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

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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.

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