Like the previous 24 events, Hot Chips 25 provided the premier industry forum to highlight innovations and trends in all things related to silicon design. Content at the conference can be counted on to provide insight into architectural trends driven by market forces. Unlike academic conferences or circuit-focused conferences, Hot Chips is the venue for presenters to discuss their entire solution. This often encompasses connectivity, software, and silicon technology on top of the chip architecture itself. Hot Chips 25 was no exception, and we’ve selected five of the highest-quality submissions for inclusion in this special issue of IEEE Micro devoted to the conference, where we can get a deeper dive on the presentations. Every year, themes are present in the conference content, which are indicative of the industry direction; last year’s theme was integration.

**It’s all about integration**

If one were to discern a trend or theme embodied in these articles, it’s one of integration. We are seeing chips that integrate far more of the system than ever before. In “Haswell: The Fourth-Generation Intel Core Processor,” Per Hammarlund et al. show that Intel’s Haswell has pulled in the voltage regulator, including inductors, capacitors, and high-current switching field-effect transistors (FETs), all miniaturized and integrated on chip and in package. “Kabini: An AMD Accelerated Processing Unit System on a Chip” by Dan Bouvier et al. shows that Kabini has integrated all components of what used to be included on the external southbridge design, such as SATA controllers, USB, and display interfaces. In “Hexagon DSP: An Architecture Optimized for Mobile Multimedia and Communications,” Lucian Codrescu et al. describe how Qualcomm’s Hexagon demonstrates a flexible new architecture for integrating application-specific accelerators with a focus on smartphone-related multimedia functions. And, finally, in “The Xbox One System on a Chip and Kinect Sensor,” John Sell and Patrick O’Connor show that the Xbox One system on a chip (SoC) demonstrates the extraordinary achievement of integrating what just a few years ago was a high-end GPU with eight processor cores, leading-edge security functions, and media capabilities.

**. . . And new technologies**

Although integration is the dominant theme, other fascinating topics are covered as well, such as the capabilities and technology behind Microsoft’s revolutionary Kinect sensor human interface system. In “Process and Circuit Optimization for Power Reduction using DDC Transistors,” David Kidd discloses advances in a Deeply Depleted Channel technology, introduced last year at Hot Chips, showing significant gains in maturity with the demonstration of power savings and performance improvements on a 65-nm...
ARM core design, and the announcement of production shipment with the Fujitsu camera image processor.

Space limitations prevent us from including more articles derived from the conference presentations. Nevertheless, the presentations from Hot Chips 25 and all previous years are available at www.hotchips.org. We encourage you to explore this fascinating archive, as well as to attend Hot Chips 26 this August.

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