GUEST EDITORIAL PREFACE

Special Issue on 2015 IEEE International Conference on Electro/Information Technology (EIT 2015)

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The 2015 International Electro/Information Technology Conference (EIT 2015) was hosted by Northern Illinois University, Dekalb, Illinois, USA on May 21-23, 2015. One of the EIT 2015 themes is mobile/handheld computing. The subjects of handheld computing not only cover the ones of desktop computing but also include many new subjects such as location-based services and wireless and mobile networking. This issue includes outstanding papers selected from the Conference and they give new mobile perspectives different from the ones from traditional computing. Regular papers submitted to the Journal are also included. A brief introduction of each of the four articles is given next.

Article 1. Cyber-Physical Platform Development for Multivariable Artificial Pancreas Systems: This paper describes a distributed sensor platform for a new breed of artificial pancreas devices. In recent work, a multi-variable adaptive algorithm has been proposed which incorporates physical activity of the patients for accurate prediction and control of glucose levels. In order to facilitate this algorithm, the authors integrate a smartphone and multiple sensors including activity trackers and a glucose monitor into a distributed system. The proposed sensor platform provides real-time data access for the artificial pancreas control algorithm hosted on a remote device.

Article 2. Meet your Users: In Situ Data Collection from Within Apps in Large-Scale Deployments: Software used as a vehicle for large-scale user trials "in the wild" has become popular. So far, researchers have needed to hardcode survey items into the software

application studied, which is laborious and error prone. This paper discusses how these problems are addressed using TEMPEST, a platform for longitudinal in situ data collection. The authors illustrate the use of TEMPEST to study the deployment and real-world use of a tablet application called *idAnimate*; this application has been designed to support the creation of simple animations as design representations during the creative design process. The authors discuss how the tool has supported the gathering of data in over 4000 installations, both from a development and research perspective, and relate their experiences to current research perspectives on large-scale app trials.

Article 3. Networked Wireless Sensors, Active RFID, and Handheld Devices for Modern Car Park Management: Wireless Sensor Networks (WSNs) perform the following two steps: (i) spatially distributed autonomous sensor nodes are used to collect to physical conditions, such as temperature and humidity, and (ii) the collected data is passed through the network to a server. RFID (Radio-Frequency IDentification) device, consisting of a small chip and an antenna, serves the same purpose as a bar code. Other than providing a unique identifier for that object, it is able to carry more data, 2,000 bytes, than a bar code or magnetic strip does. This paper studies networked wireless sensors, actuators, RFID, and mobile computing technologies for modern car park management systems with sophisticated services over the emerging internet of things (IoT). The authors propose a scalable and lowcost car parking framework (CPF) based on the integration of aforementioned technologies. A preliminary prototype implementation has been performed, as well as experimentation of some modules of the proposed CPF. The results demonstrate proof of concept, and particularly reveal that the proposed approach for WSN deployment considerably reduces the cost and energy consumption compared to existing solutions.

Article 4. A Distributed Computing Algorithm for Deployment of Mobile Robotic Agents with Limited Sensing Ranges: This paper presents a distributed computing algorithm for an application of deploying a group of mobile robotic agents in a convex region. Each agent can be treated as an embedded system with its own sensors and actuators. Under the assumption that agents have limited sensing capabilities, the distributed computing algorithm is designed to make agents cover the convex region so that each member's individual region, the space around them, is optimized. Each agent must accommodate its kinematic constraints and can only exchange information locally based on the range of the sensors equipped. The proposed algorithm utilizes Voronoi partitions to create individual subregions and directs each member toward the centroid of their subregion. The Voronoi partitions are updated with each iteration of the algorithm. Simulation results are provided to validate the proposed algorithm.

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S. Hossein Mousavinezhad received his PhD in Electrical Engineering from Michigan State University, East Lansing, Michigan. He is currently a professor of the Department of Electrical Engineering Computer Science (EECS), Idaho State University, Pocatello, Idaho. His research interests include digital signal processing, bioelectromagnetics, and communication systems. Mousavinezhad is a recipient of the Institute of Electrical and Electronics Engineers (IEEE) Third Millennium Medal. He received American Society for Engineering Education (ASEE) Electrical and Computer Engineering Division's Meritorious Service Award in June 2007. Mousavinezhad is a program evaluator for the Accreditation Board for Engineering and Technology (ABET).

Wen-Chen Hu received a BE, an ME, an MS, and a PhD, all in Computer Science, from Tamkang University, Taiwan, the National Central University, Taiwan, the University of Iowa, Iowa City, and the University of Florida, Gainesville, in 1984, 1986, 1993, and 1998, respectively. He is currently an associate professor in the Department of Computer Science of the University of North Dakota, Grand Forks. He was an assistant professor in the Department of Computer Science and Software Engineering at the Auburn University, Alabama, for years. He is the Editor-in-Chief of the International Journal of Handheld Computing Research (IJHCR), the general chairs of a number of international conferences such as the 2015 International Conference on Big Data, IoT, and Cloud Computing (BIC 2015), and associate editors of several journals like Journal of Information Technology Research (JITR). In addition, he has acted more than 100 positions as editors and editorial advisory/review board members of international journals/books, and track/session chairs and program committee members of international conferences. He has also won a couple of awards of best papers, best reviewers, and community services. Hu has been teaching more than 10 years at the US universities and over 10 different computer/IT-related courses, and advising/consulting more than 100 graduate students. He has published over 100 articles in refereed journals, conference proceedings, books, and encyclopedias, edited more than 10 books and conference proceedings, and solely authored a book entitled "Internet-enabled handheld devices, computing, and programming: mobile commerce and personal data applications." His current research interests include handheld/mobile/smartphone/tablet computing, location-based services, web-enabled information system such as search engines and web mining, electronic and mobile commerce systems, and web technologies. He is a member of Association of Computing Machinery (ACM).