Chuck Seitz Wins Cray Award

Charles L. (Chuck) Seitz is an architect and designer of innovative computing and communication systems, many of which exploit asynchrony and concurrency to achieve performance at the limits of available technology. Known for creating new disciplines of digital design, Seitz will receive the IEEE Computer Society's Seymour Cray Award in November at the annual SC conference in Seattle. His award citation reads "For innovations in high-performance message passing architectures and networks."

SEYMOUR CRAY AWARD

Established in 1997, the Seymour Cray Award recognizes innovative contributions to high-performance computing systems that best exemplify the creative spirit demonstrated by supercomputer pioneer Seymour Cray. Winners receive a crystal memento, an illuminated certificate, and a $10,000 honorarium.

CONTRIBUTIONS TO COMPUTING

Seitz become fascinated with digital design during the 1960s at MIT, where he earned a BS, MS, and PhD in electrical engineering. While a graduate student, he taught courses in switching and automata theory,

Chuck Seitz has made strides in message-passing architectures and networks.

developed MIT's digital-system project-laboratory course, and received the MIT Goodwin Medal "for conspicuously effective teaching." Seitz's PhD thesis on asynchronous logic helped to expose and explain the fundamental problems of mutual exclusion and of synchronizing asynchronous signals to a free-running clock.

Seitz later became an assistant professor of computer science at the University of Utah and worked at the Evans & Sutherland Computer Corporation, designing high-performance graphics engines. He then moved to California to perform research for Burroughs on aperture filtering digital-video techniques for character and geometric display.

In 1977, Seitz joined the computer science faculty at Caltech, where his research and teaching focused on VLSI design and concurrent computing. Under DARPA sponsorship, Seitz

and his students developed the first multicomputer, the Cosmic Cube; devised the key programming and packet-switching techniques for the second-generation multicomputers; and transferred these technologies to industry. The Intel Paragon, ASCI Red, and Cray T3D/E employ message-passing techniques licensed from his Caltech patents.

Seitz's 1992 election to the National Academy of Engineering carried the citation "for pioneering contributions to the design of asynchronous and concurrent computing systems."

COMPUTER SOCIETY AWARDS

The IEEE Computer Society recognizes outstanding work by computer professionals who advance the field through exceptional technical achievement and service to the profession and to society.

In the technical area, awards recognize pioneering and significant contributions to the field of computer science and engineering. Service awards honor both volunteers and staff for well-defined and highly valued contributions to the Society. In most cases there are no eligibility restrictions on the nominee or nominator.

Nomination forms are available via the Society's website at www.computer.org/awards. ⬛

Cleve Moler Wins Fernbach Award

Cleve Moler, founder, chairman and chief scientist of MathWorks, was recently honored with the IEEE Computer Society Sidney Fernbach Award for high-performance computing.

Moler was a professor of mathematics and computer science for almost 20 years at the University of Michigan, Stanford University, and the University of New Mexico. At New Mexico, he was a professor in the mathematics department in the late 1970s and then chair of the computer science department in the early 1980s. During this time, he developed several packages of mathematical software for computational science and engineering that eventually formed the basis for MATLAB, a high-level technical computing environment.

MATHWORKS

In 1984, Moler and Jack Little founded MathWorks to commercial-

Cleve Moler coauthored the LINPACK and EISPACK subroutine libraries.

ize and continue the development of MATLAB.

Before joining MathWorks full time in 1989, Moler spent five years with two computer hardware manufacturers, Intel Hypercube and Ardent Computer. At MathWorks, Moler has served as chief scientist, overseeing the mathematical aspects of the company's products. Moler is the one of the authors of the LINPACK and EISPACK scientific subroutine libraries, as well as author or coauthor of five textbooks on numerical analysis and computational science. He is a member of the National Academy of Engineering and a past president of the Society for Industrial and Applied Mathematics. Today, Moler works from his home office in Santa Fe, New Mexico, writing books, articles, and MATLAB programs.

FERNBACH AWARD

The IEEE Computer Society Sidney Fernbach Award was established in 1992 in memory of one of the pioneers in the development and application of high-performance computers to the solution of large computational problems. Winners receive a certificate and $2,000 honorarium in recognition of outstanding contributions in the application of high-performance computers using innovative approaches. **C**

FIFTIETH ANNIVERSARY OF MIT'S COMPATIBLE TIME-SHARING SYSTEM

David Walden, *Chair, IEEE Computer Society History Committee*

Time sharing was in the air around MIT and Cambridge in the years circa 1961. MIT faculty, staff, and students who had worked directly with the Whirlwind or TX-0 computers wanted more of that interactive access. Traditional computer system batch-processing approaches were very slow for program debugging and were challenged by machine overloading as digital computing became more popular.

