

Guest Editors' Introduction

Consumer Technologies for Smart Agriculture

Debanjan Das
IIIT Naya Raipur

Venkanna Udutalapally
IIIT Naya Raipur

Saraju P. Mohanty
University of North Texas

TECHNOLOGIES FOR SMART AGRICULTURE

Smart Agriculture has evolved as an innovative and resourceful paradigm of continuous real-time observation of the agricultural fields and thereby providing efficient management methods to respond to the variations that prevail among the crops. The smart agriculture is technically the Agriculture Cyber-Physical System (A-CPS) built on Internet-of-Agro-Things (IoAT). IoAT is a specific type of Internet-of-Things (IoT) which is the interconnected network of various agriculture sensors (e.g. moisture, temperature, air quality) and computing devices. This is similar to Internet-of-Medical-Things (IoMT) in the healthcare domain which makes healthcare CPS (H-CPS) for smart healthcare.

Smart agriculture also known as smart farming is one of the most prominent areas in the next generation consumer electronics (CE) and consumer technology (CT) for sustainable agriculture and related services. Some disruptive technologies, such as Artificial Intelligence (AI), Machine Learning (ML), and

IoT-Edge Computing, are extending the developing of new devices and solutions to the agri-technology market. Essentially, the elements of smart agriculture are consumer technology that can arrive at meaningful predictions by assimilating the spatial and temporal sensed values.

With the above vision in mind, we invited many perspective authors to contribute to the current Special Section that presents state-of-art solutions for IoAT based smart agriculture designed as A-CPS using a variety of consumer electronics and consumer technologies. We briefly discuss the accepted articles which were accepted after rigorous reviews in the following paragraphs.

SCANNING THE SPECIAL SECTION

The article titled “Smart Sensing for Agriculture: Applications, Advancements, and Challenges” introduces taxonomy of applications and advancements in smart sensing for smart agriculture. It identifies the

challenges for developing the electronic devices and systems for smart agriculture.

The article titled “MyGreen: An IoT-Enabled Smart Greenhouse for Sustainable Agriculture” presents different challenges of greenhouse farming and highlights a new IoT based solution which is smart and sustainable. It introduces an AI based Decision Support System (DSS), which governs and coordinates all the activities automatically in the greenhouse cultivation like rose farming.

The article titled “FarmFox: A Quad-Sensor based IoT box for Precision Agriculture” presents an IoT driven real-time data collection, soil health monitoring via in-situ analysis, and controlling the whole architecture from a remote location. It demonstrates the design of respective elements of the whole system useful for smart agriculture.

The article titled “Designing a Smart Honey Supply Chain for Sustainable Development” present an open, data-driven and blockchain technology that can be used in reducing honey adulteration with increase food safety and honey farming.

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The guest editors sincerely believe that this Special Section will be a good reading for Consumer Technology researchers around the globe. The guest editors would like to thank all the contributing authors for their excellent contributions. The guest editors also sincerely thank all the reviewers for their help in reviewing the manuscripts throughout the multiple revisions to have a rigorous selection of the works.

Guest Editors

Debanjan Das is an Assisat Professor at the Department of Electronics and Communication

Engineering, IIIT Naya Raipur, India. Contact him at debanjan@iiitnr.edu.in.

Venkanna Udutalapally is an Assisat Professor at the Department of Computer Science Engineering, IIIT Naya Raipur, India. Contact him at venkannau@iiitnr.edu.in.

Saraju P. Mohanty is the Editor in Chief of the IEEE CONSUMER ELECTRONICS MAGAZINE (MCE) and Professor in the Department of Computer Science and Engineering, University of North Texas, TX, USA. Contact him at smohanty@ieee.org.