From the Editor's Desk

Low-Cost Consumer Technology can help to Build Sustainable Smart Villages

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I welcome the readers to the third issue of year 2021, the May 2021 issue, of the IEEE Consumer Electronics Magazine (MCE).

CONSUMER TECHNOLOGIES FOR SUSTAINABLE SMART VILLAGES

The current issue of the IEEE MCE is dedicated to smart villages. MCE has covered smart cities theme in multiple past issues, including July 2016, March 2018. MCE also covered various technologies applicable smart cities. While covering smart cities, an obvious question arises, what about smart villages? This gives rise to various related questions including: Are smart cities and smart villages same? Can the same technology be used for both smart cities and smart villages? Doesn't Internet-of-Things (IoT) deployment make both smart cities and smart villages? How Cyber-Physical-Systems (CPS) differ in smart cities and smart villages? How underneath consume technologies, such as sensors and communications technology, differ in smart cities and smart villages? These questions needed addressing which motivated for the current issue theme of smart villages.

Smart villages can be defined as a village that uses information and communication technologies (ICT) for advancing economic and social development to make villages sustainable. Smart cities have similar definitions. However, low-cost and sustainability are key differences of smart villages as compared to the smart cities. Urban migration of the population is one of the major motivations. This is not a problem of smart villages, then what is the motivation for smart villages. Smart villages technology can be motivated by the following: 1) efficient usage of limited resources, 2) sustainability at low-cost, and 3) reverse of urban migration of population. The number, types, and complexity of CPS deployed in smart villages can be smaller than that of the smart cities. For example, smart agriculture can be more useful in smart villages than smart cities. Smart noise monitoring and smart parking are more relevant for smart cities. Smart villages technology has to overcome various obstacles including: 1) low design and operation cost, 2) lack of continuous electricity, 3) lack of quality communications, and 4) lack of computation resources. Low cost consumer technologies can come handy to overcome these obstacles.

FEATURE ARTICLES

Internet-of-Things-enabled Smart Villages - Recent Advances and Challenges: This article presents an overview of the sensors and

communications technology needed for design and operation of smart villages.

Energy Perspectives in IoT Driven Smart Villages and Smart Cities: This article presents the concept of the security-by-design (SbD) while considering energy requirement aspects by integrating cybersecurity in the energy harvesters for sustainable smart villages and smart cities.

Development of a Low-cost Low-energy Intelligent Reminder System for Unextinguished Gas Stoves: This article presents a mechanism for intelligent reminder in unattended gas stoves to provide safety during cooking which can useful in both smart villages and smart cities.

Making Buildings Smarter and Energy Efficient - Using the Internet of Things Platform: This article presents an IoT based framework towards the design of energy-efficient builds which can be useful for both smart villages and smart cities.

Emergency Department Return Prediction System using Blood Samples with Light gradient *boosted machine (GBM) for Smart Health Care Services*: This article presents a gradient boosted machine (GBM) based method for predicting the emergency return probability in hospitals.

AI-biometric driven Smartphone App for strict Post-COVID Home Quarantine Management: This article presents smart phone based solution which can be use for home quarantine management during pandemic.

A low-cost digital vital signs capturer for older adults - Design, Development, and Implementation: This article presents a device to capture vital signs of older adults which can be effective in smart villages and smart cities.

COLUMNS

Bits Versus Electrons - Connectivity Starts at Home: This article presents detailed discussions on policies and protocols of Internet.

Energy and Security Matters - Collaborative Edge Computing for Smart Villages: This article presents the idea of collaborative edge computing which can be used in smart villages to do heavy duty computing through collaborations of light duty resources.

Professional Development - An Introduction to Deep Learning Research for Alzheimer's Disease: This article presents deep learning research applied to healthcare which was performed under IEEE brain data challenges.

SOCIOECONOMIC IMPACTS

Assistive Technologies for Greatly Improved Quality of Life for People Living with MND/ALS: This article presents technologies which are effective for people with motor neuron disease (MND) to improve their quality of life.

SPECIAL SECTION

The Special Section of the current issue on *How to Make Innovation in Consumer Electronics* presents a selected set of articles to cover the scope. I would like to thank the guest editor, Haruhiko Okumura, for all his sincere effort for this strong special section which will be an excellent reading for the readers of the Consumer Electronics Magazine (MCE) as well as the researchers around the globe.

LOOKING FORWARD

I hope that the current issue dedicated to the Smart Villages becomes a good reading for a wider set of Consumer Technology researchers to advance their knowledge. The IEEE Consumer Electronics Magazine (MCE) will continue the trend of covering more themes for its enthusiastic and dedicates readers in future issues on the latest topics and emerging topics with the active support of the editorial board members, reviewers, and authors, around the globe.

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