

## Notes from the editor – My First Issue as EiC

It is a distinct privilege for me to be the Editor-in-Chief (EiC) or simply Editor of the IEEE Consumer Electronics Magazine (CEM). I sincerely believe to have the opportunity to meet and interact with CE community around the globe in next few years to contribute to the community, advance the state-of-art of the CE at the era when everything is on our palms through a smart mobile phone, and contribute to the society. A sincere thanks from the bottom of my heart goes to the outgoing EiC Peter Corcoran. It is his hard work, leadership skills, and visionary thoughts has brought CEM to a highest possible level in the span of 4 years. Peter has done an extraordinary job and I am glad to have him on the editorial board as emeritus EiC to continuously learn from him and seek his advice when needed. I am grateful to various IEEE CE Society (CESoc) volunteers including Vice President Publication Stuart Lipoff for the confidence that they have shown on me in entrusting this serious job of EiC which is a driver of CE society. I met both Stuart Lipoff and Peter Corcoran at IEEE Panel of Editors (POE) held San Diego, CA, USA during March 2016. I was very pleased to meet them and learn the level of enthusiasm that they carry to serve their profession. I learnt that Peter flew all the way from Ireland to USA for this meeting. I am thankful to CE society president Sharon Peng for generously approving the budget and always ready to help CEM and CE society. I sincerely hope that CEM will be a driver of CE society in terms of technology dissemination and membership growth. Overall, sincere appreciation to all volunteers who make their sincere efforts and serve the community.

As many of you already be knowing, CEM is the flagship magazine of the IEEE Consumer Electronics Society which has been instrumental in bringing Consumer Electronics (CE) technology to IEEE members and to the public for last several years. CEM has the mission to educate, inform, and entertain CE community on technology, news, events, and general topics relating to CE and to further serve and support their professional career development. It is due to its technical contents well fulfilling its missions CEM own the prestigious a Apex Grand Award for excellence in writing for its January 2013 issue. I strongly encourage to continuously visit IEEE-CEM site at <http://cesoc.ieee.org/publications/ce-magazine.html> for additional information which is being continuously updated. If you have any questions on the scope, submission ideas, formatting, etc. you can always contact me over email for a fast response. The perspective authors are always welcome to submit their manuscripts at the following link of ScholarOne Manuscript: <https://mc.manuscriptcentral.com/cemag>. CE is a very fast changing area, imagine how often we are getting new smart phones, tablets every month with more and more features added. Imagine how around the world Information and Communication Technology (ICT) being deployed to realize Smart Cities. The smart components of smart cities including, smart healthcare, smart information, smart transportation, smart governance have been made possible due to the usage of ICT and CE technology. To cope with the technology CE growth and trend, we are always in look out mode for special issues or special sections ideas. You are always welcome to contact me with proposal for special issues or special sections. This will be immensely useful to readers to learn new trends. If the conferences that you are organizing has very good keynote, tutorial, invited talks related to CE then, please feel free to submit them as formal write-ups to CEM.

Before presenting inside details of the issue to you, let me announce some good news. IEEE-CES presents “Chester W Sall Memorial Awards” to recognize the best papers published in the sister periodical, IEEE Transactions on Consumer Electronics (TCE). The award recognizes 3 papers, 1st place, 2nd place, and 3rd place, which are presented at the immediately next ICCE, the flagship conference of IEEE-CES “IEEE Conference on Consumer Electronics” at Las Vegas, USA. The Award consists of a plaque and a financial award. The award is quite competitive which judged by a review committee drawn mainly from the editorial board of TCE and selected from the four issues of TCE for a year. This process is overseen by the

CE Society Awards Chair which is normally appointed from the members of the Board of Governors. 2016 Annual IEEE Consumer Electronics Society Chester Sall Awards for year 2014 is awarded to the following: (1) 1st Place: "Virtual Memory Partitioning for Enhancing Application Performance in Mobile Platforms" by Geunsik Lim, Changwoo Min, and Young Eom. (2) 2nd Place: "An Enhanced Fall Detection System for Elderly Person Monitoring using Consumer Home Networks" by Jin Wang, Zhongqi Zhang, Bin Li, Sungyoung Lee, and R. S. Sherratt. (3) 3rd Place: "A DSP Based HEVC Decoder Implementation Using an Actor Language Dataflow Model" by M. Chavarrias, F. Pescador, M. Garrido, E. Juárez, and M. Raule. In the rest of the editorial, I briefly present the overview of the issue.

