

Keynote Speech VII:

Smart Sensors and Computer Devices for Agriculture, Food Production Process Control and Medicine

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Abstract:

The Internet of Things (IoT) and Industrial Internet of Things (IIoT) are based on the wireless sensor networks (WSN), which include smart sensors and computer devices for monitoring and controlling processes in industry, agriculture, medicine, etc. In the networks, the sensed data are converted to the digital value of plants' state, medical parameters of human, concentrations of matters in food products, such as juice, water, and so on. In the Institute of Cybernetics of National Academy of Sciences of Ukraine, there were designed and launched to the market the wireless smart sensor networks for agriculture, food industry and medicine application. There are ZigBee and Bluetooth compatible networks with different architectures: peer-to-peer (with mobile phone), star, and multihop tree-like networks. The main units of the designed sensor networks are patented wireless smart sensors for determination of the photosynthesis intensity in the plants, the concentrations of different matters in water or juice, and for measuring and monitoring medical parameters of human in real time. The features of design and application of different wireless networks of smart sensors and edge nodes are presented in the paper. The main contribution of this paper is the designing and fast-prototyping of WSN according to the requirements of application of WSN in beverage manufacturing with using two wireless protocols simultaneously for customer convenience.

Short Bio:

Honors and Awards

2008	The Academician Lebedev Prize Award
2012	Inventor of the Year, Ukraine
2011	Awarded with State Prize of Ukraine in Science and Technique
2015	Awarded honorary degree Honoured Scientist of Ukraine
2017	Academician of the Euro Mediterranean Academy of Arts and Sciences (EMAAS)

Research Interests

- Information Technologies, Data Acquisition Systems, Control Systems, Computer Science
- Controllers of High Reliability and Productivity, Analog-to-Digital and Digital-to-Analog Converters, Microelectronics, CAD/CAM-Technology
- Portable Non-invasive Biosensors for Industrial, Medicine, Agriculture, Science Research and Environment Protection

Publications and Patents

There are more than 230 articles, 40 patents and seven books.