



August 27 - 29, 2012
Flint Center, Cupertino, CA

A Symposium on High Performance Chips

Sponsored by the IEEE Technical Committee on Microprocessors and Microcomputers in Cooperation with ACM SIGARCH

24

Welcome to Hot Chips 24

Christos Kozyrakis & Rumi Zahir

Program Committee Co-Chairs

Program Committee



- Forest Baskett, NEA
- Pradeep Dubey, Intel
- Bob Felderman, Google
- Krisztian Flautner, ARM
- Anwar Ghuloum, NVIDIA
- Christos Kozyrakis, Stanford
- Chuck Moore, AMD
- Sameer Nanavati, Qualcomm
- Don Newell
- Kunle Olukotun, Stanford
- Mitsuo Saito, Toshiba
- Alan Smith, UC Berkeley
- Guri Sohi, U. of Wisconsin
- Dean Tullsen, UCSD
- Rich Uhlig, Intel
- Fred Weber
- Rumi Zahir, Intel

Program Statistics

- 54 submissions
 - Each submission was reviewed by all PC members
- 25 accepted talks
 - High-end & low-power cores, many core, graphics, server chips, multimedia SoCs, networking, ...
- 5 posters
 - Poster session during morning & afternoon breaks

Keynotes

- Marc Papermaster, CTO, AMD
 - The Surround Computing Era
 - Tuesday 8/28th, 1.30pm
- Marcus Weldon, CTO, Alcatel-Lucent
 - The Future of Wireless Networking
 - Tuesday 8/28th, 8pm
- Pat Gelsinger, COO, EMC
 - Cloud Transforms IT, Big Data Transforms Business
 - Wednesday 8/29th, 1.30pm

Tutorials

- The Evolution of Mobile SoC Programming
 - Organized by Niel Trevett
 - Khronos, ArcSoft, eyeSight, Metaio, Sensor Platforms, the 11ers

- Die Stacking
 - Organized by Liam Madden
 - AMD, Amkor, Qualcomm, UMC, Xilinx

Proceedings

- For registered attendees
 - Talks, posters, and tutorials available on USB key
 - Also available online for tablet users (<http://hc24.local>)
- Updated talks available online after the conference
 - Including keynote talks and videos of talks
- Conference archives available online
 - <http://www.hotchips.org>

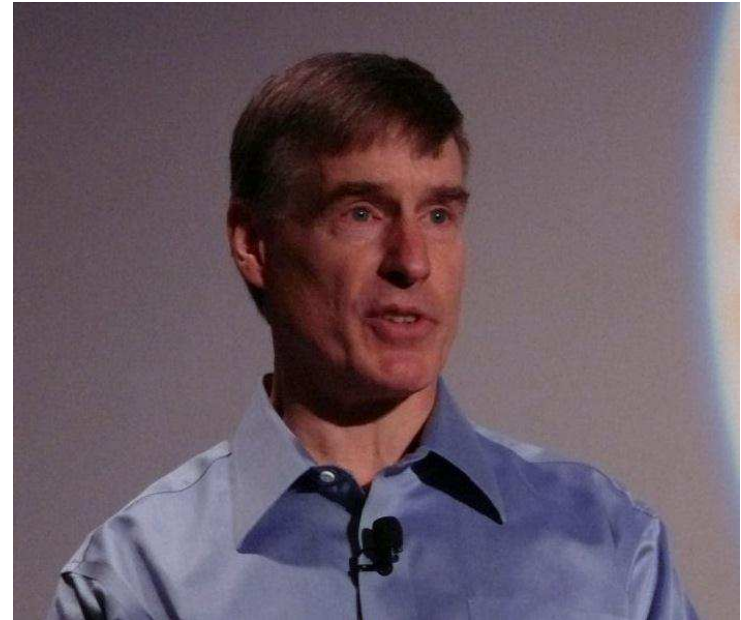
Conference Etiquette

- Silence your cellphones during sessions
- Question on technical talks
 - Wait until the end of the talk
 - Come to the microphone & start with name and affiliation
 - Stick to technical questions please
 - If there is a line, ask a single question
- For speakers: during the break before your talk
 - Introduce yourself to your session chair
 - Test your slides

In Remembrance



Chuck Moore



John Nickolls

Enjoy Hot Chips 24





On behalf of the Program Committee, we are pleased to welcome you to the 24th Annual Hot Chips Symposium.

We received fifty-four (54) submissions this year that covered nearly all areas of the semiconductor and computing systems industry. The seventeen-member committee carefully reviewed all submissions and selected the top twenty-five (25) that best represent the breadth and depth of our field. We also selected five (5) posters that represent emerging trends and important work in related technical areas. As usual, the conference features the latest processor designs for server and portable systems, multimedia and graphics, networking and telecommunications chips, and FPGA devices. The diverse program covers designs optimized for sub-threshold voltage operation all the way to designs exceeding 5GHz clock frequency. We are also happy to feature two excellent talks and four posters from academic projects.

Multi-core architectures and design for power efficiency remain the two most pervasive trends in the program. Nevertheless, specialization and heterogeneity are also emerging as important developments. Ten of the twenty-five talks in the program describe chips with multiple types of processing engines, programmable and fixed function. Heterogeneity is also the focus of the first tutorial that addresses the critical problem of software development for the heterogeneous multi-core chips in mobile devices. The second tutorial covers how die-stacking technology can improve latency, bandwidth, and system size, while preserving the benefits of heterogeneous manufacturing processes. Another exciting development this year is the appearance of chips that take established instruction sets beyond their traditional application domains. The program features talks on a smartphone chip based on the x86 ISA and a server chip based on ARM, in addition to talks on the latest designs based on the Power, SPARC, and MIPS instruction sets.

For the keynotes, we selected three exciting talks from leading figures in our industry. In the first keynote, Mark Papermaster will cover AMD's strategy towards heterogeneous systems and accelerated computing. In the second keynote, Marcus Weldon will discuss the future of wireless telecommunications and its implications to the semiconductor industry. The final keynote by Pat Gelsinger will discuss how cloud computing and big data are transforming the whole IT industry.

The high quality of this year's program is the direct result of the effort of the members of the program committee, all of whom worked hard to solicit, select, and improve presentations. We would also like to thank Liam Madden, Niel Trevett, Ralph Wittig, and Anwar Ghuloum for putting together the tutorials. The members of the organizing committee worked equally hard to provide the best possible setup for a successful symposium, overcoming several difficulties associated with the new location. An incredible amount of effort has gone into organizing tasks that we all take for granted such as high quality proceedings, online registration, and meals. Finally, we acknowledge the effort of all speakers, without whom there would be no conference.

Finally, we would like to recognize the contributions of Chuck Moore and John Nickolls that passed away recently. In addition to being leading visionaries and innovators in our field, Chuck and John were exemplary members of the Hot Chips community that contributed greatly through multiple roles. They will be missed.

Christos Kozyrakis and Rumi Zahir
Program Co-Chairs
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