Managing Electric Vehicles

The highlight of this issue is the Special Issue on Energy and Power Management for Electric Vehicles. Though electric vehicles are a reality, particularly the power management of electric vehicles bears a large potential for improvement. For the foreseeable future, there will be no revolutions in battery energy and power densities. It is therefore important to smartly and efficiently use the available energy.

Such techniques will, in mid to short term, have more impact on achievable mileage than new battery technologies. Besides, power management techniques come almost for free as they represent (mostly software-based) policies (besides additional sensors, etc.). I am, therefore, grateful to the Guest Editors Naehyuck Chang, Zili Shao, Xin Li, Orkun Karabasoglu, and Wende Zhang for bringing this important topic to IEEE Design&Test. This special issue bears a large potential for a real-world impact.

The issue also includes two general interest articles. In “Measuring System Design and Experimental Research on Electrostatic Attractive Force,” authors Weifeng Liu, Yiyong Yang, Chuankun Han, Linhong Ji, and Jia Cheng describe the design of a measuring device for electrostatic attractive force simulated with COMSOL. The article “GPU-Accelerated Soft Error Rate Analysis of Large-Scale Integrated Circuits” by M. Amin Sabet, Behnam Ghavami, and Mohsen Raji focuses on a framework for soft error rate simulation that has a significant speedup compared to current practices.

A further highlight of these special issues is the Roundtable entitled “Machine Learning for Embedded Systems: Hype or Lasting Impact?” The idea arose after a panel discussion on the same topic at ESWeek 2017 in Seoul. In the following months, the panel authors Sharon Hu and Rolf Ernst had followed up with the panelist and had an online discussion over the course of several months. The outcome is an excellent view from experts of the impact of machine learning (ML) in embedded system design with respect to hardware, software, and communication architectures and design, behavioral guarantees, etc. This Roundtable may very well serve as an inspiration for embedded ML research.

The IEEE/ACM International Symposium on Low Power Electronics and Design took place in Bellevue, Washington, from 23 to 25 July 2018. Thanks to the Chairs Jaydeep Kulkarni and Thomas F. Wenisch for the report and to our Conference Reports Editor Massimo Poncino. The 10th China Test Conference took place in Harbin, China, from 15 to 16 August 2018. Thanks for the coverage of the event to our Conference Reports Editor Yervant Zorian.

As always, last but not least, many thanks to Scott Davidson for the LastByte article, “Running on Empty.”

Many thanks to all who have contributed to this issue of IEEE Design&Test. If you have any questions or ideas, please contact me at henkel@kit.edu.

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