Mathematics People

Spielman and Teng Awarded Gödel Prize

Daniel A. Spielman of Yale University and Shang-Hua Teng of Boston University were named recipients of the Gödel Prize of the Association for Computing Machinery (ACM) at the International Colloquium on Automata, Languages, and Programming (ICALP), held July 6–13, 2008, in Reykjavik, Iceland. The Gödel Prize for outstanding papers in the area of theoretical computer science is sponsored jointly by the European Association for Theoretical Computer Science (EATCS) and the Special Interest Group on Algorithms and Computing Theory of the ACM (ACM-SIGACT). The prize carries a cash award of US$5,000.

Spielman and Teng were recognized for their work in developing a rigorous framework to explain the practical success of algorithms on real data and real computers that could not be clearly understood through traditional techniques. Their technique, known as "smoothed analysis", relies on deep mathematical analysis and insight. It has been used as a basis for considerable research, confirming its importance to scientific computing. In a paper titled "Smoothed Analysis of Algorithms: Why the Simplex Algorithm Usually Takes Polynomial Time", the authors address a fundamental question about how algorithms function. Their research explains why the simplex algorithm, an important tool used by computers to solve a broad, basic class of optimization problems, works effectively in many practical areas, especially in business. It also represents a huge advance in addressing the challenge of predicting the performance of algorithms, which are clearly specified procedures guaranteed to give the correct answer, and heuristics, which are methods of solving problems through intelligent trial and error. Understanding the mathematical structure of these problems is necessary to designing efficient algorithms and software. The findings of Spielman and Teng were published in the *Journal of the Association for Computing Machinery* in 2004.

Spielman was awarded the ACM Doctoral Dissertation Award in 1995 and was honored with the Best Student Paper award at the ACM Symposium on Theory of Computing in both 1994 and 1995. He received his Ph.D. from the Massachusetts Institute of Technology and is a recipient of the Beckwith Prize in mathematics. Teng is an active participant in industry and collaborates with engineers and scientists in developing real-world products. He received his Ph.D. degree from Carnegie Mellon University.

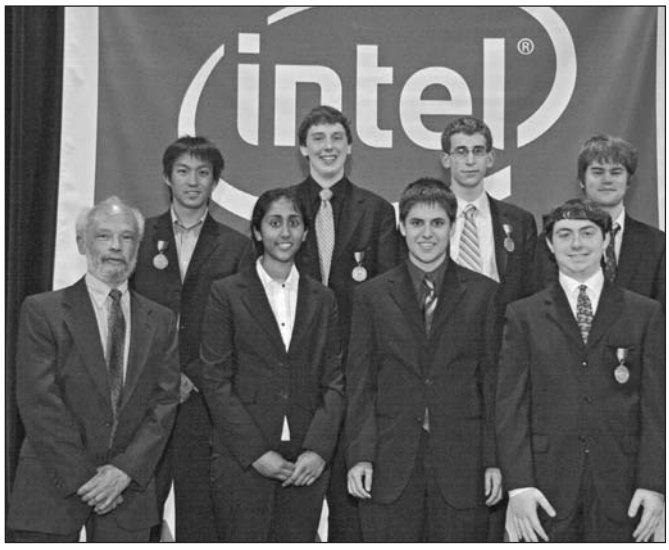
The Gödel Prize is named in honor of Kurt Gödel, an Austrian-American mathematician and philosopher who had a major impact on the foundations of computer science.

—From an ACM announcement

AMS Menger Awards at the 2008 ISEF

The 2008 Intel International Science and Engineering Fair (ISEF) was held May 11–16, 2008, in Atlanta, Georgia. This was the fifty-ninth year of the ISEF competition. More than fifteen hundred students in grades 9 through 12 from over fifty countries participated in the fair. Student finalists who compete at the ISEF go through a multistep process to qualify and have won an all-expense-paid trip to the fair. They qualified by winning local, regional, and state fairs in the United States or national science fairs abroad. In addition to numerous grand awards presented by the ISEF, sixty-seven federal agencies and professional and educational organizations, including the AMS, participated by giving special awards. Prizes given by the AMS included cash, certificates, books, and tote bags.

For the AMS this was the twenty-first year of participation, and it was the nineteenth year of the presentation of the Karl Menger Awards. The members of the 2007–2008 AMS Menger Prize Committee and AMS Special Awards Judges were Edward Connors, University of Massachusetts; Doron Levy, University of Maryland; and David Scott,



Menger Prize winners: front row, left to right: David Scott (committee chair), Shravani Mikkilineni, Matthew Wage, and David Rosengarten; back row, left to right: Alex Chen, Alexander Churchill, Paul Kominers, and Eric Larson.

University of Puget Sound (chair). The panel of judges reviewed all sixty projects in mathematics, as well as mathematically oriented projects in computer science and physics, and interviewed each student under consideration for a Menger Prize. The AMS gave awards to one first-place winner, two second-place winners, and four third-place winners, and honorable mentions to five others.

The Karl Menger Memorial Prize winners are as follows:

First-Place Award (US$1,000): "Restrictions and Generalizations on Comma-Free Codes", ALEXANDER CHURCHILL, 18, Lincoln East High School, Lincoln, Nebraska.

Second-Place Awards (US$500): "Continued Fractions and Orbits of a Linear Fractional Transformation", SHRAVANI MIKKILINENI, 17, Detroit Country Day School, Beverly Hills, Michigan; "Rotation Curves in Five Dimensions", DAVID ROSENGARTEN, 18, John L. Miller Great Neck North High School, Great Neck, New York.