## **1. Society News – General**

### **Why Join Consumer Electronics Society of IEEE?**

VP publication Stuart Lipoff presents a motivational case for the benefits of joining CE Society of IEEE. He clearly suggests CE products which including smart mobile phones, tablets, home PCs, home networking, navigation; home medical devices, and corresponding services fall under the CE industry umbrella. CE society deals with the research to drive the state-of-the-art of these products. Thus becoming a CE society member has major advantage of being learning bleeding edge technology well ahead of time even before its becomes an end product.

### **IEEE CE Society attends OpenFog Members Meeting at Princeton**

During mid May 2016, Peter Corcoran, an CE society board of governor attended the 2<sup>nd</sup> members meeting of OpenFog consortium. We are aware of Cloud Computing. Cloud Computing through Internet has made computing, storage, and communications ubiquitous without actually physically accessing the computing platforms. Fog Computing is about bringing the Cloud closer to the edge of the network and OpenFog is an initiative for Fog Computing.

### **CES Asia and CE Society Workshop Show Amazing Growth**

The 2<sup>nd</sup> annual Consumer Electronics Show (CES) Asia took place at Shanghai New International Expo Centre (SNIEC). CES-Asia™ exceeded the expectations and had more than 425 exhibitors representing 23 countries. The co-located event, CES-Asia Conference Program featured more than 100 speakers and 50 sessions. Overall 32,000 attendees, including more than 1,000 members of the media attended the meeting.

### **Call for Special Section Articles**

Fabrizio Lamberti and Fernando Pescador will guest edit a Special Section on "Advanced Interaction and Virtual/Augmented Reality". The Special Section will emphasize the human-machine interaction approaches tailored to CE with a special focus on those pertaining Virtual and Augmented Reality, aiming to provide a platform for engineers, researchers, industrial experts and other stakeholders to address several related challenges. The perspective authors invited to submit their manuscript at the following link: <https://mc.manuscriptcentral.com/cemag>. Please following article type: "Special Section: Advanced Interaction and Virtual" while submitting the article to accurately conduct the review process.

## **2. Society News – Conferences**

### **IEEE International Conference on Consumer Electronics 2017**

As continuation of the previous issue of CEM, I mention about ICCE 2017 first. Preparations by IEEE-CES volunteers in full swing for the Society's flagship conference ICCE 2017 held annually in Las Vegas, USA. ICCE in the year 2017 is on its 35<sup>th</sup> year will have oral and poster presentations in various different tracks. Everyone is invited to contribute and attend the meeting which is held in conjunction with world's largest show on global consumer electronics and consumer technology, the Consumer Electronics Show (CES).

### **IEEE International Conference on Consumer Electronics-China 2016**

The 2016 IEEE International Conference on Consumer Electronics China (ICCE-China) to take place during December 19-21, 2016 at Guangzhou, China. It has the following tracks: (1) CE and technologies for multimedia applications, (2) CE and technologies for health care applications, (3) CE and technologies for power management applications, (4) CE and technologies for home automation, and (5) General consumer electronics and technologies.

### **IEEE International Conference on Consumer Electronics-Taiwan (ICCE-TW) 2016**

The ICCE-TW 2016 conference was held during May 27-29, 2016 at the National Chi Nan University in Nantou County of the Central Taiwan. The meeting attracted 234 participants mainly from the South East Asia CE academic and industry sectors. The keynote was quite interesting to the audience which was on the energy consumption patterns in a connected world to reduce household energy foot print. The meeting was a great success and attendees look forward to next edition.

### **Global Humanitarian Technology Conferences: CES Report and Preview**

Now I bring the IEEE Global Humanitarian Technology Conferences (GTHC) 2016 to your attention. GTHC is going to take place during October 13-16, 2016 at Seattle, WA, USA. Based on the historical data, GTHC 2016 is projected to attract 250-300 participants with more than 250 papers, case studies and humanitarian challenges submissions. GTHC is a unique conference, a quick history GTHC is the following: IEEE Region 6 organized the first GTHC in October 2011 to focus on power, water & agriculture, health, communications, education and disaster response. The conference attracted attendees from around the world who have interest in CE.

## **3. Society News – Future Directions**

### **Report on W3C Web of Things Face to Face in Montreal and W3C Track in WWW 2016**

Soumya Kanti Datta presents report on World Wide Web Consortium (W3C) Web of Things (WoT) Interest Group (IG) face to face the took place in Montreal, Canada during April 10-13, 2016. This is the 2<sup>nd</sup> such meeting and was co-located with 25<sup>th</sup> World Wide Web (WWW 2016) Conference. The meeting had several informative presentations. It has open day and PlugFest to test and evaluate their implementations jointly with other peers. Another editions of this meeting is planned as well.

