PRINCETON PROFESSOR TO RECEIVE
ACM FRANCES E. ALLEN AWARD FOR OUTSTANDING MENTORING

*Margaret Martonosi's Guidance Significantly Impacted Computer Architecture
Students and the Broader Computer Science Community*

New York, NY, May 29, 2024 – ACM, the Association for Computing Machinery, today named Margaret Martonosi the recipient of the ACM Frances E. Allen Award for Outstanding Mentoring. Martonosi is recognized for outstanding and far-reaching mentoring at Princeton University, in computer architecture, and to the broader computer science community. Martonosi, the Hugh Trumbull Adams '35 Professor of Computer Science at Princeton University, is a leader in the design, modeling, and verification of power efficient computer architecture.

The ACM Frances E. Allen Award is presented biennially to an individual who has exemplified excellence and/or innovation in mentoring, with particular attention to recognition of individuals who have shown outstanding leadership in promoting diversity, equity, and inclusion in computing. The award is accompanied by a prize of $25,000 to the awardee and an additional $10,000 cash contribution to an approved charity of the awardee's choice. Financial support is provided by Microsoft Research.

Mentoring Contributions

Martonosi instituted the Discipline Specific Workshops program—an initiative of what was then the CRA-W sub-committee of the Computer Research Association and the Coalition to Diversify Computing—with the goal of increasing participation of women and members of underrepresented groups in computing by fostering professional networking within a specific computing research area.

Those attending these workshops develop professional networks with other women in their field and gain vital career guidance from successful senior role models. Martonosi and her collaborators in this work planned the workshops to be co-located with major conferences related to each specific sub-field. To date, more than 30 workshops have helped thousands of students build their collaboration networks. For example, several of the students have co-authored papers with senior researchers and peer colleagues that they met at the workshops.

At Princeton, Martonosi has advised 36 PhD students who have gone on to successful careers. In addition to her work with doctoral students, she has been recognized as a dedicated and extremely effective mentor for women and minority undergraduate and graduate students. Since 1995, she has supervised the undergraduate research of many students, including hosting undergraduate women from other colleges and universities such as Columbia, Pomona College, Georgia Tech, Hiram College, Duke, and Mt. Holyoke College to come work with her as summer research interns at Princeton.

Research Contributions
Themes in Martonosi's work include combining theoretical underpinnings and novel algorithms with simple hardware ideas and a detailed understanding of workload behavior. Her techniques span hardware and software as well as theory and practice to produce high-impact, long-lasting results from important problems.

Martonosi's research has made myriad contributions to power-aware architecture. Her early research on narrow bit-width operands cut arithmetic energy requirements in half by exploiting common data value patterns. This work was patented and licensed to Intel. Martonosi's research in power-awareness originally focused on general-purpose computer architecture. She later broadened her scope to energy issues in mobile sensor networks where energy dictates system lifetime and success.

Her ZebraNet Wildlife Tracking Project established the field of mobile sensor networks. Covering large tracking areas (up to hundreds of miles) with no installed infrastructure using traditional protocols would have required very high-power, long-range radios. In contrast, ZebraNet developed the first energy-efficient protocols for opportunistic routing using low-power, short-range data transfers. The project comprehensively addressed hardware design, energy adaptation, communication protocols, and system software. ZebraNet was deployed twice in Kenya. It collected thousands of data points on Plains Zebras, provided biologists with never-before-seen animal behavior data, and established the utility of mobile sensor networks for many problems that are now adapted broadly in sensors and mobile devices.

"As with colleagues in all scientific fields, computer scientists recognize how essential mentors have been to the development of our careers" said ACM President Yannis Ioannidis. "For this reason, while the Frances E. Allen Award was inaugurated only two years ago, I believe it is one of our most important honors. Studies have shown that a major factor in women and other underrepresented groups joining and staying in our field is the presence of mentors and role models. Margaret Martonosi's contributions demonstrate the crucial link between helping younger colleagues launch their careers and ensuring that our field reflects the wider society. We congratulate Margaret and hope others will be inspired by her example."

"Our field is built on collaboration and, for many, our first and most influential collaborations are with our mentors," said Susan Dumais, Technical Fellow and Director of the Microsoft Research Labs in New England, New York City and Montréal. "Microsoft is proud to provide financial support for the ACM Frances E. Allen Award for Outstanding Mentoring. We salute Margaret Martonosi for her trailblazing research, as well as her willingness to volunteer her time to cultivate the next generation in our field.

She has not taken a "business as usual" approach but has instead developed innovative new approaches to address longstanding challenges."

Biographical Background

Margaret Martonosi is the Hugh Trumbull Adams '35 Professor of Computer Science at Princeton University. She also recently served a four-year term as the National Science Foundation (NSF) Assistant Director leading the Directorate for Computer and Information Science and Engineering (CISE).

Martonosi earned MS and PhD degrees in Electrical Engineering from Stanford University and a BS in Electrical Engineering from Cornell University.

Her many honors include the ACM-IEEE-CS Eckert-Mauchly Award, the Undergraduate Research Mentoring Award by the National Center for Women & Information Technology, Princeton's Graduate Mentoring Award, as well as numerous Test-of-Time and Best Paper Awards. Martonosi is a Fellow of ACM and IEEE. She is a member of the National Academy of Engineering.

Martonosi will be formally presented with the ACM Frances E. Allen Award for Outstanding Mentoring at the annual ACM Awards Banquet, which will be held this year on Saturday, June 22 at the Palace Hotel in San Francisco.

About the ACM Frances E. Allen Award for Outstanding Mentoring
The ACM Frances E. Allen Award for Outstanding Mentoring is presented biennially to an individual who has exemplified excellence and/or innovation in mentoring with particular attention to recognition of individuals who have shown outstanding leadership in promoting diversity, equity, and inclusion in computing. The award is named for Frances E. Allen, an American computer scientist and pioneer in optimizing compilers. Allen, who was the first woman to receive the ACM A.M. Turing Award, was especially known for her mentorship of younger colleagues. The award is presented at the ACM Award Banquet and is accompanied by a prize of $25,000 to the awardee, with an additional $10,000 cash contribution to an approved charity of the awardee's choice. Financial support is provided by Microsoft Research.

About ACM
ACM, the Association for Computing Machinery, 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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