

Unmanned Arial Vehicles (UAVs) as Consumer Electronics

By Saraju P. Mohanty

I welcome the readers to the May 2019 issue of CE magazine. The cover theme of this issues is Unmanned Arial Vehicles (UAVs) as Consumer Electronics (CE). Unmanned Arial Vehicles or Remotely Piloted Vehicles is an aircraft without a human pilot on board. In a bigger picture, an Unmanned Aircraft System (UAS) with 3 distinct parts: (1) a UAV (also known as a drone), (2) a ground-control subsystem, and (3) a communication subsystem work together. UAVs/drones have various forms including fixed-wing drone, single-rotor drone, and multi-rotor drone like quadrotor helicopter (aka quadcopter or quadrotor). The UAVs have been predominately used for various dangerous applications since their first use in Austria for military purposes during 1849. However, UAVs are now being considered to be used in all most all current day's application which can be categorized 4 different forms: (1) Data Collection and Surveying, (2) Monitoring and Tracking, (3) Temporary Infrastructure, and (4) Delivery of Goods. The use of UAVs is growing more and more each day. UAV as a whole is a Consumer Electronic system. Most of its components including GPS, accelerometer, barometer, compass, gyroscope, camera, communication components, thermal sensors, light detection and ranging (LIDAR), are essentially CE. The design of a UAV can be considered as an optimization of battery-life, security payload, latency, weight, aerodynamics, flying-range, and design and operation costs.

SOCIETY NEWS

John Cioffi is Inducted into the CTA Hall of Fame: CE Society reports that the father of Digital Subscriber Line (DSL) John Cioffi Consumer Technology Association (CTA) hall of fame.

The Boston Chapter Meeting - IEEE CESoc is here to assist from garage to gigafactory of Consumers: This article report CE Society Boston Chapter activity that focused on smart healthcare.

Young Professionals Activities at GCCE 2018: This article reports the CE Society young professional activities at the 7th IEEE Global Conference on Consumer Electronics 2018 which was held at Nara, Japan.

FUTURE DIRECTIONS

Radiosilent Communications: The Undiscovered Continent: This article discusses the Surface Plane Magnetics (SPM) technology to utilize the untapped and unregulated radio-frequency (RF) spectrum.

FEATURE ARTICLES

Anonymous Communications for Secure D2D-Aided Fog Computing: The authors introduce the concept of device-to-device communication-aided fog computing. Devices in the proximity help each other to ensure faster authentication without involving any centralized server.

Enhancing the Collaborative Security with Cyber Threat Intelligence Information Sharing: This article presents security enhancements through collaborations in the forms of cyber threat intelligence and threat information sharing.

A Tensor-Based VNF Forensics Framework for Internet of Things: This article presents a tensor-based forensics approach for virtualized network functions (VNF) to investigate attacks in IoT networks.

Blockchain Technologies for Enhanced Security and Privacy in the Internet of Things: This article presents the applicability of blockchain for the security and privacy in a cryptographically verifiable manner for IoT-enabled CE devices.

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.

An Intrusion Detection/ Prevention System for MANET: This article presents approaches to prevent counter a variety of active attacks in Mobile Ad hoc Network (MANET).

Synchronization Method for LTE-A System Downlink: This article presents a synchronization method for the Long Term Evolution (LTE) system which is used in 3G or 4G networks.

Lookup Table-Based Efficient Implementation of Multi-Channel Filters for Wireless Networks: This article presents an efficient multi-channel finite impulse response (FIR) filter which is useful for CE devices with IEEE 802.15.4 communications.

An Architectural and Performance Exploration of Synchronous and Asynchronous Network on Chip for Consumer Devices: This article presents the Network on Chip (NoC) based multiprocessors architecture exploration for the multi-processor SoC (MPSoC) used in CE devices.

Why Piezoelectric Based Force Sensing is not Successful in Interactive Displays?: This article discusses the issues related to the piezoelectric based interactive displays used in CE devices.

Review on Data Management Methods in Cloud-based Wireless Body Area Networks: This article presents various perspectives of wireless body area network (WBAN) which has applications in smart healthcare.

Technology in Hospitality Industry: Prospects and Challenges: This article discusses the advancement of hospitality services through the Internet of things (IoT) technology.

SPECIAL SECTION

This special section titled “Advances of Unmanned Aerial Vehicles in Consumer Applications” presents a selected article which discuss various advances in research related to UAVs (aka drones) which are having disruptive impacts in various types of applications in the society. I would like to thanks the Guest Editor for all the hard work for this strong special section which will be a very good reading for the CE community.

COLUMNS

Bits Vs. Electrons -- Found Objects: A View from a Room: This article presents the software based automation while focusing on the end-to-end interaction with an abstraction of mid-points details.

Storage -- When Memory Starts to Think: This article presents the idea of processing and storage together for smarter CE devices.

Energy & Security Matters -- Fog Computing Security Challenges and Future Directions: This article presents security challenges and future directions of fog computing.

Product Reviews -- PCI Express: This article discusses power and performance tradeoffs as well as architectural modification aspects are discussed for PCIe.

LOOKING FORWARD

I hope this issue dedicated to UAVs or drones helps a wider set of CE community to advance their knowledge in this area. I also hope more and more themes will be covered in future in this CE magazine on the latest hot topics with the help of a dedicated editorial board and authors around the globe.