

Improving the Quality of Life for the Visually Impaired

By Saraju P. Mohanty

I welcome the readers to the third 2018 issue of CE magazine. I assume the first 2018 which had theme of Smart Health Care and the second 2018 issue themes as Smart Technologies for Sustainable Smart Cities good reading for the CE community. I was chairing ICCE 2018. I am quite glad to report that ICCE 2018 went very well. The attendee very much liked the 6 keynotes, 2 main panels, and the technical sessions. I was also in the CE society board-of-governors (BoG) meeting. During BoG discussion on MIT sponsored study on the membership, I was glad to learn from the MIT group that people read CE magazine. So CE magazine is driving CE Society and I hope to take to a position that CE society will proud of. I saw some portions of the Consumer Electronics Show (CES). I saw one product that could be used by visually impaired person that converts images to audio signal and using that audio signal the person can comprehend what is being viewed by the cameras of the product. That motivated to make the cover page as consumer electronics for visual impaired. It comes to my mind that Jan 2017 issue of CE magazine had a titled "A Multi-Task Grocery Assist System for the Visually Impaired" that presented interfaces, algorithms and hardware platforms to help the visually impaired people on grocery shopping. The related CE systems can have a potential impact on an estimated 285 million people who are visually impaired worldwide. This should be an integral part of smart healthcare that we covered in Jan 2018 issue of CE magazine.

AWARDS AT ICCE 2018

I first bring the readers the ICCE, CE Magazine, and CE Transactions, and CE society awards which were distributed at ICCE 2018. I congratulate the winners of the awards.

(1) **Ibuka Award:** Ibuka which is conferred by IEEE for outstanding contributions to consumer electronics technology has been named in honor the co-founder and honorary chairman of Sony Corporation, Masaru Ibuka.

2018 Ibuka award was conferred to Linus Torvalds "For his leadership of the development and proliferation of Linux." It was a great moment for me to join IEEE president James A. Jefferies to host Linus Torvalds at ICCE 2018.

(2) **ICCE 2018 – Best Paper Award**

- i. *1st Prize:* "A Hardware-Trojan Classification Method Utilizing Boundary Net Structures" by Kento Hasegawa, Masao Yanagisawa, and Nozomu Togawa.
- ii. *2nd Prize:* "Learning Data Augmentation for Consumer Devices and Services" by Joseph Lemley, Shabab Bazrafkan, and Peter Corcoran.
- iii. *3rd Prize:* "Energy-Aware Core Switching for big.LITTLE Multicore Mobile Platform" By Yeomin Nam and Moonju Park.

(3) **IEEE Consumer Electronics Magazine Awards**

The following awards were initiated this year and hence last 3 years were covered. From next year CE magazine best paper for immediate previous year and best performing member of editorial board will be awarded.

- i. *Long-Term High-Impact Award:* "HEVC: The New Gold Standard for Video Compression: How Does HEVC Compare with H.264/AVC?" by Mahsa T. Pourazad, Colin Dautre, Maryam Azimi, and Panos Nasiopoulos; July 2012.
- ii. *2015 Best Paper Award:* "Brain-Computer Interface Technology and Development: The emergence of imprecise brainwave headsets in the commercial world" by Narisa N. Y. Chu; July 2015.
- iii. *2016 Best Paper Award:* "Everything you wanted to know about smart cities: The Internet of things is the backbone" by Saraju P. Mohanty, Uma Choppali, and Elias Kougiianos; July 2016.
- iv. *2017 Best Paper, Joint Award:* (a) "Deep Learning for Consumer Devices and Services: Pushing the limits for machine learning, artificial intelligence, and computer vision" by Joe Lemley, Shabab Bazrafkan, Peter Corcoran; April 2017. (b) "Create Your Own Internet of Things: A survey of IoT platforms" by Kiran Jot Singh, and Divneet Singh Kapoor; April 2017.
- v. *2017 Best Impacts, Joint Award:* (a) "Smart Fabrics and Networked Clothing: Recent developments in CNT-based fibers and their continual refinement" by Javad Foroughi, Teodor Mitew, Philip Ogunbona, Raad Raad,



ICCE 2018 Conference Chair and EiC CE Magazine Saraju P. Mohanty, and IEEE President James A. Jefferies Conferring Ibuka Award to Linus Torvalds.

and Farzad Safaei; October 2016. (b) “Security and Privacy Challenges in the Internet of Things” by Jong-Hyouk Lee, Hyoungshick Kim; July 2017.

