The Internet of Things Revolution

LIEVEN EECKHOUT
Ghent University

•••••• Welcome to the November/December 2016 special issue on the Internet of Things. The IoT revolution is happening at an unprecedented pace. New devices are emerging every day that have embedded electronics, software, sensors, actuators, and network connectivity. All of these devices collect and exchange data. The widespread connectivity among these intelligent devices has the potential to transform society—in fact, the Global Standards Initiative on the Internet of Things defined the IoT as the "infrastructure of the information society." The IoT enables a wide range of new applications and services, including smart grids, smart homes, intelligent transportation, smart cities, and health monitoring. Current applications that are emerging are only the tip of the iceberg. Projections by experts estimate that the IoT will consist of tens of billions of intelligent objects within just a few years. To support this next revolution in computing, we need a large number of technological advances from the hardware, software, and networking communities to come together.

This theme issue on the IoT covers some of these technological advances. Guest Editors Vijay Janapa Reddi from the University of Texas at Austin and Hyesoon Kim from the Georgia Institute of Technology done an excellent job selecting four interesting articles on a variety of topics covering major IoT components, including compilers, sensor networks, security, and large-scale issues. In addition, the special issue includes an Expert Opinion department featuring two invited articles that provide insight on various IoT issues. I wholeheartedly thank Vijay and Hyesoon for their greatly valued time and effort spent on this issue, and I encourage you to read their guest editorial for an introduction to the articles included in this special issue.

This issue also includes a general-interest article by Nikolaos Chrysos and colleagues from IBM, "Unbiased Quantized Congestion Notification for Scalable Server Fabrics." The article describes the design and implementation of a server-rack fat-tree 100-Gigabit Ethernet switching fabric that includes an alternative congestion management architecture in the context of lossless local area networks.

Finally, the issue features an award testimonial for the 2015 ISCA Influential Paper Award. Professor David Albonesi from Cornell University, the program chair of ISCA 2015, reports on the significance and impact of the awarded paper, "Wattch: A Framework for Architectural-Level Power Analysis and Optimizations" by David Brooks, Vivek Tiwari, and Margaret Martonosi, which was published in ISCA 2000. Congrats to the authors of this highly influential work, and thanks to David Albonesi for the testimonial.

With that, I wish you happy reading, as always!

Lieven Eeckhout
Editor in Chief
IEEE Micro

Lieven Eeckhout is a professor in the Department of Electronics and Information Systems at Ghent University. Contact him at lieven.eeckhout@ugent.be.