Welcome to the Spring 2018 Issue of IEEE Solid-State Circuits Magazine!

This issue of IEEE Solid-State Circuits Magazine details the contributions of William S. Carter and Stephen M. Trimberger, the recipients of the 2018 IEEE Donald O. Pederson Award in Solid-State Circuits, for contributions to field-programmable gate array (FPGA) technology. The award recipients were pioneers at Xilinx. They created and refined the FPGA as a new semiconductor product category. The FPGA market is now a multibillion-dollar industry. Carter saw that Moore’s law would make FPGAs increasingly capable and useful. He developed efficient circuits for implementing FPGAs. He designed the Xilinx XC2000 and XC3000 FPGAs and led the engineering effort on later versions. Trimberger’s experiments on the architecture of the fabric and its influence on the performance of a user design as well as its impact on the design of the silicon was crucial in developing efficient FPGA architectures. Many features of this approach are now standard for all programmable logic manufacturers.

Carter and Trimberger helped form a new industry with profound and beneficial societal impact. FPGAs are used in many applications, including communications, the aerospace and defense industries, IC prototyping, audio/video and image processing, automotive electronics, consumer electronics, industrial control, security and surveillance, and medical systems. The award winners’ technical leadership, innovation, and vision have been critical to making FPGAs as popular, important, and useful as they are today.

To further the discussion of FPGAs, this issue includes a reprint of Trimberger’s 2015 article from the Proceedings of the IEEE detailing the three ages of FPGAs. Articles from André De Hon and Mike Dini are also included, which provide additional details about the past, and current, state of the FPGA.

In addition, as usual, several articles of interest to readers ranging from tutorials to technology overviews are included in this issue. These include the always-popular editorials/tutorials from Marcel Pelgrom, Ali Sheikholeslami, and Behzad Razavi. In addition to these contributions, Ken Dyer, John Keane, and Steve Lewis provide the first part of a two-part article on the calibration and dynamic matching in data converters. The articles provide some very useful, relevant techniques to improve data converter performance and should be a one-stop reference for those working in this field or trying to learn about techniques to practically implement data converters in products.

The goal of the magazine continues to be to provide Society news and information as well as a series of self-contained resources to keep IEEE Solid-State Circuits Society members up to date with changes in technology while, at the same time, providing reviews of circuit design concepts. This includes contributions from experts describing the current state of affairs and evolution of a particular IC technology. We will also continue to feature articles focused on the contributions of luminaries and solid-state circuit techniques and directions.

We hope you enjoy reading IEEE Solid-State Circuits Magazine. Please send comments to me at rjacob@baker.com.