Blue Gene Architect Gara Receives 2010 Cray Award

Alan Gara, chief system architect for the three generations of Blue Gene supercomputers, has been awarded the IEEE Computer Society’s 2010 Seymour Cray Computer Engineering Award.

An IBM Fellow at the T.J. Watson Research Center in Yorktown, NY, since 2006, Gara now leads IBM’s exascale system research. He is set to receive the Cray award for his “innovations in low power, densely packaged supercomputing systems” at SC10 in New Orleans.

SUPERCOMPUTER RESEARCHER

Affiliated with the T.J. Watson Research Center since 1999, Gara holds a PhD in theoretical physics from the University of Wisconsin-Madison. He received Gordon Bell awards in 1998 and 2006 for his scientific work in supercomputing. In addition, President Obama honored IBM for its creation of the Blue Gene family with the US National Medal of Technology and Innovation in 2009.

Gara served as technical project leader and chief system architect for Blue Gene, which represented a radical reconceptualization of distributed memory parallel systems. Rather than integrating and exploiting existing components, Blue Gene was a complete design based on a desire for dense packaging, low-power operation, efficient cooling, and a high mean time to failure to facilitate large hardware configurations.

Combining torus and tree networks for communication, and a custom system-on-chip (SoC) node design, the Blue Gene series set new standards for ultra-high performance, occupying the number one position on the Top500 list of supercomputers for several years.

LOW-POWER PIONEER

Gara not only conceived the low-power Blue Gene design but was the driving force behind its realization. He identified power consumption and reliability as two of the primary constraints on the continued scaling of supercomputing architecture, something now widely recognized in international plans for exascale systems. He then created a design based on low-power SoC nodes, with dense packaging and multiple interconnection networks that scaled beyond anything previously envisioned.

SEYMOUR CRAY AWARD

The integrated Blue Gene design embodies the spirit of Seymour Cray’s novel designs, which were marvels of integrated engineering. The Seymour Cray Award is one of the IEEE Computer Society’s highest awards, and is presented in recognition of innovative contributions to high-performance computing systems that best exemplify Cray’s creative spirit. The award consists of a crystal memento, certificate, and $10,000 honorarium.

Kenichi Miura, a professor at the National Institute of Informatics in Japan, received the 2009 Cray award. Other previous recipients include Ken Batcher, John Cocke, Glen Culler, William J. Dally, Monty Denneau, John L. Hennessy, Steven L. Scott, Burton J. Smith, Steven Wallach, and Tadashi Watanabe.
Intel’s Kuck Wins Kennedy Award

The second annual ACM-IEEE Computer Society Ken Kennedy Award will go to Intel Fellow David Kuck for advances in compiler technology and parallel computing that have improved the cost-effectiveness of multiprocessor computing. In this era of multi-core architectures and petascale supercomputers, Kuck’s contributions have been critical in adapting software to effectively use new hardware. He will be honored with the award at SC10.

Influential Designer

Kuck’s pioneering techniques are incorporated in every optimizing compiler in use today. His impact spans four decades and embraces a broad range of areas including architecture design and evaluation, compiler technology, programming languages, and algorithms. During his distinguished career, he influenced the design of the Illiac IV, Burroughs BSP, Alliant FX, and Cedar parallel computers. Kuck’s citation reads “For his pioneering contributions to compiler technology and parallel computing, the profound impact of his research on industry, and the widespread and long-lasting influence of his teaching and mentoring.”

Kuck & Associates Inc., the company Kuck founded in 1979, produced a line of industry-standard optimizing compilers that focused on exploiting parallelism. When Intel acquired KAI in 2000, Kuck led the KAI Software Lab, a leading provider of performance-oriented compilers and programming tools used in the development of multithreaded applications. These applications enable more efficient computing by spreading workloads over multiple central processing units.

University of Illinois Leader

A professor of computer science and electrical and computer engineering at the University of Illinois at Urbana-Champaign from 1965 to 1993, Kuck founded UIUC’s computational sciences program. In 1983, he established its Center for Supercomputing Research and Development, which he directed for a decade.

Kuck, an Intel Fellow, is currently a researcher in Intel’s Software and Solutions Group, where he is developing the hardware/software codesign of architectures, tools, and compilers based on performance, energy, and cost.

His awards for computer architecture and software design include the IEEE Piore Award and the ACM-IEEE Computer Society Eckert-Mauchly Award. He is a Fellow of IEEE, the ACM, and the American Association for the Advancement of Science, and a member of the National Academy of Engineering.

A graduate of the University of Michigan with a BS in electrical engineering, Kuck received both MS and PhD degrees in engineering from Northwestern University. He was a Ford Foundation postdoctoral fellow and assistant professor of electrical engineering at the Massachusetts Institute of Technology.

Ken Kennedy Award

ACM and the Computer Society cosponsor the Kennedy Award, which was established in 2009 to recognize substantial contributions to programmability and productivity in computing and significant community service or mentoring contributions. It is named for the late Ken Kennedy, founder of Rice University’s computer science program and a world expert on high-performance computing. Kennedy’s own work was heavily influenced by Kuck. While on sabbatical at IBM, Kuck provided Kennedy with access to his Parafrase system, generating the spark for Kennedy’s research at both Rice and IBM.

The Kennedy Award carries a $5,000 honorarium endowed by the ACM Special Interest Group on Computer Architecture (SIGARCH) and the Computer Society. The inaugural award went to grid computing pioneer Francine Berman, vice president for research at Rensselaer Polytechnic Institute, for her leadership in building national-scale cyberinfrastructure.
The IEEE Computer Society has announced new exam windows for its Certified Software Development Professional (CSDP) and Certified Software Development Associate (CSDA) credentials. The examination for both certifications can be taken between August 16 and December 17 or between January 10 and June 26. The deadline is November 17 to register to take the examination during the first test window and May 26 to register for the early 2011 test window.

PREP COURSES

The Computer Society recently introduced test preparation courses for both the CSDA and CSDP that are designed to help software professionals evaluate their mastery of the software engineering body of knowledge as they prepare for the examinations. The courses help software developers assess the breadth and depth of their understanding in the 15 knowledge areas contained in Guide to the Software Engineering Body of Knowledge (SWEBOK Guide).

The online, self-paced assessment courses were developed by top subject-matter experts in the software engineering field. Each assessment course provides a survey of selected SWEBOK Guide topics. The assessment courses, like the IEEE Computer Society’s certifications, are intended to provide a measure of a developer’s knowledge and expertise.

The CSDA, which has no prerequisites, is intended for undergraduates, recent graduates, and entry-level developers. For more details, visit www.computer.org/cxda or email cesda@computer.org. The CSDP is designed for midcareer professionals and requires a combination of education and experience. For more information, visit www.computer.org/csdp or email cesda@computer.org.

UPDATED CONTENT

The Computer Society recently updated the CSDP examination to bring it in line with current industry practices and the most recent version of the SWEBOK Guide, version 3. Knowledge areas on software engineering economics and computing, math, and engineering foundations were added in the process. For general certification questions, e-mail certification@computer.org.

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