
Editorial

Changhoon Lee

Department of Computer Science and Engineering,
Seoul National University of Science and Technology,
Gongneung-ro 232, Nowon-gu, Seoul, 01811, Korea
Email: changhoonlee08@gmail.com
Email: chlee@seoultech.ac.kr

Neal Naixue Xiong

Department of Business and Computer Science,
Southwestern Oklahoma State University (SWOSU),
100 Campus Drive Weatherford, OK, 73096, USA
Fax: (+1)-580-774-3751
Email: xionгнаixue@gmail.com
Email: neal.xiong@swosu.edu

Biographical notes: Changhoon Lee received his PhD in Graduate School of Information Management and Security (GSIMS) from Korea University, Korea. In 2008, he was a Research Professor at the Center for Information Security Technologies in Korea University. In 2009–2011, he was a Professor in the School of Computer Engineering in Hanshin University. He is now a Professor at the Department of Computer Science and Engineering, Seoul National University of Science and Technology (SeoulTech), Korea. His research interests include information security, cryptography, digital forensics, IoT security, smart grid security, computer theory etc.

Neal N. Xiong is currently a Faculty at the Department of Business and Computer Science, Southwestern Oklahoma State University (SWOSU), OK, USA. He received his PhD in Japan Advanced Institute of Science and Technology. Before he attends SWOSU, he worked in Colorado Technical University (Full Professor, four years), Wentworth Institution of Technology, and Georgia State University for many years. His research interests include cloud computing, business networks, security and dependability, parallel and distributed computing, and optimisation theory. He published over 100 international journal papers and over 100 international conference papers.

1 Introduction

Recently, rapid technological advancements and changes in the various networking technologies such as 4G/5G systems, wireless sensor network, and vehicular network have been achieved. With the help of these technologies, we can establish the ubiquitous convergence networks, which will bring convenience in our lives to us. One of the typical examples for the next generation ubiquitous convergence networks is cloud computing, which enables convenient, on-demand network access to a shared pool of configurable

computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction. Although these technologies will introduce various convenience services and applications, the convergence issues (i.e., energy-efficient network protocol and location privacy in heterogeneous networks) also are occurred.

This special section aims to foster the dissemination of high quality research in any new theory, technique, and research related to ubiquitous convergence networks, as well as to enhance its state-of-the-art. This special section also provides a chance for academia and industry to present novel research on all aspects of ubiquitous convergence networks, as well as theoretical and experimental studies of fielded systems. The topics of papers submitted in this special issue included the following topics:

- convergence platform in future telecommunication network
- energy-efficient networking protocol (e.g., energy-efficient routing protocol)
- issues in electro mobile vehicular network (e.g., battery charging system)
- self-healing and self-optimising networking
- applications of smart grid (e.g., privacy-preserving billing system)
- security and location privacy in ubiquitous convergence networks (e.g., privacy in wireless body area network)
- intrusion detection mechanism in mobile vehicular network
- standardisation and interoperability
- convergence education system and e-learning.

2 The papers in this special issue

We have selected nine manuscripts for this special issue after the two rounds of reviews. Each selected manuscript was blindly reviewed by at least two reviewers consisting of guest editors and external reviewers.

The first paper entitled ‘Advanced assessment model for improving effectiveness of information security measurement’, by Yoon and Lee proposes consistency test used in Minnesota multiphasic personality inventory (MMPI) and newly improved re-survey process. Consistency test detects a false response of respondents. The improved process includes the assessment method to give a penalty to the existing method. Advanced assessment model is applied to a checklist of energy industry in order to verify the effectiveness.

The second paper entitled ‘Unsupervised method of word sense disambiguation for real time associated word identification in human–robot interaction’ by Choi and Kwon presents a system architecture and algorithm for the disambiguation problem in human-robot interaction. They identify ambiguous words, phrases and sentences in many contexts and suggest appropriate alternatives by calculating the frequency of an ambiguous word, an associated word and the theme.

The third paper entitled 'Swing analysis by body type with golf shot analysing device' by Park et al. suggests fundamental resources to develop scientific golf swing method by analysing golf shot change by swing patterns for three different body types.

The fourth paper entitled 'Using circular dot pattern code tag for medical information on the round type medical package' by Shim and Kim proposes the circular dot pattern code (CDPC) tag for cylindrical and round type medical bottle identification and management. CDPC is based on topology of dot pattern code, and it is well suited to recognising tags in curvature environments.

The fifth paper entitled 'Pedestrian-to-vehicle communication-based safety message transmission for the elderly in the conflict area' by Cho proposes pedestrian-to-vehicle (P2V) communication based safety message transmission for the elderly. He focuses on the conflict area which represents the unsigned area on the road, i.e., a single road and intersection area.

The sixth paper entitled 'MAP task allocation strategy in an ARM-based Hadoop cluster by using local storage as split cache' by Gu and Kwak we propose a new map task scheduling policy for Hadoop. This policy transmits multiple splits to nodes at once to reduce network load. In addition, local storage space of nodes is used as a cache for split, which shortens the time to access splits, so this policy can reduce the execution time of MapReduce applications.

The seventh paper entitled 'Design and implementation smart device control system based on indoor positioning' by Lim et al. proposes a smart phone control system to resolve such problems. The proposed system is based on an indoor positioning system, and controls smart phone functions automatically by setting up restricted functions for the distinct zones.

The eighth paper entitled 'A Unity3D-based mobile fashion coordination system' by Kim et al. proposes an android-based application to provide mix-and-match options customised according to the users current wardrobe and the weather, and display these clothes on a virtual avatar via Unity3D.

The ninth paper entitled 'Verification of the performance of respiratory synchronisation radiation switchgear by using imaging technique' by Park et al. suggests respiratory synchronisation beam switchgear which can perform the real-time gating of treatment beam by synchronising with respiratory signal in order to compensate for the motion of normal tissue or organs which is generated by respiration for radiation applied to tumour in radiotherapy. Respiratory signal obtained by the belt system is applied to the self-developed switchgear motor control program so that the AC servo motor of switchgear can be operated in connection with actual respiration.