Hot Chips and Remembering a Pioneer

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This issue features updated and enhanced versions of selected papers from the August 2010 Hot Chips conference. As always, Hot Chips attracts important papers highlighting some of the most exciting new offerings in the field. Guest editors Will Eatherton and Jose Renau have done an excellent job in tapping the best of Hot Chips for publication, continuing a tradition of IEEE Micro since 2001. There is no better place than this issue to learn about the latest research on chip design and use, including several offerings from leading vendors.

This issue features several articles with a focus on power, including AMD’s low-power Bobcat processor, energy management on IBM’s Power7 chip, and the GreenDroid mobile application processor, which promises major energy reductions in smartphones. Several other articles describe chips and systems targeting specialized needs, such as FPGA (field-programmable gate array) acceleration of seismic computation in oil and natural gas exploration, Nvidia’s Fermi GF100 GPU and its many uses, and IBM’s 16-core/64-thread edge of network processor. Rounding out the issue are articles on foundational chip technology from two major vendors: IBM’s 5.2-GHz zEnterprise 196 system and AMD’s Bulldozer, a two-core modular building block designed to be used in a variety of system-on-a-chip markets, including both client and server systems.

I also want to call attention to an announcement made at another recent conference, Micro: the B. Ramakrishna Rau Award to be presented “in recognition of substantial contributions in the field of computer microarchitecture and compiler code generation.” The Rau Award is sponsored by IEEE and will be presented annually at Micro. The deadline for nominations for the inaugural award is July 1, 2011. Additional details and the nomination form are available at http://www.computer.org/portal/web/awards/Rau.

“Bob” Rau was of course a pioneer and a giant in our field, both in technical contributions such as software pipelining and scheduling, VLIW (very long instruction word), and microarchitecture, and in bringing those contributions to market, via the Cydrome start-up and later through HP-Intel’s EPIC/IA-64 offerings. In making those many contributions, Bob reached out broadly to others, from senior colleagues to aspiring graduate students (like me), not to mention his time in academia at the University of Illinois at Urbana-Champaign. Thus, it is altogether fitting that his broad impact continues in the form of this award.

No matter how meritorious, awards like this do not happen without a lot of hard work behind the scenes to secure support and funding. Rich Belgard unflaggingly led this effort and will chair the Rau Award nominations committee. Tom Conte drove efforts at IEEE with major help from a large cast, including Kemal Ebcioglu, Paolo Faraboschi, Wen-mei Hwu, Norm Jouppi, Scott Mahlke, Bill Mangione-Smith, Trevor Mudge, Yale Patt, and Mike Schlansker. (As is inevitably the case with a list of contributors, I have undoubtedly overlooked some key participants, and if so, I apologize.)

Please submit appropriate Rau Award nominations, and please keep submitting the papers that are the foundations for such nominations to IEEE Micro.

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