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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, COMMERCE AND EDUCATION

Award Winners Recognized for Improvements in Graphics, Information Filtering, Computer Vision, Cryptography, and Educational Opportunities

NEW YORK, April 6, 2011 – ACM (the Association for Computing Machinery) today announced the winners of five prestigious awards for their innovations in computing technology that have led to practical solutions for a wide range of challenges facing commerce, education, and society. The awards reflect outstanding achievements that have resulted in expanded geometric applications in computer graphics, personalized recommendations from information filtering, improved face and motion detection, adaptable cryptography methods, and broadened student participation in computer science education.   The 2010 ACM award winners, from internationally known research and academic institutions, include practiced innovators as well as promising newcomers to the computing profession. ACM will present these and other awards at the ACM Awards Banquet on June 4, in San Jose, CA.

The 2010 ACM awards winners include:

- **<u>Kurt Mehlhorn</u>**, recipient of the Paris Kanellakis Theory and Practice Award for contributions to algorithm engineering that led to creation of the Library of Efficient Data Types and Algorithms (LEDA). This software collection of data structures and algorithms, which Mehlhorn developed with Stefan Näher, provides practical solutions for problems that had previously impeded progress in computer graphics, computer-aided geometric design, scientific computation, and computational biology. LEDA's software has been incorporated in the applied research programs of thousands of companies worldwide in telecommunications, bioinformatics, Computer-Aided Design (CAD) and Geographic Information System (GIS), banking, optical products, and transportation. Since 2001, LEDA has been developed and distributed by Algorithmic Solutions Software GmbH, founded by Mehlhorn with Näher and Christian Uhrig, who introduced a novel distribution model that is free to researchers and licensed to companies. Mehlhorn is the founding director of the Max Planck Institute for Informatics and a professor at Saarland University in Saarbrucken, Germany. A Fellow of ACM, he received the Gottfried Wilhelm Leibniz Prize in 1986, and the European Association for Theoretical Computer Science

(EATCS) Award in 2010. *The Kanellakis Award honors specific theoretical accomplishments that significantly affect the practice of computing.*

- **GroupLens Collaborative Filtering Recommender Systems,** recipient of the Software System Award. These systems show how a distributed set of users could receive personalized recommendations by sharing ratings, leading to both commercial products and extensive research. Based on automated collaborative filtering, these recommender systems were introduced, refined, and commercialized by a team at GroupLens. This team then brought automation to the process, enabling wide-ranging research and commercial applications. They founded Net Perceptions, which provided recommender systems to leading retail and information companies around the world. Recommender systems draw on machine learning, human computer interaction, ecommerce, information retrieval, databases, and other computer science fields. The GroupLens team includes John Riedl (University of Minnesota), Paul Resnick (University of Michigan), Joseph A. Konstan (University of Minnesota), Neophytos Iacovou (COVOU Technologists), Peter Bergstrom (Fluke Thermography), Mitesh Suchak (Massachusetts Institute of Technology), David Maltz (Microsoft), Brad Miller (Luther College), Jon Herlocker (VMware, Inc.), Lee Gordon (Gordon Consulting, LLC), Sean McNee **(**FTI Consulting, Inc.), and Shyong (Tony) K. Lam (University of Minnesota). *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.*

- **Takeo Kanade,** recipient of the ACM/AAAI Allen Newell Award for contributions to research in computer vision and robotics. His approach balanced fundamental theoretical insights with practical, real-world applications in areas like face and motion detection and analysis, direct drive manipulators, three dimensional shape recovery from both stereo vision and motional analysis, and video surveillance and monitoring. Applications of his algorithmic insights, mathematical and physical principles, and rigorous implementation include medical robots for surgical assistance, "virtualized reality" systems for capturing and visualizing three-dimensional scenes, modern graphics effects in video, and autonomous vehicles. Kanade, the U.A. and Helen Whitaker University Professor of Computer Science and Robotics at Carnegie Mellon University, was director of the Robotics Institute of CMU from 1991-2001. He founded the Digital Human Research Center in Tokyo in 2001. *The Newell Award recognizes career contributions that have breadth within computer science, or that bridge computer science and other disciplines.*

- **Craig Gentry**, recipient of the Grace Murray Hopper Award for his breakthrough construction of a fully homomorphic encryption scheme, which enables computations to be performed on encrypted data without unscrambling it. This long-unsolved mathematical puzzle requires immense computational effort, but Gentry's innovative approach broke the theoretical barrier to this puzzle by double encrypting

the data in such a way that unavoidable errors could be removed without detection. This insight has the potential to result in adaptable cryptography methods that can prevent security breaches and protect sensitive personal data. Gentry is a researcher at IBM. In 2009, he won the ACM Doctoral Dissertation Award. *The Hopper Award recognizes the outstanding young computer professional of the year.*

- **Barbara Ericson and Mark Guzdial**, recipients of the [Karl V. Karlstom Outstanding Educator Award](#) for their contributions to broadening participation in computing. They created the Media Computation (MediaComp) approach, which motivates students to write programs that manipulate and create digital media, such as pictures, sounds, and videos. Now in use in nearly 200 schools around the world, this contextualized approach to introductory Computer Science attracts students not motivated by classical algorithmic problems addressed in traditional computer science education. They also lead "Georgia Computes!" an NSF-funded statewide alliance to increase the number and diversity of students in computing education across all of Georgia. Barbara Ericson directs the Institute for Computing Education at Georgia Tech. Mark Guzdial is director of the Contextualized Support for Learning at Georgia Tech. Together they have written three textbooks using the MediaComp approach to engage and inspire student learning in computing. *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.*

About the Awards

Paris Kanellakis Theory and Practice Award 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 $5,000 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.

Software System Award 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.

ACM/AAAI Allen Newell Award 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](#), and by individual contributions.

Grace Murray Hopper Award 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.

Karl V. Karlstom Outstanding Educator Award 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 the [Pearson Education](#).

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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