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ACM - Association for Computing Machinery   IEEE Computer Society

Contacts: Virginia Gold   Margo McCall
                    212-626-0505   714-816-2182
                    vgold@acm.org   mmccall@computer.org

ACM, IEEE COMPUTER SOCIETY HONOR INNOVATOR OF HIGH-PERFORMANCE COMPUTER SYSTEMS DESIGNS

University of Wisconsin's Sohi Developed Advances Widely Adopted by Microprocessor Manufacturers to Increase the Power of Computing

NEW YORK, **MAY 4, 2011** -- ACM (the Association for Computing Machinery) and the IEEE Computer Society (IEEE-CS) will jointly present the Eckert-Mauchly Award to Gurindar S. (Guri) Sohi of the University of Wisconsin-Madison for pioneering widely used micro-architectural techniques in the design of high-performance microprocessors. These innovations increase the instruction-level parallelism, a measure of how many operations in a computer program can be performed simultaneously. They can be found in almost every commercial microprocessor used today in personal computers and high-end servers. The Eckert Mauchly Award **http://awards.acm.org/eckert_mauchly www.computer.org/portal/web/awards/eckert** is known as the computer architecture community's most prestigious award. Sohi will receive the 2011 Eckert-Mauchly Award at the International Symposium on Computer Architecture (ISCA), held as part of the Federated Computing Research Conference (FCRC) **http://www.acm.org/fcrc**, June 7, 2011, in San Jose, CA.

Early in his career, Sohi articulated a model for a dynamically scheduled processor supporting precise exceptions. This model has served as the basis for many commercial superscalar microprocessors that have been designed and built since the early 1990s. His group also proposed the idea of memory dependence prediction to further improve instruction-level parallelism, a technology that has been considered a key innovation in some recent microprocessors. His work on memory systems for superscalar processors was instrumental in influencing high-end microprocessors to switch from blocking to non-blocking caches.

Sohi also invented the multiscalar paradigm, which pioneered the concepts of thread-level speculation that permit a single, sequential program to be executed in parallel on multiple processing cores. These concepts have also been adopted by several multicore processor designs and continue to influence thinking about how to design future microprocessors.

In addition to a variety of other contributions to processor and memory hierarchy design, Sohi has educated and trained many successful Ph.D graduates who have gone on to make their own impact in the field. He continues to supervise a small group of students investigating how to execute programs in parallel on multicore processors.

A recipient of the 1999 Maurice Wilkes Award from ACM SIGARCH (Special Interest Group on Computer Architecture), Sohi is a Fellow of ACM **http://fellows.acm.org** and the IEEE **http://www.ieee.org/fellows** . He was elected to the National Academy of Engineering in 2009. He has been at the University of Wisconsin-Madison since 1985 where he is currently the John P. Morgridge Professor and the E. David Cronon Professor of Computer Sciences. From 2004-2008, he served as chair of the Computer Sciences Department. He received a B.E. degree from the Birla Institute of Technology and Science (Pilani, India) and M.S. and Ph.D. degrees in Electrical and Computer Engineering from the University of Illinois.

ACM and the IEEE Computer Society co-sponsor the Eckert-Mauchly Award, which was initiated in 1979. It recognizes contributions to computer and digital systems architecture and comes with a $5,000 prize. The award was named for John Presper Eckert and John William Mauchly, who collaborated on the design and construction of the Electronic Numerical Integrator and Computer (ENIAC), the first large-scale electronic computing machine, which was completed in 1947.

About ACM
ACM, the Association for Computing Machinery **www.acm.org**, is the world's largest educational and scientific computing society, uniting computing educators, researchers and professionals to inspire dialogue, share resources and address the field's challenges. ACM strengthens the computing profession's collective voice through strong leadership, promotion of the highest standards, and recognition of technical excellence. ACM supports the professional growth of its members by providing opportunities for life-long learning, career development, and professional networking.

About the IEEE Computer Society
Founded in 1946, and the largest of **IEEE's** 38 societies, the IEEE Computer Society **www.computer.org** is dedicated to advancing the theory and application of computing and information technology. The Computer Society serves the information and career-development needs of today's computing researchers and professionals with books, conferences, conference publications, magazines, online courses, software development certifications, standards, and technical journals. Known worldwide for its computer-standards activities, the Computer Society promotes an active exchange of ideas and technological innovation.

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