

POLITECNICO DI TORINO
Repository ISTITUZIONALE

IEEE Access Special Section Editorial: Social Computing Applications for Smart Cities

Original

IEEE Access Special Section Editorial: Social Computing Applications for Smart Cities / Rottondi, C.; Verticale, G.; Fraternali, P.; Novak, J.; Pelechrinis, K.; Hidasi, B.; Vaca Ruiz, C. K.. - In: IEEE ACCESS. - ISSN 2169-3536. - ELETTRONICO. - 7:(2019), pp. 65219-65222. [10.1109/ACCESS.2019.2915485]

Availability:

This version is available at: 11583/2741774 since: 2019-07-17T16:51:38Z

Publisher:

Institute of Electrical and Electronics Engineers Inc.

Published

DOI:10.1109/ACCESS.2019.2915485

Terms of use:

This article is made available under terms and conditions as specified in the corresponding bibliographic description in the repository

Publisher copyright

IEEE postprint/Author's Accepted Manuscript

©2019 IEEE. Personal use of this material is permitted. Permission from IEEE must be obtained for all other uses, in any current or future media, including reprinting/republishing this material for advertising or promotional purposes, creating new collecting works, for resale or lists, or reuse of any copyrighted component of this work in other works.

(Article begins on next page)

Digital Object Identifier 10.1109/ACCESS.2019.2915485

: EDITORIAL

IEEE ACCESS SPECIAL SECTION EDITORIAL: SOCIAL COMPUTING APPLICATIONS FOR SMART CITIES

Computer and social sciences offer a wide range of tools to help face the world's challenges arising in smart city scenarios and involving environment, energy, food, water, transportation, infrastructures, society, healthcare, education, governance, and economy. Indeed, purely technical solutions might be of little effect without proper consideration of the social dimension of the Smart City. A user's behavior depends on a variety of social and individual motivations, which require addressing both the technical and social sides of the problem to promote active engagement of individuals in increasing the social good. More specifically, social computing tools can be targeted on a wide range of Smart Cities applications, including urban transport and fleet logistics management (possibly leveraging electric vehicles or other intelligent transportation systems), traffic, public safety and air pollution monitoring via smart traffic lights, smart signals and lamp posts, automation of smart buildings and homes with the aim of improving energy efficiency, livability and age-friendliness, smart health, smart industries, electricity grids, water systems and solid waste management, and frameworks for educational, cultural, and entertainment initiatives.

This Special Section of IEEE ACCESS on social computing applications for Smart Cities aims at bringing together researchers to disseminate their findings in the field of social computing while pushing forward the potential cooperation with related engineering fields in the context of Smart Cities.

The "Call for Papers" aroused great enthusiasm in the scientific community and received 29 submissions. Out of these, seven articles were accepted for inclusion in the Special Section after a thorough revision process by at least two independent referees. The seven accepted articles can be broadly categorized into two groups: the first, with four articles, tackles social media and networks, whereas the second group of three articles addresses privacy and security issues in the Internet of Things (IoT) and smart city communications.

In the first group, the article, "Locating the source of asynchronous diffusion process in online social networks," by Fang, *et al.*, describes a novel source locating mechanism consisting of an estimator based on the correlation coefficient

and a matrix to approximately model the diffusion time delay between social network nodes. Different sampling strategies for the choice of observable nodes are considered and numerically assessed. Possible applications of the proposed method are the identification of the sources of rumors and news or of the spreaders of an epidemic.

The article, "Regionalization of social interactions and points-of-interest location prediction with geosocial data" by Psyllidis, *et al.*, presents a framework for the localization of Points of Interests (POIs) in urban environments, based on heterogeneous data sources (e.g., spatial, temporal, topical, and demographic data) drawn from social media in combination with Geo-Self-Organizing Maps. The framework relies on a contiguity-constrained hierarchical clustering algorithm for the identification and localization of POIs, thus mining knowledge about the geography of social dynamics.

The article, "Using social media for attendees density estimation in city-scale events" by Gong, *et al.*, [3] studies how micro-posts collected from social media can be leveraged during city-scale events for the estimation of the density of attendees. Three different density estimation strategies are proposed and tested in the context of two large-scale events occurred in the Netherlands, using measurements gathered from counting systems and Wi-Fi sensors as ground truth.

The article, "Shared-resource management using online social-relationship metric for altruistic device sharing" by Inagaki and Shinkuma introduces a system that leverages online social relationships between mobile device owners and users to enable altruistic sharing (e.g., mobile phones tethering). The system automatically matches offers and demands and determines the amount of resources that each user is entitled to use. A prototype implementation of the proposed solution is presented and the communication overhead required by the protocol is quantified.

In the second group of articles, "Urban transition in the era of the Internet of Things: social implications and privacy challenges" by Hassan and Awad, discusses the security and privacy challenges emerging from IoT deployment in urban environments, with a special focus on the potentially disruptive effects of massive integration of IoT devices on social

relationships among urban residents. The authors conclude that legal and ethical standards should be adopted to protect personal rights, safeguard users' privacy, and ensure social welfare.