(4) **IEEE Transactions on Consumer Electronics Awards - Chester Sall Memorial Award**

- i. *1st Place*: “Multisource Wireless Energy Harvesting-based Medium Access Control for Rechargeable Sensors” by Chenglong Shao, Heejun Roh, Taekyung Kim, and Wonjun Lee; May 2016.
- ii. *2nd Place*: “FSLRU: A Page Cache Algorithm for Mobile Devices with Hybrid Memory Architecture” by Dong Hyun Kang, and Young Ik Eom; May 2016.
- iii. *3rd Place, Joint*: (a) “Non-Parametric Human Segmentation Using Support Vector Machine” by Kyuwon Kim, Changjae Oh, and Kwanghoon Sohn, May 2016. (b) “Bio-inspired Ant Colony Optimization based Clustering Algorithm with Mobile Sinks for Applications in Consumer Home Automation Networks” by Jin Wang, Jiayi Cao, Bin Li, Sungyoung Lee, and R. Simon Sherratt; Nov 2015.

NEWS – CONFERENCES

IEEE Sixth Global Conference on Consumer Electronics (GCCE 2017) – Discusses the 6th IEEE Global Conference on Consumer Electronics held at Nagoya, Japan during 24-27 October 2017.

IEEE International Conference on Consumer Electronics - Asia (ICCE-Asia 2017) – Presents a brief report on IEEE International Conference on Consumer Electronics-Asia (ICCE-Asia 2017) which was held in Bangaluru, India during 5-7 October 2017.

ARTICLES – GENERAL

A Wearable Indoor Positioning System Based on Visual Marker for People with Visual Impairment – This article motivated me to have the cover page dedicated to consumer electronics for visually impairment. This article presents the idea of wearable glasses that can provide the indoor positioning system while detecting the obstacles. The wearable glass has microcamera and ultrasonic transducer to facilitate the detection and recognition phases. The wearable glass works in coordination with a smart mobile phone that performs the computations and notifies the information of the current location and the obstacles by audio or vibration to the user.

Food Nutrition Visualization on Google Glass: Design Trade-off and Field Evaluation – This paper presents a head-mounted system based on augmented reality that allows the user to automatically access nutrition information overlaid on food items. It would be interesting to see if the wearable glass of the above papers and this paper can be combined to have a strong unified solution for visually impaired to make shopping in supermarkets easy.

iTour: An IoT Framework for Independent Mobility of Tourists in Smart Cities – This article presents a IoT based framework that can help tourists in independent mobility in smart cities which can be unknown the tourists.

Evaluation of ICtCp color space and an Adaptive Reshaper for HDR and WCG – This article presents a color space and a compression algorithm for better presentation of visual information with optimal storage use.

User Credential Cloning Attacks in Android Applications – This paper presents a generic procedure for user credential cloning attacks against Android applications that support the automatic login feature and also defense mechanisms.

A consumer's perspective on digital games – This article discusses the dimensions that a game developer need to consider for the successful development of good quality digital games.

Personal Active Choreographer, a new method to improve learners’ performance of hand-waving dance -- This article presents a game-based learning platform to recognize and record hand-waving dance movement in a three-dimensional digital way.

REGULAR COLUMNS

Hardware Matters -- Obfuscated JPEG Image Decompression IP Core for Protecting Against Reverse Engineering: This article presents a method for IP protection against reverse engineering which can be a good step towards preventing fake/clone consumer electronics.

IP Corner -- Product Compliance and E-Commerce on the European market - The European Commission's guidelines on responsibilities and consequences for U.S. manufacturers: This article presents the guidelines on responsibilities and consequences for U.S. manufacturers by the European Commission.

Market Analysis Corner -- Market-Based Values: Securing the Future: This article discusses various aspects of security in consumer electronics.

Professional Development Corner -- Leadership and parenting - 6 Parallels: This article presents a good comparison of workplace leadership and parenting at home.

SOCIOECONOMIC IMPACT

Microsoft's Kinect Technology: This article discusses frameworks for body motion detection which is a necessity for natural user interface (NUI) with computing environment with Microsofts' kinetic technology as a specific example.

SPECIAL SECTION

This special section titled "Advanced Interaction and Virtual/Augmented Reality" presents selected articles in this area as Part-II whose Part-I was published in March 2018 issue. I would like to thank the Guest Editor for all the hard work for this strong special section which will be a good reading for our readers.

PRODUCT AND BOOK REVIEWS

Webcams: Look How Far We've Come (and What Lies Ahead) – This article presents the origin and progress in the webcams.

LOOKING FORWARD

I hope May 2018 issue is a good reading for the CE community. I more hot themes will be covered in future issues of the CE magazine with the help of editorial board and authors around the globe.