Carnegie Mellon University
Electrical & Computer Engineering

THE CIRCUIT

special edition

JUDITH RESNIK YEAR OF
W❍MEN IN ECE

welcome

Dear friends of CMU ECE, welcome to a special edition of The Circuit!

In 2016, the Department of Electrical and Computer Engineering at Carnegie Mellon University released its strategic plan, FIRE: Foster, Impact, Research, Educate. The plan sets a five-year course for department, articulates the vision and mission, and maps the path for its execution for the department. To underscore and highlight the importance of inclusion, the department launched The Judith Resnik Year of Women in ECE. In celebration of all female students, faculty, and staff, the department hosted monthly events for the community of ECE women, including networking events, dinners, motivational speakers, and workshops. This special issue of The Circuit highlights events from the past academic year.

Jelena

Jelena Kovačević

JUDITH RESNIK YEAR OF WOMEN IN ECE

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Electrical & Computer Engineering Magazine

JUDITH RESNIK YEAR OF WOMEN IN ECE

Contributors
Krista Burns
Debra Vieira

Electrical & Computer ENGINEERING

Year of Women events

Learn about the monthly Judith Resnik Year of Women in ECE events, ranging from casual networking receptions to a fun paint night for graduate students.

p. 3-7

p. 8
Staff news
ECE staff members attend a local conference designed to help future leaders develop the necessary skills in their transition from doer to leader.
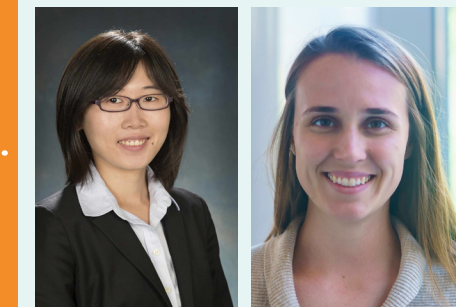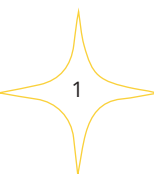
p. 10
Faculty news
The department is excited to introduce two new faculty members, Yuejie Chi and Virginia Smith.
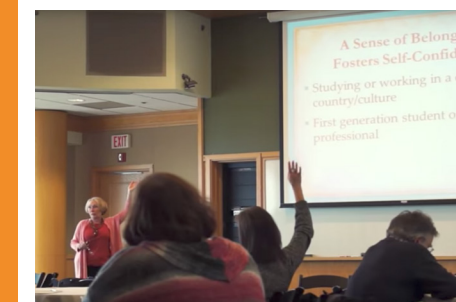
p. 12
Year of Women seminars
During the 2016/2017 academic year, ECE hosted weekly seminars. Get to know the Judith Resnik Year of Women in ECE seminar speakers.
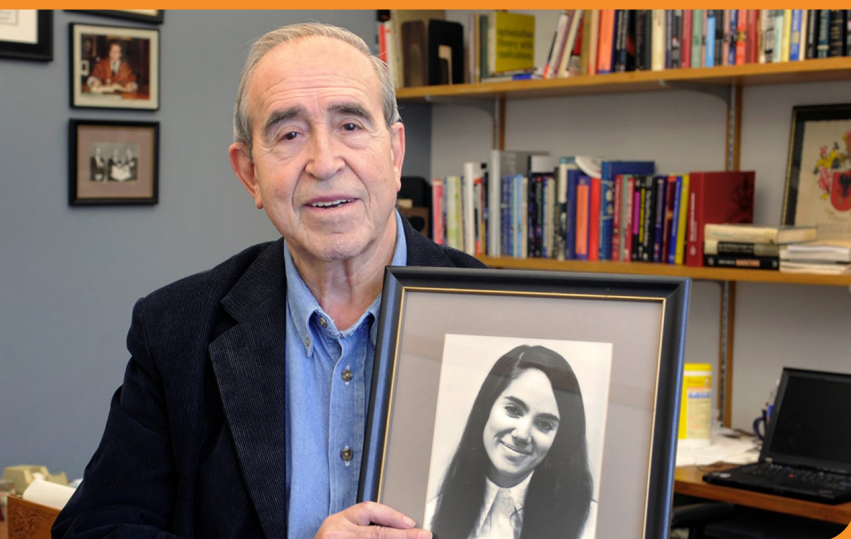
Judith Resnik

Born in Akron, Ohio, Resnik received a B.S. in electrical engineering from Carnegie Mellon in 1970, and a Ph.D. in electrical engineering from the University of Maryland in 1977. She worked for the RCA Corporation, the Laboratory of Neurophysiology at the National Institutes of Health, and Xerox Corporation, before she was selected by NASA for their first group of women astronauts.

