

# 5G is Here for Consumer Electronics

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I welcome the readers to the last issue of year 2020, the November 2020 issue, of the IEEE Consumer Electronics Magazine (MCE). We are still in the middle of the global impact of Corona Virus Disease 2019 (COVID-19). I am positive that this will soon be over, and we will back to normal life.

## 5G CAN BE PART OF ANY SMART TECHNOLOGY

This issue of MCE is dedicated to fifth generation (5G) wireless technology. We have been covering various technologies related to smart cities for last several years. We are now hearing various other related such technologies but with different levels of granularities such smart villages and smart countries. It is no doubt that information and communication technology (ICT) makes these possible. If we examine 3C model of Internet-of-Things (IoT) and Cyber-Physical Systems (CPS) we learn that 3Cs IoT are Connection, Computation and Communication, and 3Cs of CPS are Control, Computation and Communication. So, while IoT and CPS are same or different based on different point of views, commonality is the “Communication”. Thus, 5G technology which builds the “Communication” component of IoT/CPS will have a significant impact on almost every smart technologies that we see, deploy, or use. All variety of CPS including Agriculture CPS (A-CPS), Energy CPS (E-CPS), Healthcare CPS (H-CPS), and Transportation CPS (T-CPS), will be impacted by 5G. So, also the impact on Industrial IoT (IIoT). The attractive features 5G technology include: low energy, low latency, and high bandwidth. At the same time, 5G may have the issue of higher electromagnetic radiation as compared to its predecessors. The current issue presents several thematic articles covering different aspects of 5G technology.

## FEATURE ARTICLES

*Moving Towards 5G: Significance, Differences, and Impact on Quality of Experience (QoE):* This article presents detailed discussion of impact of 5G in Internet of Everything (IoE).

*DFT-s-OFDM: Enabling Flexibility in Frequency Selectivity and Multiuser Diversity for 5G:* This article presents a method to facilitate frequency selectivity and multiuser in 5G.

*A New 5G eHealth Architecture based on Optical Camera Communication:* This article presents an overview of smart healthcare system when 5G is deployed in it.

*Half Duplex Radio: Towards Green 5G NR:* This article presentation electromagnetic radiation aspects of 5G including impacts and solutions.

*Human Electromagnetic Field Exposure in 5G at 28 GHz:* This article analyzes the impact of electromagnetic impact of 5G on humans.

*LTE IoT Technology Enhancements and Case Studies:* This article discusses different releases of the 3rd Generation Partnership Project (3GPP) of wireless technology relating it to 5G.

*Home Automation System Coordinator Replacement with One-Touch Network Recommissioning:* This article presents a new networking approach in the context of smart home.

*Blockchain-Based Energy Trading in Electric Vehicle Enabled Microgrids:* This article presents a blockchain based energy trading in smart transportation framework.

*Trust Issues in Microelectronics: The Concerns and the Countermeasures:* This article presents an overview of trust issues of consumer electronics hardware and also discusses some solutions of these issues.

## **COLUMNS**

*Bits Vs. Electrons -- The JavaScript Ecosystem:* This article presents the past and future of The JavaScript Ecosystem.

*The Art of Storage -- Let's Build a Holodeck:* This article discusses insights of immersive environment.

*Consumer Technology Association -- Turning to Technology:* This article presents pandemic perspectives of Consumer Technology Association.

*Future Directions -- Post COVID-19 thoughts: Controversies and Merits of the Technology Progress:* This article presents impacts of various technologies such as AI and 5G on life during pandemic.

*Market Analysis -- COVID-19: A Crisis or A Springboard:* This article discusses various aspects of industry and its employee during and post COVID-19 pandemic.

*Standards -- IEEE SA Industry Connections 3D Body Processing Working Group and IEEE P3141 Standard for 3D Body Processing - Part 2:* This article presents 2<sup>nd</sup> part of the activities of 3D body processing standard group of the IEEE.

*Professional Development -- Interview with the Entrepreneur - Florian Seitner:* This article presents interview of Dr. Florian Seitner who is CEO of Emotion 3D, headquartered in Vienna, Austria.

## **SOCIOECONOMIC IMPACTS**

*Internet Usage Patterns and Gender Differences: A Deep Learning Approach:* This article analyzes the Internet usage patterns including the intensity of usage and types of online activities for different genders.

## **LOOKING FORWARD**

I hope that the current issue dedicated to 5G in Consumer Electronics becomes a good reading for a wider set of Consumer Technology community to advance their knowledge. Consumer Electronics magazine will continue the trend of covering more themes for its enthusiastic readers in future issues on the latest hot topics with the active support of the editorial board members, reviewers, and authors, around the globe.

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