Information Systems Frontiers

Special issue on:
Mitigating Cyber Threats and Defense in Data Intensive Smart Cities

Technologies are increasingly pervasive in our data intensive smart cities, as evidenced by the broad range of Internet-connected devices (also referred to as 'Internet of Things') and systems, ranging from smart grids to intelligent systems and technology to critical information infrastructure. There is also increasing recognition for the need to have rigorous foundations in cyber security; thus, the emphasis on developing innovative managerial, technological and strategic integrative solutions. For example, according to National Institute of Standards and Technology's International Technical Working Group on IoT-Enabled Smart City Framework:

> *Two barriers currently exist to effective and powerful smart city solutions. First, many current smart city ICT deployments are based on custom systems that are not interoperable, portable across cities, extensible, or cost-effective. Second, a number of architectural design efforts are currently underway (e.g. ISO/IEC JTC1, IEC, IEEE, ITU and consortia) but have not yet converged, creating uncertainty among stakeholders. To reduce these barriers, NIST and its partners are convening an international public working group to compare and distill from these architectural efforts and city stakeholders a consensus framework of common architectural features to enable smart city solutions that meet the needs of modern communities.*

Unsurprisingly, there has also been interest on formulating and designing of strategies and solutions from researchers from different disciplines, such as legal (Edwards, 2016), computer science (Li et al., 2016; Wang et al., 2016; Zhang et al., 2017), policy (van Zoonen, 2016; Yeh, in press), and information systems (Janssen et al., 2017; Malhotra, Melville, and Watson, 2013; Mukherjee, Aarts, and Doyle, 2009; Park, Hsu, and Arabnia, 2009; Pereira et al., 2017).

This special issue will focus on the research, development and application of these foundations, particularly on the scientific foundations, technologies, and practices from different disciplines and countries that can improve the security and dependability of complex systems in smart cities. This special issue solicits cutting-edge research from both academia and industry, with an emphasis on novel techniques and tools to perceive, reason, learn and act on a wide range of data collected from different (attempted) attacks, sophisticated advanced persistent threat campaigns, etc; as well as bringing together solutions from different disciplines to address the underpinning cyber security threats.

Topic of interest relating to smart cities (e.g. smart grids, intelligent systems and technology, and critical information infrastructure) include, but are not limited to the following:

- Big data analytics for cyber threat identification and/or cyber security mitigation in smart cities and related concepts and technologies such as smart grids, intelligent systems and technology, and critical information infrastructure
- Behavioral security for cyber threat identification and/or cyber security mitigation in smart cities and related concepts and technologies
- Context aware data security in smart cities and related concepts and technologies
- Cyber defense in intelligence systems and technologies for smart cities
- Cyber forensics or cyber intelligence for smart cities and related concepts and technologies
- Cyber security, system security and information security for smart cities and related concepts and technologies
- Cyber threats and protection in smart cities and related concepts and technologies
- Cyber threats and hunting in smart cities and related concepts and technologies
- Secure and efficient implementation of cryptographic algorithms, including post-quantum cryptography, in smart cities and related concepts and technologies
- Security frameworks, architectures and protocols, particularly lightweight solutions, for IoT nodes in smart cities
- Security, privacy and trust issues in IoT, cloud, fog, big data, social networks, and other contemporary technologies relating to smart cities
- Security, privacy and trust management in IoT, cloud, fog, big data, social networks, and other contemporary technologies relating to smart cities
- Social-legal aspects of cyber security (e.g. legal liability of security breaches)

Submission details:

The author instructions for preparation of manuscripts can be found at the Information Systems Frontiers journal web page Author Guidelines web page. Articles which have been previously published at a conference needs to have at least 50% new material as clarified in the cover letter of the submission. Manuscript must be submitted online using the following URL: https://www.editorialmanager.com/isfi/default.aspx, and the authors need to select "Special Issue: Cyber_Smart_Cities" during the submission process.

Authors of selected high quality papers from the 17th IEEE International Conference on Trust, Security and Privacy in Computing and Communications (IEEE TrustCom 2018) relevant to this special issue, will be invited to submit an extended paper for consideration in this special issue. Each selected paper must be substantially extended, with at least 60% difference from its conference version.

