From the Editor's Desk

Consumer Technologies Build Smart Homes

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Happy New year 2020. I welcome the readers to the first issue of the year 2020, the January 2020 issue, of the IEEE Consumer Electronics Magazine (MCE). With the year 2019 over, MCE completes eight years and two years with six issues per year. I would like to thank all the members of the editorial board and enthusiastic authors who have contributed to MCE and made it interesting reading. I am hopeful that MCE will further excel in all aspects including quality of articles, and broadening author/reader base.

The current issue of MCE has a theme of Smart Home. I have discussed the concept of smart city in many of the editorials in the past. At a different level of granularity, smart village, smart state, and smart nation have been envisioned. A smaller level of granularity is the smart home. I think every citizen in a smart city can play a crucial role in making their homes smart homes, thus, contributing to bigger entities like smart cities, and smart state. In this context, several questions include the following questions arise.

1. What is a smart home?
2. What are building blocks of smart home?

The smart home and intelligent home refer to the home in which different components have been automated, e.g., home appliances, sprinkler system, or heating, ventilation, and air conditioning system. A smart home allows its residents to automatically control home environment for efficient and comfortable manner to save energy bills, to improve quality of life, and to provide security and safety. The smart homes or intelligent homes automatically optimize comfort of the residents by using context awareness as well as predefined constraints based on the conditions of the inside home and outdoor environment.

Like other smart systems, Internet-of-Things (IoT) including Internet-of-Medical-Things (IoMT), can make smart homes. Thus, sensors, actuators, network technology, Internet, microcontrollers, and software become the building blocks of smart home including its physical components. The building blocks of smart home are essentially consumer electronics or a bigger domain consumer technology. The different components of smart home include: (1) remote access and control, (2) energy management, (3) healthcare, and (4) security and safety. Remote access and control allows a user to control smart home remotely from a smart phone of Web interface. Energy management units allow automatic control of appliances, lights, and air-conditioning temperate to reduce energy bills while providing maximum comfort. Healthcare units can provide healthcare facilities to residents in various forms including monitoring of health conditions, activity tracking, and provide

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assistive living. Security and safety units can allow keyless entry for the user and monitor surroundings of the home using appropriate cameras. This first issue of 2020 includes many articles which deal with consumer technologies or components of smart homes.

FEATURE ARTICLES

"Design and Implementation on Intelligent Homecare Appliance System:" This paper presents design of a smart home to handle safety of residents. Specifically, a computer vision (CV)-based method has been integrated in video technology to automatically detect and prevent potentially dangerous events.

"IoT-Connect—An Interoperability Framework for Smart Home Communication Protocols:" This paper presents a solution for the communication technology issue in smart homes. Specifically, this paper presents an interoperability framework called IoT-Connect, so that various home appliances with different protocols can talk to each other in smart homes.

"Diabetes Care in Motion:" This paper presents a photoplethysmogram-based wearable for noninvasive blood-glucose estimation to avoid finger-pricking, and can be useful in healthcare in smart homes.

"iGLU—An Intelligent Device for Accurate Noninvasive Blood Glucose-Level Monitoring in Smart Healthcare:" This paper presents a near-infrared-based device for noninvasive blood-glucose monitoring that avoids painful finger-pricking, and can be useful in healthcare in smart homes.

"A Study of User Interface with Wearable Devices Based on Computer Vision:" This paper discusses several approaches for human-computer interaction using hand gestures and CV.

"Quality of Experience of Smart-Wearables—From Fitness-Bands to Smartwatches:" This paper introduces quality-of-experience for fitness trackers based on the end-user perception.

"Controlled Tactile and Vibration Feedback Embedded in a Smart Knee Brace:" This paper presents a device to record muscle activity and sends warnings for any abnormalities.

"Power Management Strategies for Medical Information Transmission in Wireless Body Sensor Networks:" This paper presents a brief survey of power management strategies for wireless body sensor networks.

"SuperVoxel Graph Cuts—An Effective Method for GGO Candidate Regions Extraction on CT Images:" This paper presents an approach for reducing artifacts on temporal difference images in computed tomography.

COLUMNS

Bits Versus Electrons—"What I Want for CES:" This paper presents perspectives of the columnist on the Consume Electronics Show (CES).

The Art of Storage—"AI Inference and Storage:" This paper presents storage perspectives when handling large data in AI-based applications.

SPECIAL SECTION

This special section titled "Cognitive Science and Artificial Intelligence for Human Cognition and Communication" presents selected articles to cover the scope. I would like to thank the Guest Editors Arun Kumar Sangaiah, Huimin Lu, and Qing Hu for all their hard work for this strong special section, which will be a good read for the Consumer Electronics (CE) community around the globe.

LOOKING FORWARD

I wish all the readers of MCE a wonderful year ahead. I hope this issue dedicated to smart home becomes a good read for a wider set of the CE community to advance their knowledge. MCE will continue the trend of covering more themes for our enthusiastic readers in future issues on the latest hot topics with the help of the editorial board and authors around the globe.

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