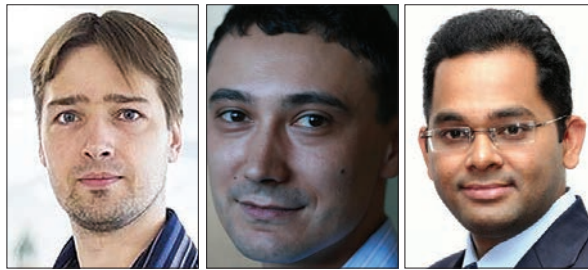


INTERNET OF THINGS AND SENSOR NETWORKS



Sergey Andreev

Ciprian Dobre

Prasant Misra

We are now facing unprecedented times when the entire world is combating the COVID-19 threat. While this crisis has had a direct impact on the society at-large by posing health risks to people across the planet, its cascading nature has made a dent in the global economy with numerous industry sectors struggling to resume or continue their operations.

The world's population is witnessing a new norm that requires everyone to revisit their ways of conducting daily activities while minding the communal safety. With the global pandemic epicenter moving across regions at an aggressive rate, there is a growing sense of urgency. Meanwhile, the presently adopted strategy has become to contain and limit the spread of infection. To this aim, social distancing is being enforced at an individual level and a test-track-isolate protocol is being followed at the community level.

Individuals and organizations alike strive to develop effective means for navigating the current crisis as well as to find a transition path to the new operating regime for conducting business in the post-pandemic world. Here, IoT technologies can come to our aid. Full-stack trusted IoT systems that encompass the elements of sensing, connectivity, and data analysis have the potential to address many immediate and future needs that such a crisis imposes.

With an emphasis on these aspects, the seventh appearance of the "Internet of Things and Sensor Networks" Series of *IEEE Communications Magazine* has prepared a set of focused contributions.

The first article, "Wireless Sensing Using Dynamic Meta-surface Antennas: Challenges and Opportunities," introduces a novel way of using wireless communication signals to sense physical dynamics, such as human activities in confined spaces, monitoring of human vitals, and more.

The second article, "Routing in LoRaWAN: Overview and Challenges," discusses a new mechanism of employing

long-range WAN communications technology in a multi-hop regime. The focus is set on an overview of routing protocols and the corresponding challenges.

The third article, "Trusted Wireless Monitoring Based on Distributed Ledgers over NB-IoT Connectivity," offers a data protection measure and summarizes the experiences of building tamper-proof IoT systems for real-world network deployments.

All in all, these articles provide a collection of viewpoints on various essential aspects of IoT systems. We sincerely thank our authors for their valuable contributions. We are also grateful to all the reviewers and the editorial team for their hard work and invaluable support during the preparation of this issue.

BIOGRAPHIES

SERGEY ANDREEV (sergey.andreev@tuni.fi) is an associate professor of communications engineering and Academy Research Fellow at Tampere University, Finland. He has been a visiting senior research fellow with King's College London, UK (2018-20) and a visiting postdoc with the University of California, Los Angeles, US (2016-17). He received his Ph.D. (2012) from TUT as well as his Specialist (2006), Cand.Sc. (2009), and Dr.Habil. (2019) degrees from SUA. He is the lead series editor of the IoT Series (2018-) for *IEEE Communications Magazine* and he has served as an editor for *IEEE Wireless Communications Letters* (2016-19).

CIPRIAN DOBRE (ciprian.dobre@cs.pub.ro) is a professor of computer science at University Politehnica of Bucharest, Romania, and director of MobyLab: Laboratory on Pervasive Products and Services. His research interests involve mobile wireless networks and computing applications, pervasive services, context awareness, and people-centric sensing. He is the Director or PI for national and international research projects, and has received the IBM Faculty Award, CENIC Awards, and Best Paper Awards. He serves on the Steering and Organization Committees of major conferences.

PRASANT MISRA (prasant.misra@tcs.com) is a scientist with TCS Research & Innovation, where he works on intelligent cyber-physical systems for smart mobility. His research experience spans across various aspects of mobile sensing and computing, with a current focus on decision sciences. His felicitations include the MIT TR35 India (2017), the ERCIM Alain Bensoussan and Marie Curie Fellowship (2012), and the Australian Government's AusAID Australian Leadership Awards (2008). He serves on the editorial board of *IEEE Communications Magazine* as a series editor for IoT and Sensor Networks, and *Elsevier Ad Hoc Networks Journal* as an area editor. He is a senior member of IEEE and ACM.