The article "Securing offline delivery services by using kerberos authentication" by Li, *et al.*, proposes a Kerberos-based scheme for the crowdsourcing delivery model, including online ordering and offline delivery business. The protocol enables authentication of different entities involved in the delivery chain and can also be applied to more evolved delivery models.

The article, "Secure and efficient large content broadcasting in mobile social networks" by Fu, *et al.*, introduces a secret-sharing based scheme that enables broadcasting of large-size data in the presence of unreliable communication infrastructures. The scheme is especially useful in emergency scenarios, or in mobile networks where malicious and cooperative users coexist. The authors provide a thorough security analysis of the proposed protocol and evaluate the trade-off between its efficiency and security.

Finally, the leading editor and the guest editors of the Special Section express their gratitude to the authors for their contributions, to the volunteering referees for their dedication and to the whole IEEE ACCESS editorial staff for their invaluable support.

CRISTINA ROTTONDI, *Guest Editor*
Department of Electronics and Telecommunications
Politecnico di Torino
Italy



CRISTINA ROTTONDI (M'11) received the bachelor's and master's degrees (*cum laude*) in telecommunications engineering and the Ph.D. degree in information and communications engineering from the Politecnico di Milano, Italy, in 2008, 2010, and 2014, respectively. From 2015 to 2018, she was a Researcher with the Dalle Molle Institute for Artificial Intelligence (IDSIA), Lugano, Switzerland. She is currently an Assistant Professor with the Department of Electronics and Telecommunications, Politecnico di Torino. Her research interests include optical networks planning, data privacy and security in smart grids, and networked music performance. Since 2016, she has been serving as an Associate Editor for the IEEE ACCESS.

GIACOMO VERTICALE, *Guest Editor*
Department of Electronics,
Information and Bioengineering
Politecnico di Milano
Italy

PIERO FRATERNALI, *Guest Editor*
Department of Electronics,
Information and Bioengineering
Politecnico di Milano
Italy

JASMINKO NOVAK, *Guest Editor*
University of Applied Sciences Stralsund
Germany European Institute for
Participatory Media
Berlin, Germany

KOSTANTINOS PELECHRINIS, *Guest Editor*
School of Computing and Information University of
Pittsburgh PA, USA

BALAZS HIDASI, *Guest Editor*
Gravity Research and Development Inc.

CARMEN KARINA VACA RUIZ, *Guest Editor*
Faculty of Electrical and Computer Engineering
ESPOL Polytechnic University
Ecuador



GIACOMO VERTICALE received the Ph.D. degree in telecommunication engineering from the Politecnico di Milano, Italy, in 2003. He defended his Ph.D. thesis on the performance of packet transmission in UMTS. From 1999 to 2001, he was with the Research Center, CEFRIEL, working on the Voice-over-IP and ADSL technologies. He is currently an Assistant Professor with the Department of Electronics, information and Bioengineering, Politecnico di Milano. He was involved in several European research projects advancing the Internet technology. His current interests include the security issues of the smart grid and the network function virtualization. He is a member of the ACM.



PIERO FRATERNALI is currently a Full Professor of web technologies with the Department of Electronics, information and Bioengineering, Politecnico di Milano, Italy. He is a coinventor of WebML, a model for the conceptual design of web applications (US Patent 6,591,271, July 2003) and a co-founder of WebRatio, a start-up focused on the commercialization of an innovative tool suite for the model-driven development of web and BPM applications. He contributed to the Interaction Flow Modeling Language (IFML) OMG Standard. His main research interests include software engineering and methodologies and tools for web application development, multimedia information retrieval, and human computation.



JASMINKO NOVAK is currently a Professor of business informatics with the University of Applied Sciences Stralsund, Germany, and the Chairman of the European Institute for Participatory Media, and the founding partner of the Social Innovation Lab, Humboldt-Viadrina School of Governance. His current research interests include interactive and cooperative systems, human-computer interfaces, knowledge visualization, and social computing.



KOSTANTINOS PELECHRINIS received the Diploma degree from the Electrical and Computer Engineering Department, National Technical University of Athens, and the Ph.D. degree from the Computer Science Department, University of California at Riverside, under the supervision of Prof. S. V. Krishnamurthy.

In 2010, he joined the University of Pittsburgh, USA, where he is currently an Associate Professor with the School of Computing and Information and leads the Network Data Science Lab. Before joining UCR, he worked with Prof. V. Maglaris at the Network Management and Optimal Design Laboratory, National Technical University of Athens. His research interests include network science and computational urban, social, and sports sciences.



BALAZS HIDASI received the Ph.D. degree from the Budapest University of Technology and Economics, Hungary, in 2016. Since 2015, he has been the Head of Data Mining and Research at Gravity Research and Development, Inc. His research interests include the fields of recommender systems, machine learning, and data mining techniques.



CARMEN KARINA VACA RUIZ received the Ph.D. degree in information technology from the Politecnico di Milano, in 2014. She is currently a Professor with the Escuela Superior Politécnica del Litoral, Ecuador. Her research interests include the development of methods for modeling urban areas from online data using social network analysis and spatial data mining techniques.

...