Participating in the shuttle program at the Johnson Space Center, she became the second American woman in orbit on the Discovery flight, on which she helped to deploy three satellites and conducted biomedical research. Resnik was one of seven astronauts who died on January 28, 1986 aboard the Challenger; she was 36 years old and had spent more than 144 hours in space.

Source: NASA biography

Angel Jordan, a University Professor Emeritus, former provost of CMU, and Resnik's faculty adviser and mentor, holds a picture of Judith from when she attended Carnegie Mellon University.

Undergraduate networking reception

This informal networking event was an opportunity for undergraduate women to mingle with faculty and staff members in ECE. As the inaugural event in the Judith Resnik Year of Women in ECE, attendees learned about the legacy of the late alumna.

WinECE Fall Dinner

Women in ECE (WinECE) is an organization encompassing all female undergraduate students, graduate students, faculty, and staff within the electrical and computer engineering department. The WinECE Fall Dinner is an annual event for the women of ECE to get to know each other and to hear about what it's like to be a tech woman in industry or academia. The highlight of the dinner was the keynote speaker, Ayana Ledford, the Founding Executive Director of the Program for Research and Outreach on Gender Equity in Society at Carnegie Mellon University, known as PROGRESS.

participants

Carnegie Mellon hosts the Rising Stars Workshop

rising stars

Last fall, Carnegie Mellon University hosted the world's brightest female Ph.D. students and postdocs in the fields of electrical engineering and computer science at the 2016 Rising Stars Workshop. The two-day career-building conference of scientific interactions and career-oriented discussions aimed to identify and mentor young stars in electrical engineering and computer science (EECS).

Founded by MIT in 2012, the workshop focused on navigating the early stages of careers in academia. The workshop was hosted and sponsored by Carnegie Mellon University's Department of Electrical and Computer Engineering, the College of Engineering, the Center for Faculty Success, and the School of Computer Science, in collaboration with MIT's Department of Electrical Engineering and Computer Science.

"We were excited to welcome the participants to Carnegie Mellon University," says Jim Garrett, dean of Carnegie Mellon's College of Engineering. "The workshop is an important leadership and development program to help to change the equation and bring more women into positions of influence and leadership."

 The workshop included three poster sessions as well as presentations and panels on aspects of life in academia—from finding a faculty position to how to succeed as a junior faculty member. Participants had the opportunity to present their ongoing research, interact with faculty members from top institutions, and receive advice for advancing their careers.

"The Rising Stars Workshop is a great opportunity to become acquainted with the latest research, to meet future leaders in the field, and to network with Carnegie Mellon faculty," says Jelena Kovačević, department head of electrical and computer engineering. "The participants showcased their passion for research and education, while creating societal impact."

The participants had the opportunity to learn by doing, with sessions focused on landing a faculty job, navigating the promotion process, and building a professional support network, as well as many other sessions with topics of interest to women in academia. The workshop featured presentations and discussions by participants spanning the spectrum of EECS from devices, circuits and nanosystems, to cyber-physical systems, data science, and security and privacy, with particular focus on making an impact on society through work on energy, mobility, smart infrastructure, health, and quality-of-life.

"I've got good news and bad news for the participants," says Andrew Moore, dean of Carnegie Mellon's School of Computer Science. "The bad news first: being in their position is a big responsibility. Technology is one of the best bets for getting the planet through the 21st century and, as future thought and organizational leaders, it's all on their shoulders. The good news is that I can't imagine a more rewarding and interesting career!"

