographics” by MinhuiXue, Limin Yang, Keith W. Ross, Haifeng Qian, takes an in-depth examination of the user anonymity and demographics in a popular mobile social networks, WeChat.

“An Ultra-Lightweight RFID Authentication Scheme for Mobile Commerce” by Kai Fan, Nan Ge, Yuanyuan Gong, Hui Li, Ruidan Su and Yintang Yang, presents an ultra-lightweight RFID authentication scheme, which only uses Bit and XOR operations to prevent the DDOS attack in mobile social networks.

“A Novel Approach for Inhibiting Misinformation Propagation in Human Mobile Opportunistic Networks” by Xiaoming Wang, Yaguang Lin, Yanxin Zhao, Lichen Zhang, JuhuaLiang, Zhipeng Cai, proposes a novel approach based on vaccination and treatment strategies for inhibiting misinformation propagation in mobile social networks.

“SOS: Real-time and Accurate Physical Assault Detection using Smartphone” by Zehao Sun, Shaojie Tang, He Huang, Zhenyu Zhu, Hansong Guo, Yu-e Sun, Liusheng Huang, investigates the issue of how to detect those severe and non-instantaneous physical assaults using accelerometer in smartphone by proposing a combinatorial classification scheme considering individuality of user’s Activities of Daily Living and universality of differences between ADLs and assaults to most people.

“Finding Overlapping Communities based on Markov Chain and Link Clustering” by Xiaoheng Deng, Genghao Li, and Mianxiong Dong, and Kaoru OT a proposes a novel MCLC algorithm to discover overlapping communities in mobile social networks.

Finally, we would like to thank all the authors who contributed manuscripts to our special issue, and all of the anonymous dedicated reviewers for their expert comments and time to help us make the final decisions. Without their valuable and strong support, we could not have made this special issue successful. We would like also to express our sincere gratitude to the PPNA EiC, Prof. Xuemin (Sherman) Shen, as well as Ms. Melissa Fearon, Ms. Ethel Dionela and Mr. Hector Nazario from the Springer Journal Editorial Office for helping us to publish this special issue to readers.



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