Timeline:

Submission deadline: November 30, 2018
First round of reviews due (accept/reject notification): January 30, 2019
Second round of reviews due: March 30, 2019
Final acceptance: June 30, 2019
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Kim-Kwang Raymond Choo holds the Cloud Technology Endowed Professorship in the Department of Information Systems and Cyber Security at the University of Texas at San Antonio, and is an Adjunct Associate Professor of Cyber Security and Forensics at the University of South Australia, Australia. He serves on the editorial board of Computers & Electrical Engineering, Cluster Computing, Digital Investigation, IEEE Access, IEEE Cloud Computing, IEEE Communications Magazine, Future Generation Computer Systems, Journal of Network and Computer Applications, PLoS ONE, Soft Computing, etc. He also serves as the Special Issue Guest Editor of ACM Transactions on Embedded Computing Systems (2017), ACM Transactions on Internet Technology (2016), Computers & Electrical Engineering (2017), Digital Investigation (2016), Future Generation Computer Systems (2016, 2018), IEEE Access (2017), IEEE Cloud Computing (2015), IEEE Network (2016), IEEE Transactions on Cloud Computing (2017), IEEE Transactions on Dependable and Secure Computing (2017), Journal of Computer and System Sciences (2017), Multimedia Tools and Applications (2017), Personal and Ubiquitous Computing (2017), Pervasive and Mobile Computing (2016), Wireless Personal Communications (2017), etc. He is a Fellow of the Australian Computer Society, and a Senior Member of IEEE.

Deepak Puthal received the PhD degree from University of Technology Sydney, Australia in 2017. He is currently a Lecturer in Faculty of Engineering and Information Technologies at University of Technology Sydney, Australia. Prior to this position, he was working as a graduate researcher at Commonwealth Scientific and Industrial Research Organization (CSIRO-Data61), Australia and before that as a research associate at Qatar Mobility Innovations Center (QMIC), Doha, Qatar. His research interest mainly focused on Cyber Security, to design and development security and privacy model for Internet of Things (IoT), distributed computing, cloud computing and big data. He serves on the editorial board of IEEE Consumer Electronics Magazine, Internet Technology Letters (John Wiley), and KSII Transactions on Internet and Information Systems. He also serves as the Special Issue Guest Editor of IEEE Consumer Electronics Magazine, Concurrency and Computation: Practice and Experience (John Wiley), Wireless Communications and Mobile Computing journal (John Wiley) and Computers & Electrical Engineering (Elsevier). He is a member of IEEE and IEEE Computer Society.

Charles Zhechao Liu received his Ph.D. in management information systems from the Katz Graduate School of Business, University of Pittsburgh. He is currently an Associate Professor of Information Systems at The University of Texas at San Antonio. His current research interests include the economics of information systems and cybersecurity, mobile apps, data analytics and emerging technology platforms. Dr. Liu is an ICIS Doctoral Consortium Fellow and a recipient of the Net Institute Research Grant. His research has been presented at international conferences such as ICIS, HICSS, AMCIS, INFORMS, and WISE and published in leading information systems journals such as MIS Quarterly, Information Systems Research (ISR), Journal of Management Information Systems (JMIS), Communications of the ACM (CACM) and Communications of the AIS (CAIS).

Chonggang Wang received the PhD degree from Beijing University of Posts and Telecommunications (BUPT) in 2002. He is currently a Member of Technical Staff/Senior Manager with InterDigital Communications, where he leads an innovation team on Internet of Things (IoT) Protocols and Big Data. His research focuses on IoT, Big Data, Fog/Edge/Cloud Computing, Semantic Computing, etc. including innovative technology development and standardization. Before joining InterDigital in 2009, he conducted various research at NEC Laboratories America in Princeton, AT&T Labs Research, University of Arkansas-Fayetteville, and Hong Kong University of Science and Technology. He has co-organized a number of special issues for IEEE journals/magazines and involved with a number of IEEE conferences in different roles (e.g. co-chair, area chair, and technical program committee member). In 2017, he was elevated to IEEE Fellow for his significant contributions to IoT enabling technologies. He is the co-

Founder and Inaugural Editor-in-Chief of IEEE Internet of Things Journal; during his term 2014-2016, the journal obtained its impact factor of 7.596. He is also a Distinguished Lecturer of the IEEE Communication Society (ComSoc) in 2015 and 2016 covering IoT topics, and currently the associate Editor-in-Chief of IEEE Transactions on Big Data. He received InterDigital Innovation Awards in 2012, 2013 and 2017, a Long-Term Service Award from the IEEE ComSoc Multimedia Communications Technical Committee (MMTC) in 2016, and an Outstanding Leadership Award from the IEEE GLOBECOM 2010. He served as an NSF panelist on wireless networks in 2012 and was an external reviewer for Canada NSERC in 2013.