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The Association for Computing Machinery
Advancing Computing as a Science & Profession

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ACM HONORS COMPUTING INNOVATORS FOR ADVANCES THAT BENEFITED RESEARCH, EDUCATION, INDUSTRY

Award Winners Recognized for Breakthroughs in Web Security, Education, Data Structures, Computer Security, Software Development Tools

NEW YORK, NY, April 26, 2012—ACM (the Association for Computing Machinery) today announced the winners of five prestigious awards for their innovations in computing technology who have made significant contributions that enable computer science to solve real world challenges. These awards reflect achievements in human-computer interaction, complex data structure applications, computer science education, geographic information science, computer simulation for biological research, and open-source software development tools. The 2011 ACM award winners, from internationally known research and academic institutions, include prominent computer scientists, educators, and industry leaders. ACM will present these and other awards at the ACM Awards Banquet on June 16 in San Francisco, CA.

The 2011 Award Winners Include:

- **Luis von Ahn**, recipient of the Grace Murray Hopper Award for advances in harnessing the human side of computation to solve problems that neither humans nor computers could solve alone. Originally termed "human computation," von Ahn's methods employ the technique now known as crowdsourcing to tap into the collective intelligence of the public at large, enabling managers to expand their talent pools and gain insight into customer preferences. He created "Games with a Purpose" to harness human gameplay for tackling challenging image recognition problems. He and his colleagues coined the term CAPTCHA (Completely Automated Public Turing test to tell Computers and Humans Apart), now the world's most ubiquitous computer security program. It relies on distorting text in a way that remains easily readable by humans, but cannot be parsed by computers. A related application invented by von Ahn uses people on the Internet to help digitize parts of books for which optical character recognition (OCR) algorithms fall short. A professor at Carnegie Mellon University, von Ahn also received a MacArthur Fellowship. *The Hopper Award recognizes the outstanding young computer professional of the year.*

- **Hanan Samet**, recipient of the Paris Kanellakis Theory and Practice Award for pioneering research on quadtrees and other multidimensional spatial data structures for sorting spatial information, as well as his well-received books, which have profoundly influenced the theory and application of these structures. These spatial data structures are commonly used in biomedical imaging, games, map (GIS) and image processing, computer graphics, visualization, and other applications. Samet's contributions to, and application of, incremental nearest-

neighbor search, spatial indexing, and spatial data mining exemplify the breadth of his work. Its impact can be seen in a wide array of practical applications including Google Earth, the world's most widely used graphics application. His recent book, *Foundations of Multidimensional and Metric Data Structures*, was an award winner in the Best Book Competition of the American Publishers Association's Professional and Scholarly Publishers Group. His Ph.D. thesis on formal proofs of correctness of compilers and the symbolic execution of compiled execution sequences was among the earliest contributions to the field that later became known as translation validation for compilers. He is the Founding Chair of the ACM Special Interest Group on Spatial Information (SIGSPATIAL). A professor at the University of Maryland, Samet is a Fellow of ACM, IEEE, AAAS and IAPR (International Association of Pattern Recognition), and winner of the 2009 UCGIS (University Consortium for Geographic Information Science) Award. *The Kanellakis Award honors specific theoretical accomplishments that significantly affect the practice of computing.*

- **Hal Abelson**, recipient of the Karl V. Karlstom Outstanding Educator Award for innovative advances in curricula designed for students pursuing different kinds of computing expertise. Abelson fostered revolutionary changes in the teaching and learning process that de-emphasized programming language specifics and concentrated on the mathematical idea of abstraction as a fundamental concept in programming. To help the novice or general student of computer science, he developed the App Inventor for building applications on Android phones and tablets. He is a leader in the movement for open educational resources, and an advocate for the free exchange of intellectual property, thus promoting and democratizing education. A professor at Massachusetts Institute of Technology, Abelson is a Fellow of IEEE. He received MIT's Bose Award, the IEEE Computer Society Taylor L. Booth Education Award for continued contributions to the pedagogy and teaching of introductory computer science, and the ACM Special Interest Group on Computer Science Education (SIGCSE) Award for Outstanding Contributions to Computer Science Education. *The Karlstrom Award recognizes educators who advanced new teaching methodologies; effected new curriculum development in Computer Science and Engineering; or contributed to ACM's educational mission.*

