Video Cameras: An Omnipresent Consumer Electronics

By Saraju P. Mohanty

The cover theme of July 2019 issue of CE magazine has been dedicated to Video Cameras. Video cameras are omnipresent in almost everywhere including, TV studios broadcasting for TV, smart phones on hand, doorbells, or even mount on an Unmanned Arial Vehicle (UAV). We trace back the history of cameras, an all electronics TV system that uses cathode ray tube (CRT) for both imaging and display was introduced in 1908. Then various camera or imaging tubes including iconoscope, orthicon tube, vidicon have been used from a time to time in the evolution of this highest impact technology. Then came charge-coupled devices (CCD), and CMOS image sensors. CMOS image sensors made the cameras possible to be of any sizes, part of any devices, and placed at any locations. In the process of development both monochrome and color cameras have been marketed. The cameras have been both analog and digital. Of course, digital cameras are replacing the analog cameras more or less in all applications. The cameras can be of different resolutions and quality. Along with the digital cameras, video compress technology has been evolving as well to meet the constraints for storage/memory cost, and transmission bandwidth.

CE SOCIETY AWARDS

I congratulate winners of various awards presented by CE society.

CESoc Ibuka Award for 2019: Awarded to Tomonori Aoyama and Takashi Hayasaka, for pioneering contributions in super-high-definition image technologies leading to 4K digital cinema and television.

CESoc Fellow for 2019:
(1) Wen-chung Kao - for leadership in the development of electrophoretic display technology
(2) Seishi Takamura - for application of video coding

CESoc Outstanding Service Award for 2019: Awarded to Michael Isnardi, for Outstanding contributions to a broad range of important activities in the IEEE Consumer Electronics Society including the awards committees, ATSC representation, and ICCE technical reviews.

CE Magazine Best Paper Awards for 2018:
(1) First: Deepak Puthal, Nisha Malik, Saraju P. Mohanty, Elias Kougianos, and Chi Yang, "The Blockchain as a Decentralized Security Framework", Year: 2018, Month: March, Volume: 7, Issue: 2.
(2) Second: Deepak Puthal, Nisha Malik, Saraju P. Mohanty, Elias Kougianos, and Gautam Das, "Everything You Wanted to Know About the Blockchain: Its Promise, Components, Processes, and Problems", Year: 2018, Month: July, Volume: 7, Issue: 4.
(3) Third: Anirban Sengupta and Dipanjan Roy, "Intellectual Property-Based Lossless Image Compression for Camera Systems", Year: 2018, Month: January, Volume: 7, Issue: 1.

CE Transactions Best Paper Awards for 2019:
(1) First: José L. Herrera, Carlos R. del-Blanco and Narciso García, "A Novel 2D to 3D Video Conversion System Based on a Machine Learning Approach", Year: 2016, Month: November, Volume: 62, Issue: 4.
(2) Second: Solmaz Javanbakhti, Sveta Zinger and Peter H. N. de With, "Fast Scene Analysis for Surveillance & Video Databases", Year: 2017, Month: August, Volume: 63, Issue: 3.

(3) Third: Hasan Azgin, Ercan Kalali and Ilker Hamzaoglu Sabanci University, "A Computation and Energy Reduction Technique for HEVC Intra Prediction", Year: 2017, Month: February, Volume: 63, Issue: 1.

SOCIETY NEWS

Young Professionals Event at ICCE 2019: This article discusses young professional activities of CE Society which was held at ICCE 2019 at Las Vegas.

CESoc Malaysia Project Competition - Internet of Things (IoT) for Humanitarian Cause: This article presents the IoT challenge organized by the CESoc Malaysia Chapter.

Workshop on Consumer Technologies (Invent the Future Today): This article discusses IEEE CE Society Malaysia Chapter activity on Industry 4.0.

FEATURE ARTICLES

Development in Video Camera Technologies: This cover theme article presents historical overview of video cameras starting from its inception.

Point Cloud Compression: MPEG's New Standard in 2020: This article which is closely related to the theme presents the details of the first MPEG compression when performed in the cloud which can be impact on next generation videos.

Next Gen Video Network Design Tenets: This article which is related to the theme discusses requirements for next generation video broadcast which has increased demand for personalized services.

Why Piezoelectric Based Force Sensing is not Successful in Interactive Displays?: This article presents insights of the use of piezoelectric based sensing in interactive display such as smart mobile phones.

Estimation of Unusual Event for Detecting Abnormal Massive Crowd Flows: This article presents a method for estimation of unusual event from the surveillance video for detecting abnormal massive crowd flows.

Towards Assured Data Provenance in Blockchain Integrated Cloud: This article presents a blockchain empowered data provenance architecture called BlockCloud in the context of cloud computing.

A Hybrid Framework to Evaluate Breast Abnormality using Infrared Thermal Images: This article presents a framework for pre-processing and post-processing for automated inspection of breast malignancy.

A Blokchain based Privacy-Preserving Parking Management System: This article presents a blockchain based smart parking system which can preserve privacy of the users.

Trustworthy Blockchain Technology Platform in Connected Consumer Oriented Medical Devices Environments: This article discusses a blockchain for consumer oriented medical devices to ensure the control of end-users of medical devices in the context of cybersecurity threats.

Effects of Impulsive RFI on Wireless Consumer Electronic Devices: This article discusses various impulsive noises and presents analysis of their effect on the performance of wireless CE devices.

A PUF based Approach for Secure Access to IEEE 1687 On-chip Instrumentation: This article presents a physical unclonable function (PUF) based method for secure on-chip communication with in CE devices.

COLUMNS

Bits Vs. Electrons -- As a Service?: This article presents the perspectives of options buying serives in the context of communications and Internet.

Storage -- Giving Your Home an Edge: This article discusses the options of storage at the edge of the IoT with emphasis of home media.

Professional Development Corner -- Entrepreneurs in Consumer Electronics: Steve Penrod of Mycroft AI: This article presents interview of the CTO of Mycroft AI.

PRODUCT AND BOOK REVIEWS

TV of Tomorrow: This article which is closely related to the theme presents future perspectives on TV.

The tolling of bells – A traditional communications system in our days: This article presents perspectives of various door bell options.

Book Review: Computing in Geographic Information Systems: This article presents review of a book on Geographic Information Systems (GIS) which has applications in smart cities, such as determining asset management for property owners and disaster management.

LOOKING FORWARD

I hope this issue dedicated with a cover theme of video helps a wider set of CE community to advance their knowledge. I am working with our dedicated editorial board and worldwide researchers for more and more themes which will be covered in future in this CE magazine on the latest hot topics.