

May 09, 2019 | By Katie E. Ismael

Mihir Bellare Named Inaugural Holder of S. Gill Williamson Endowed Chair in Computer Science

Gift from alumni Steven and Susan Hart will help Bellare advance his work in socially conscious cryptography

Professor Mihir Bellare, an internationally renowned cryptographer and a pioneer in data security and privacy, has been appointed the S. Gill Williamson Chancellor's Endowed Chair in Computer Science at the University of California San Diego.

The chair was established by a \$1 million gift from alumni benefactors Steven R. Hart '80 and Susan O. Hart '86 in honor of Stanley Gill Williamson, the former chair of the Department of Computer Science and Engineering (CSE) and a professor emeritus.



Computer Science and Engineering Professor Mihir Bellare

The impact of the Harts' gift is boosted with a \$500,000 match from the campus Chancellor's Chair Challenge, a program created to support the recruitment and retention of quality tenured faculty. The chair award will provide dedicated funds, in perpetuity, for the chair holder's scholarly activities, as well as support for faculty salaries and graduate fellowships.

"I congratulate Mihir Bellare on his game-changing advances in cryptography. His work contributes every day to critical efforts to ensure online privacy and security," said Albert P. Pisano, dean of the UC San Diego Jacobs School of Engineering. "I'd also like to sincerely thank Steve and Sue Hart for their generous support and invaluable friendship and wisdom. Steve and Sue are crucial to the Jacobs School of Engineering and our mission to educate the students who go on to make discoveries and develop solutions that benefit society."

Security solutions to address real-world problems

Bellare codesigned algorithms that are used billions of times a day— every time someone connects to a Gmail account via a secure web connection, denoted by an "https" in the URL, or makes a credit card-based internet payment. The algorithms make up what is known as the hash-based message

authentication code (HMAC) data authentication scheme, which is used in many methods for securing data over networks.

"I congratulate Professor Bellare on this well-deserved honor. He has succeeded in both pushing the frontiers of research in cryptography while also having profound impact on real systems, as we all benefit from his research pretty much every day. He also has a deep commitment to the next generation of computer scientists here at UC San Diego," said CSE department chair Dean Tullsen. "We are extremely thankful to Steve and Sue Hart for making it possible to bestow this honor on Professor Bellare, as well as for their continued support of research advances in computer science."

Bellare said the endowed chair award will help fund his research in the area of socially conscious cryptography, which aims to create privacy and integrity methods and tools that "help people rather than power." In 2015, he was a coauthor of an influential paper titled "Security of Symmetric Encryption against Mass Surveillance," which received the Privacy Enhancing Technologies Award.

His work could also help reporters working in dangerous parts of the world. "I want to reduce the incentive to harm them by creating a tool that allows them to share the information they gather through 'secret sharing,' so if anything happens to them, their work is recoverable yet their privacy is maintained," he explained.

Bellare is also interested in improving secure messaging apps, such as WhatsApp and iMessage, which are entrusted with vast volumes of text communication, video and images, he said. More generally, he said he aims to bring solutions with mathematical security support to real-world problems.

"This type of work is not always funded by government agencies, and the S. Gill Williamson Chancellor's Endowed Chair, generously funded by Steve and Sue Hart, can enable it," he said.

Supporting online security, and the UC San Diego community

Steve Hart, the executive vice president of engineering, chief technical officer and co-founder of Viasat Inc., and his wife, Sue, are passionate supporters of UC San Diego, in particular its students. They have made numerous contributions to various student scholarships and success initiatives across the campus.

Steve Hart serves on the Jacobs School of Engineering Development Committee and on the board of the school's Gordon Leadership Center. He is also a member of the UC San Diego Foundation Board of Trustees and serves on the International Leadership Committee for the Campaign for UC San Diego. Sue Hart serves on the Student Support and Success Council, as well as the International Leadership Committee for the Campaign for UC San Diego. In 2014, the couple was awarded a Chancellor's Medal for their contributions to the university.

“We are pleased to help further the work of Professor Bellare in enhancing our online security and developing solutions to the problems we face in keeping our information private and safe,” said Steve Hart. “We felt it was important to honor the legacy and contributions of Gill Williamson to the mathematics and computer science fields and to the UC San Diego community, which Sue and I have been proud members of for nearly four decades.”

Williamson joined UC San Diego in 1965 as a professor in the mathematics department, where he served until 1991 when he transferred to the Department of Computer Science and Engineering. He served as CSE chair from 1991 until 1996. He retired in 2004 but continues to serve the department as an emeritus faculty.

Williamson is author of “Combinatorics for Computer Science,” a beginning graduate text in combinatorial algorithms, and the book “Top-down Calculus.” He is coauthor of three books with E. Bender: “Foundations of Combinatorics with Applications,” “A Short Course in Discrete Mathematics,” and “Mathematics for Algorithm and Systems Analysis.”

He has also been, as the Harts note, a mentor and/or thesis advisor to many graduate students over the years.

“I have deep gratitude to Steve and Sue Hart and am pleased their gift honors Gill Williamson, who was the department chair who hired me in 1995, and whose advice I have benefited from on many occasions,” Bellare said.

Provable contributions to cryptography

Earlier this year, Bellare was awarded the Levchin Prize, which recognizes annually two individuals or teams who have provided "significant contributions to real-world cryptography."

In 2013, he was elected a Fellow of the Association for Computing Machinery (ACM), becoming one of only 50 elite researchers to be named to the organization that year. He was cited for “contributions to provable security methods supporting high-quality, cost-effective cryptography.”

Among his numerous other awards, he has received the ACM Paris Kanellakis Theory and Practice Award, 2009; the RSA Conference Award in Mathematics, 2003; the David and Lucille Packard Foundation Fellowship in Science and Engineering, 1996; and the Test of Time Award, ACM CCS 2011, given for the best paper from ten years prior.

Bellare is a prolific scholar with some 50,000 citations. He has presented more than 80 publications at first-tier cryptography conferences (Crypto, Eurocrypt, Asiacrypt); 15 publications at first-tier security conferences (ACM Conference on Computer Communications and Security, IEEE Symposium on Security and Privacy, and the USENIX Security Symposium); and 18 publications at first tier theory conferences (Foundations of Computer Science, Symposium on Theory of Computing).

Before joining the Department of Computer Science and Engineering at UC San Diego, Bellare was a research staff member at the IBM T.J. Watson Research Center. He holds a Ph.D. in Computer Science from the Massachusetts Institute of Technology and a B.S. with honors in Mathematics from the California Institute of Technology (Caltech).

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