- **Stephanie Forrest**, recipient of the ACM/AAAI Allen Newell Award for contributing new ways to address problems in computer science and biological sciences that provided new linkages between these fields. Forrest introduced ways for systems to model "self," leading to practical methods for detecting anomalous and malicious behavior. This work expanded to encompass building "artificial immune systems" for computers and networks that simulate the behavior of natural immune systems. Her research resulted in new approaches to human vaccine design and understanding viral replication. It also led to advances in automatic software fault correction, software (re)generation, and automated diversity for attack and flaw avoidance. A professor at the University of New Mexico, she is co-chair of the Science Board at the Santa Fe Institute, where she was vice president of Research. She was also a researcher with the Center for Nonlinear Studies at Los Alamos National Laboratory. *The Newell Award recognizes career contributions that have breadth within computer science, or that bridge computer science and other disciplines.*

- **Eclipse**, recipient of the Software System Award , created by IBM. Eclipse changed the way builders think about tools by defining a set of user interaction paradigms for which domain-specific variants are plugged in and customized for their tool. Conceived to address perceived shortcomings in proprietary software development tools, Eclipse allowed developers to seamlessly integrate their own extensions, specializations, and personalizations. It revolutionized the notion of an Integrated Development Environment (IDE) by identifying the conceptual kernel underlying any IDE. Eclipse was designed as an open, extensible platform for application development tools with a Java IDE built on top. In 2004 Eclipse became a not-for-profit corporation. The IBM Eclipse team included John Wiegand, Dave Thomson, Gregory Adams, Philippe Mulet, Julian Jones, John Duimovich, Kevin Haaland, Stephen Northover (now with Oracle), and Erich Gamma (now with Microsoft). *The software System Award is given to an institution or individuals recognized for developing software systems that have had a lasting influence, reflected in contributions to concepts and/or commercial acceptance.*

About the Awards

Grace Murray Hopper Award http://awards.acm.org/hopper/ is given to the outstanding young computer professional of the year, selected on the basis of a single recent major technical or service contribution. This award is accompanied by a prize of $35,000. The candidate must have been 35 years of age or less at the time the qualifying contribution was made. Financial support for this award is provided by Google, Inc. http://www.google.com/corporate/

Paris Kanellakis Theory and Practice Award http://awards.acm.org/kanellakis/ honors specific theoretical accomplishments that have had a significant and demonstrable effect on the practice of computing. This award is accompanied by a prize of $10,000 and is endowed by contributions from the Kanellakis family, with additional financial support provided by ACM's Special Interest Groups on Algorithms and Computation Theory (SIGACT), Design Automation (SIGDA), Management of Data (SIGMOD), and Programming Languages (SIGPLAN), the ACM SIG Projects Fund, and individual contributions.

Karl V. Karlstom Outstanding Educator Award http://awards.acm.org/karlstrom/ is presented annually to an outstanding educator who is appointed to a recognized educational baccalaureate institution. The recipient is recognized for advancing new teaching methodologies; effecting new curriculum development or expansion in Computer Science and Engineering; or making a significant contribution to the educational mission of ACM. Those with ten years or less teaching experience are given special consideration. A prize of $5,000 is supplied by Pearson Education. http://www.pearsoned.com/

ACM/AAAI Allen Newell Award http://awards.acm.org/newell/ is presented to an individual selected for career contributions that have breadth within computer science, or that bridge computer science and other disciplines. This endowed award is accompanied by a prize of $10,000, and is supported by the Association for the Advancement of Artificial Intelligence, http://www.aaai.org/ and by individual contributions.

Software System Award http://awards.acm.org/software_system/ honors an institution or individual(s) recognized for developing a software system that has had a lasting influence, reflected in contributions to concepts, in commercial acceptance, or both. This award carries a prize of $35,000. Financial support for the award is provided by IBM. http://www.ibm.com/

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.

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