Third-Place Awards (US$250): "The DNA Inequality in Non-convex Regions", ERIC LARSON, 16, South Eugene High School, Eugene, Oregon; "On the Reducible Quintic Complete Base Polynomials", ALEX CHEN, 17, York High School, Yorktown, Virginia; "Chip-Firing Analysis of Stabilization Behaviors, Hitting Times, and Candy-Passing Games", PAUL KOMINERS, 17, Walt Whitman High School, Bethesda, Maryland; "On Lehmer-Type Questions for Special Classes of Arithmetic Functions", MATTHEW WAGE, 18, Appleton East High School, Appleton, Wisconsin.

Honorable Mention Awards: "Frequency Sequence: Structures and Properties", SWARA KOPPARTY, 17, Terre Haute South Vigo High School, Terre Haute, Indiana; "Computation of the Alexander-Conway Polynomial on the Chord Diagrams of Singular Knots", SANA RAOOF, 17, Jericho High School, Jericho, New York; "Problems of Ramsey Theory", NURLAN TAIGANOV, 16, Ekibastuz, Pavlodar, Kazakhstan; "Analogue of the Popoviciu's Inequality", ARTEM TIMOSHENKO, 16, Murmansk Polytechnic Lyceum, Murmansk, Russia; "Eisenstein Prime Magic Square", SARAH SELLERS, 17, Hedgesville High School, Hedgesville, West Virginia.

The Society for Science and the Public, the owner and administrator of the ISEF, changed the awards ceremony this year. In a departure from previous awards ceremonies, those receiving honorable mention were not publicly announced and called to the stage like the first-, second-, and third-place awardees. As a consequence, those receiving honorable mentions are not pictured with the other Menger Prize winners.

The panel of judges was impressed both by the quality and originality of the work and by the dedication and enthusiasm of the students. The projects covered a wide range of topics, including elementary number theory, knot theory, dynamic systems on graphs, arithmetic and geometric inequalities, algebraic structures, and mathematical games. To the extent that these young scholars represent the future of mathematics, the outlook for the field is indeed bright.

The AMS's participation in the Intel-ISEF is supported in part by income from the Karl Menger Fund, which was established by the family of the late Karl Menger. The income from the donation by the Menger family covers less than the amount of the awards. The balance, including the travel expenses of the judges, comes from the AMS's general fund. For more information about this program or to make contributions to this fund, contact the AMS Development Office, 201 Charles Street, Providence, RI, 02904-2294; or send email to `development@ams.org`; or phone 401-455-4151.

—David Scott, University of Puget Sound

Parlett and Moler Awarded Schneider Prize

BERESFORD PARLETT of the University of California, Berkeley, and CLEVE MOLER of The MathWorks have been awarded the Hans Schneider Prize in Linear Algebra for 2008 by the International Linear Algebra Society (ILAS). Parlett was honored for his theoretical and numerical contributions to numerical linear algebra, especially the symmetric eigenvalue problem. Moler was honored for his creation of MatLab, a computational and experimental tool in linear algebra that has influenced both research in and teaching of linear algebra.

The Hans Schneider Prize is awarded for research, contributions, and achievements at the highest level of linear algebra. It may be awarded for an outstanding scientific achievement or for lifetime contributions, and there may be more than one recipient. An invitation is extended to the recipient(s) to attend the award ceremony to receive the prize, and each is invited to present a talk at an ILAS meeting.

—Danny Hershkowitz for the ILAS Prize Committee

Prizes of the Mathematical Society of Japan

The Mathematical Society of Japan (MSJ) awarded a number of prizes in spring 2008.

HIDEO TAKAOKA of Kobe University has been awarded the 2008 Spring Prize for his outstanding contributions to the global theory of nonlinear dispersive equations. The Spring Prize is awarded each year to a mathematician who is not older than forty and has made an outstanding contribution to mathematics.

The Publication Prize is given for distinguished contributions to the mathematical literature. The awardees for 2008 are: SUSUMU OTAKE for his life's work in publishing translations of Russian mathematics books; TAKESHI KITANO for televised programs of his mathematics classes at Comaneci University, in which he "showed the charm of mathematics" and contributed to the awareness and appreciation of mathematics; and to TAKAHIKO YAMAGUCHI and MITSUO SUGIURA for their monograph *An Introduction to Continuous Group Theory*.

Three mathematicians have received 2008 Algebra Prizes. They are OSAMU IYAMA of Nagoya University for his research on higher-dimensional Auslander-Reiten theory; YOSHINORI NAMIKAWA of Osaka University for his work on Calabi-Yau threefolds and holomorphic symplectic geometry; and TOSHIYUKI TANISAKI of Osaka City University for his contributions to the representation theory of Lie algebras and quantum groups.

—From a Mathematical Society of Japan announcement

Ford Foundation Diversity Fellowships Awarded

The Ford Foundation has named the recipients of its Diversity Fellowships for 2007. The Ford Foundation's predoctoral, dissertation, and postdoctoral fellowship programs seek to increase the presence of underrepresented minorities on college faculties. Awardees later serve as role models and mentors for a new generation of scholars. MANUEL L. REYES of the University of California, Berkeley, was awarded a Predoctoral Fellowship of US$20,000 a year for up to three years. He is a student in the field of algebra.

—From a Ford Foundation announcement