In the spring of 1961, Professor Fernando Corbató, then associate director of MIT's Computation Center, began to design the Compatible Time-Sharing System (CTSS) for MIT's IBM 709 computer. Corbató initially worked with two of his Comp Center staff members, Robert Daley and Marjorie Merwin. They arranged for IBM to provide an interrupt capability for the 709 that allowed them to take control of the machine. They created a special version of the operating system that set aside 5 kilowords of memory (of 32 kw total) for the time-sharing supervisor (and for buffering typewriter terminal input and output). They used tape drives to store the programs and files of the users of the four terminals. It was crude, but that original configuration allowed a November 1961 demonstration of interactive computer use. Thus, 2011 is the 50th anniversary of the conception and initial demonstration of CTSS.

By 1963, CTSS was a stable, large-scale system, operating with a large disk drive for file storage, more memory for a refined time-sharing supervisor, and a controller that handled a significant number of local and remote terminals. That summer, CTSS supported experimentation with time-shared computing at MIT by a stream of visiting computing pioneers. CTSS was proof positive of the feasibility of time sharing.

Corbató's substantive, solid, early implementation of time sharing in CTSS at MIT was an important stimulus for the era in computing that continues to this day—the era in which users themselves have direct contact with a computer, telling the computer what they want it to do from moment to moment.

In honor of the 50th anniversary of CTSS, the Computer Society's History Committee has prepared a commemorative brochure that is publicly available as article number 5 on the Society's website at www.computer.org/portal/web/volunteercenter/history.

Most IEEE Computer Society publications and activities highlight the state of the art of computing technology and the computing profession, with occasional retrospective articles in the Society's journals and magazines. Founded in 1987, the Society's History Committee focuses exclusively on computing history. Members of the History Committee work on various projects relating to Society history and to computing history more generally.

The Computer Society's longest-running explicit history activity is *IEEE Annals of the History of Computing*, a print journal that is also now available in epub format. Founded by computing pioneers in 1979 (and operated by the Society since 1992), *Annals* has long published first-person accounts from participants in the history of computing. More recently, *Annals* has become a preeminent journal of scholarly writing by professional historians on computing history. *Annals* encourages submissions from both computing practitioners and computing historians.

In recent years, the Computing Then department of the Society's Computing Now portal has highlighted and posted online historical content from *Annals* and other Computer Society sources. Read articles from Computing Then at www.computer.org/portal/web/computingthen.

Susan Graham Receives Kennedy Award

Susan L. Graham, a professor of computer science at the University of California, Berkeley, was recently honored with the IEEE Computer Society's 2011 Ken Kennedy Award winner for her contributions to computer programming tools that have significantly advanced software development. Her award citation reads, "For foundational compilation algorithms and programming tools; research and discipline leadership; and exceptional mentoring."

RESEARCH AND PROJECTS

Graham's research covers human-computer interaction, programming systems, and high-performance computing. Her work has led to the development of interactive tools that enhance programmer productivity as well as new implementation methods for programming languages that improve software performance.

Susan L. Graham is the Pehong Chen Distinguished Professor of Electrical Engineering and Computer Science Emerita at UC Berkeley.

As a participant in the Berkeley Unix project, Graham and her students built the Berkeley Pascal system and the widely used gprof program profiling tool. Her most recent projects include Harmonia, a language-based framework for interactive software development, and Titanium, a Java-based parallel programming language, compiler, and runtime system that supports high performance scientific computing on large-scale multiprocessors.

Graham currently serves as vice-chair of the Council of the Computing Community Consortium, which is sponsored by the National Science Foundation.

KEN KENNEDY AWARD

The Kennedy Award was established in 2009 to recognize substantial contributions to programmability and productivity in computing as well as significant community service and mentoring activities. The award was named for high-performance computing expert Ken Kennedy, founder of Rice University's computer science program. Previous recipients of the Kennedy Award include David Kuck of the University of Illinois, Urbana-Champaign and Francine Berman of Rensselaer Polytechnic Institute. Winners receive a $5,000 honorarium. **C**