### **Introducing VR First – Unlocking the door to a future in virtual reality**

Virtual reality (VR) labs equipped with the latest VR headsets, computers, and necessary development software are crucial to train technical pioneers best platform. F. Ozkan presents discussions on the first ever VR lab named VR First which can serve as a benchmark for excellence in this area.

## **4. Young Professionals**

### **The global IEEE Young Professionals committee meeting 2016**

The annual meeting of the global IEEE Young Professionals was held in Reykjavik, Iceland during April 2016. The meeting was well represented by ten IEEE Regions and in the 35+ Technical Societies. The CESoc Young Professionals Committee Chair for 2016, Abdullah Almutturi, attended the meeting and has presented his report for the CEM readers. The meeting focused on improving the execution of the IEEE Young Professionals by improving the mentoring programs and engaging Young Professional members.

### **To be a leading engineer with achievement and morality**

Kosin Chamnongthai presented young professional event at 2016 ICCE-Taiwan under a theme "To be an engineer with achievement or morality?". This article is a formal representation of the same. He advocates the need for new-face engineers to carefully design their morality-based working lives while advancing in their career paths, and finally reach their career goals.

## **5. Articles – General**

### **Listening in Noisy Environment**

This articles titled “Listening in Noisy Environment - Integration of Active Noise Control in Audio Products” authored by C.-Y. Chang\*, A. Siswanto, C.-Y. Ho, T.-K. Yeh, Y.-R. Chen and S. M. Kuo. It is distinct pleasure to mention here that one of the co-authors of this article, Sen M. Kuo was a 1993 IEEE Consumer Electronics Society Chester Sall Award winner. This article addresses interesting problem of listening to music in a very noisy environment. As typical, one can either block the noise or increase the music level for masking the annoying noise. This article discusses insight details of this and answers which one is a better solution.

### **Survey of Affective Computing for Stress Detection**

S. Greene, H. Thapliyal, and A. Caban-Holt present a thorough Survey of Affective Computing for Stress Detection. Affective computing is an emerging field of interest in the era of social networks as society becomes more aware of the connection between emotional states and physical health. In the affective computing both hardware and software technology are used to detect affective states including joy, anger, surprise, disgust, and fear. In this survey which will be very much useful for CEM readers, various aspects of affecting survey including physiological indicators such as heart and blood activity (ECG and PPG) and skin response (GSR/EDA), physical features such as facial expression (AFE) have been presented.

### **The Amiga, a Hardware Engineering Story**

The articles titled "The Amiga, a Hardware Engineering Story" has been authored by J. Decuir and R. H. Nicholson. In 1980s, the Amiga personal computer architecture was a child of both home video game consoles and PC systems. This Amiga was the first architecture to support multimedia multitasking OS

which in turn enabled visual artists and musicians. This article presents a very good historical and technical perspectives of Amiga hardware design.

### **Hacking the House: Chapter 3- Non-Stop Internet**

The third article in “Home Hacking” series is again very well presented by S. Lipoff. This article discusses the challenge in maintaining reliability of home remote doorbell by creative systems integration using off the shelf components. This article is a very good reading for readers who like to implement this as a hobby. This project if catches serious attention may even become a commercial CE product!

## **6. Regular Columns**

### **Standards Corner -- EXG Standards pertaining to the Field of Interest within the IEEE Consumer Electronics Society**

The standard column by N. N. Y. Chu will be interesting read for the CEM community. It is a fact that healthcare is key for the society, so are biometric signals data when extraction technology has become readily available for processing, transmission, and storage in the smart health care context. Biometric signals such as EEG, EKG/ECG, EMG, EOG are called as EXG. This edition of standard column discussed about EXG standardization.

### **IP Corner -- Registration of the three-dimensional shape of consumer products as trademarks in the EU**

V. Nieß in discussions on the registration of the three-dimensional shape of consumer products as trademarks in the European Union in the current IP corner. The current column presents detailed discussions of challenges in patenting the shapes of 3D products in the EU in light of the recent case law of the Court of Justice of the European Union (CJEU).

### **Storage – The Memory of Cars**

T. Coughlin discusses "The Memory of Cars" in the current Storage column. It is an interesting fact that electronic and electrical systems is approximately 40% of the value of a latest internal combustion vehicle and in the hybrid vehicle this can be as high as 75%. In these modern automobiles, the electronic systems depend upon digital memory to hold the data that the automobiles need for their operations. The current column discusses these memory devices will play critical roles in the next generation autonomous driving systems.

