

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)

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

Computer and social sciences offer a wide set 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: user's behavior depends on a variety of social and individual motivations, which require addressing both the technical and the social side of the problem to promote the active engagement of individuals in increasing the social good. More specifically, social computing tools can be targeted to 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 lampposts, 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, frameworks for educational, cultural, and entertainment initiatives.

This Special Section of IEEE Access on social computing applications for smart cities aimed 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 those, 7 manuscripts were accepted for inclusion in the Special Section after a thorough revision process by at least two independent referees. The 7 accepted papers can be broadly categorized in two groups: the former, which includes 4 publications, tackles social media and networks, whereas the latter includes 3 papers addressing privacy and security issues in Internet of Things (IoT) and smart city communications.

Among the former group, the paper "Locating the Source of Asynchronous Diffusion Process in Online Social Networks" by M. 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 rumours and news or of the spreaders of an epidemic.

The paper "Regionalization of Social Interactions and Points-of-Interest Location Prediction With Geosocial Data" by A. 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 paper "Using Social Media for Attendees Density Estimation in City-Scale Events" by V. X. Gong *et al.* [?] studies how micro-posts collected from social media can be leveraged during city-scale events for density of attendees estimation. 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 paper "Shared-Resource Management Using Online Social-Relationship Metric for Altruistic Device Sharing" by Y. Inagaki and R. 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.

Among the latter group, the paper “Urban Transition in the Era of the Internet of Things: Social Implications and Privacy Challenges” by A. Hassan and A. I. 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 paper “Securing Offline Delivery Services by Using Kerberos Authentication” by H. 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 paper “Secure and Efficient Large Content Broadcasting in Mobile Social Networks” by T. Fu *et al.* [?] introduces a secret-sharing based scheme that enables broadcasting of large-size data in 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 (M’11) received Bachelor and Master Degrees “cum laude” in Telecommunications Engineering and a PhD in Information and Communications Engineering from Politecnico di Milano (Italy) in 2008, 2010 and 2014 respectively. From 2015 to 2018 she was researcher at the Dalle Molle Institute for Artificial Intelligence (IDSIA) in Lugano, Switzerland. She is currently Assistant Professor at the Department of Electronics and Telecommunications of Politecnico di Torino (Italy). Her research interests include optical networks planning, data privacy and security in smart Grids and networked music performance. Since October 2016 she serves as Associate Editor of IEEE Access.



GIACOMO VERTICALE is assistant professor at the dept. of Electronics, information and Bio-engineering of Politecnico di Milano, Italy. He obtained his PhD in Telecommunication Engineering in year 2003 from Politecnico di Milano defending a thesis on the performance of packet transmission in UMTS. In the years 1999-2001 he was with the research center CEFRIEL, working on the Voice-over-IP and ADSL technologies. He was involved in several European research projects advancing the Internet technology. His current interests focus on the security issues of the Smart Grid and on Network Function Virtualization. He is a member of IEEE and ACM.



PIERO FRATERNALI is full professor of Web Technologies at the dept. of Electronics, information and Bioengineering of Politecnico di Milano (Italy). His main research interests concern software engineering, and methodologies, tools for WEB application development, multimedia information retrieval and human computation. He is co-inventor of WebML, a model for the conceptual design of Web applications (US Patent 6,591,271, July 2003) and 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.



JASMINKO NOVAK is professor of Business Informatics at the University of Applied Sciences Stralsund (Germany) and chairman of the European Institute for Participatory Media, founding partner of the Social Innovation Lab at the Humboldt-Viadrina School of Governance. His current areas of research are interactive and cooperative systems, Human-Computer Interfaces, knowledge visualization and social computing.



KONSTANTINOS PELECHRINIS joined the University of Pittsburgh (USA) in Fall 2010, where he is Associate Professor at the School of Computing and Information and leads the Network Data Science Lab. He received his PhD degree from the Computer Science department at the University of California at Riverside, under the supervision of Prof. Srikanth V. Krishnamurthy. Before joining UCR, he obtained his Diploma degree from the Electrical and Computer Engineering department of the National Technical University of Athens, where he worked with Prof. Vasileios Maglaris at the Network Management and Optimal Design Laboratory. His research interests lay in network science and computational urban, social and sports science.



BALAZS HIDASI received his PhD in 2016 from the Budapest University of Technology and Economics (Hungary). Since 2015 he is head of Data Mining and Research at Gravity Research and Development Inc. His research interest are in the field of recommender systems, machine learning and data mining techniques.



CARMEN KARINA VACA RUIZ received her PhD in Information Technology from Politecnico di Milano in 2014. She is professor at the Escuela Superior Politécnica del Litoral (Ecuador). Her research focuses on the development of methods for modeling urban areas from online data using social network analysis and spatial data mining techniques.