### **Hardware Matters -- Resilient Soft IP-core Design against Terrestrial Transient Faults for CE Products**

A. Sengupta presents the hardware matters column of this issue. The version of the column in this issue focuses on resiliency aspects of IP core against terrestrial transient fault. This faults considered a major contributing factor in malfunctioning of hardware thus limiting their applicability in critical CE applications.

### **Product Safety Perspectives -- Let's Talk Product Safety**

B. Bisenius writes the 2nd version of the Product Safety column in the current issue. This is a continuation discussion of the 6 Hazards of Product Safety introduced in the previous issue. The 6 Hazards such as the following have been discussed detail: (1) Risk of Shock, (2) Risk of Energy, (3) Risk of Fire, (4) Risk of Injury, (5) Risk of Radiation, and (6) Risk of Chemicals.

### **CE Society TV -- Internet of Things**

K. Glasman is the author of the first version of the new column "CE Society TV" in which the current version is focused on Internet of Things. IEEE CESoc TV is the YouTube Broadcast Channel of the CE Society. This collection of videos is a very good source of knowledge and information for those who would like to know more about CE. The objective of this column is to bring specific programs/videos to the readers attention which together can be good reading under a specific theme.

### **Publications Corner – CESoC Publications**

CE Society VP Publications Stuart Lipoff has introduced the various publications of the society in detail. Readers will find this informative to contribute as authors for their new research findings. The researchers can volunteer as reviewers to contribute to the professional as well as learn while reviewing.

### **CE Education and Outreach --**

The new nominee for VP of Education for the CE Society Joseph Wei has nice and brief discussion of CE education and outreach activities. He indicates the need and desire for the CE members to have more membership workshops, Distinguished Lecturer (DL) program, Young Professional educational programs.

## **7. Socioeconomic Impact**

### **Periscope's Paradox: the Promise and Peril of Un-Censored Live Video**

R. Pringle in the article titled "Periscope's Paradox: the Promise and Peril of Un-Censored Live Video" discusses the opportunities, issues, and challenges of live, un-edited, and un-censored live video on the society. In the current CE era in which smart mobile phone and tablets are everywhere which can create such videos, the responsibilities of the user have increased significantly.

### **The Virtual Yellow House**

In the article "The Virtual Yellow House" C. Moore discusses the entry of virtual reality (VR) and augmented reality (AR) to the mainstream consumer marketplace. The article presents the Virtual Yellow House project as a case study to create a three-dimensional gallery and multimedia space through VR technology.

### **Smart Fabrics and Networked Clothing**

The "Smart Fabrics and Networked Clothing" article by J. Foroughi, T.Mitew, P. Ogunbona, R.Raad, and F. Safaei provides an overview of the main technical and social challenges associated with the emerging technology of smart fabrics and networked clothing. The article emphasizes on carbon nanotube (CNT) based fibres and yarns based fabrics. CNT is an emerging nanotechnology that has lots of promises. In the smart fabrics, the CNT fibres act as transreceivers as well as actuators for the wireless communication for networked clothes.

## **Science fiction is full of bots that hurt people**

K. Michael presented the article titled "Science fiction is full of bots that hurt people". The article provides detailed discussions of the positive and negative aspects of bots. The most important aspect of the article is the first-ever Bot Power List.

## **8. Special Section**

In the current issue, P. Corcoran and S. K. Datta guest edited a special section on “Mobile Edge Computing and Internet of Things for Consumers”. Mobile Edge Computing (MEC) can be more suitable for real time operation, low latency requirements and high QoS as compared to cloud platforms. This special session is intended to presents research and discussions on MEC. In the Part I of this Special Section, the following articles have been presented which were selected after rigorous review process: (1) Mobile Edge Computing vs. The Internet? (2) MEC come home! Connecting things in future smart homes using LTE D2D communications, (3) Mobile Edge Computing architecture as enabler for innovative services toward 5G networks, and (4) Optimizing Power Consumption of Wi-Fi inbuild IoT device.

## **9. Looking Forward**

Finally, I would like to thank you all for the opportunity to contribute to CEM and serve the professional society. I look forward to work with IEEE, IEEE-CES, CE community, and CE researchers around the globe for continuous upward growth of CEM in the years to come. In the January issue complete editorial board will be introduced to the readers. I envision that CEM will be have wider visibility in various other societies of IEEE including IEEE-CS and IEEE-CAS and will foster collaboration among sister societies of IEEE. I envision that in next couple of years with support from everybody CEM will be bimonthly periodical instead of quarterly.

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