Mehrnaz Afshang, Virginia Tech

Gabriella Alves Bulhões Barros, New York University

Ofra Amir, Harvard University

Jennie Appel, Arizona State University

Judith Birkenfeld, MIT

Allison Chaney, Princeton University

Danqi Chen, Stanford University

Tali Dekel, MIT

Cynthia Disenfeld, University of Toronto

Amal El-Ghazaly, Stanford University

Roya Ensafi, Princeton University

Motahhare Eslami, University of Illinois at Urbana-Champaign

Chuchu Fan, University of Illinois at Urbana-Champaign

Nicole Fern, UC Santa Barbara

Madalina Fiterau, Stanford University

Vidya Ganapati, Verily

Kristen Gardner, Carnegie Mellon University

Marzyeh Ghassemi, MIT

Wenjuan Guo, Intel

Xi He, Duke University

Jean Anne Incorvia, Stanford University

Hernisa Kacorri, Carnegie Mellon University

Fulya Kaplan, Boston University

Hana Khamfroush, Pennsylvania State University

Jeonghee Kim, Georgia Institute of Technology

Minji Kim, University of Illinois at Urbana-Champaign

Shinjini Kundu, Carnegie Mellon University

Himabindu Lakkaraju, Stanford University

Bhoram Lee, University of Pennsylvania

Christina Lee, MIT

Changchang Liu, Princeton University

Ruonan Liu, University of California, Berkeley

Jing Li, Washington University in St. Louis

Sarah Lukes, Agile Focus Designs

Xuanxuan Lu, Lehigh University

Parisa Mansourifard, University of Southern California

Sujitha Martin, University of California, San Diego

Shahrzad Mirkhani, Stanford University

Aida Nematzadeh, University of California, Berkeley

Farnaz Niroui, MIT

Nadia Polikarpova, MIT

Emily Porter, National University of Ireland – Galway

Reihaneh Rabbany, University of Alberta

Priyanka Raina, MIT

Enas Sakr, Purdue University

Tselil Schramm, University of California, Berkeley

Jahnavi Sharma, Columbia University

Elaine Short, University of Southern California

Virginia Smith, University of California, Berkeley

Carolin Sutter-Fella, University of California, Berkeley

Cheng Tang, George Washington University

Aishwarya Thiruvengadam, University of Maryland

Yuan Tian, Carnegie Mellon University

Anju Toor, University of California, Berkeley

Niki Vazou, University of California, San Diego

Rashmi Vinayak, University of California, Berkeley

Qinsi Wang, Carnegie Mellon University

Weina Wang, University of Illinois at Urbana-Champaign

Claire Watts, University of Washington

Ashia Wilson, University of California, Berkeley

Cathy Wu, University of California, Berkeley

Lyndia Wu, Stanford University

Qiaomin Xie, University of Illinois at Urbana-Champaign

Bishan Yang, Carnegie Mellon University

Xinwen Yao, Columbia University

Irene Zhang, University of Washington

Liang Zheng, Princeton University

Wenxuan Zhou, University of Illinois at Urbana-Champaign

Yanqi Zhou, Princeton University

Staff high tea

In January, the department hosted the staff high tea to celebrate ECE female staff members. They enjoyed a cup of tea and finger sandwiches while listening to the inspiring words of Melanie Harrington, president and CEO of Vibrant Pittsburgh, a nonprofit economic development organization that was established to build a more diverse and inclusive Pittsburgh region by spearheading initiatives to attract, retain, and elevate a diverse workforce.

Melanie Harrington

"The Year of Women high tea was a wonderful event. Melanie Harrington was so inspirational, and getting to mingle with other staff members in a fun setting was refreshing."

Christina Cowan, Director of Administrative Services and Office of the Department Head

Paint night

In February, the department hosted a paint night for female graduate students. An instructional painter lead the participants through a two-hour session as they painted the home of the electrical and computer engineering department, Hamerschlag Hall.

Lunch & learn: is grad school right for me?

This event featured advisors and female graduate students at an informal pizza lunch where the participants learned about graduate school options. The most common question was whether female graduate students felt out-of-place in the classroom. Although the ECE field is male-dominated, our graduate students feel comfortable and natural in the classroom and on campus.

WinECE Spring Dinner

This spring event mirrored the fall dinner where students got to know each other and find out what it's like to be a woman in industry or academia. Instead of hosting a keynote speaker, WinECE asked soon-to-be graduating students to stand up and offer their best advice to their younger colleagues.

The department's driving force

Stereotypically, the field of electrical and computer engineering is thought be male-dominated. But Carnegie Mellon and its Department of Electrical and Computer Engineering are breaking boundaries, in more ways than one.

Walking through Hamerschlag Hall, one might notice a refreshing and inspiring phenomenon—the presence of women. Not only did the university just enroll the largest female undergraduate population in engineering and computer science to date, but the Department of Electrical and Computer Engineering's senior leadership staff is comprised entirely of female professionals. Spearheaded by Meighan Harding, senior director of operations, her dynamic team of directors includes Charlotte Ambrass, director of finance and sponsored research, Christina Cowan, director of administrative services and office of the department head, Leona Kass, director of student and academic affairs, Tara Moe, director of graduate affairs, and Ashley Patton, director of engagement and annual giving.

"Our senior leadership team is made up of extremely talented and professional women," says Jelena Kovačević, department head of electrical and computer engineering. "Every director brings something unique to the table. Their experience and leadership capabilities are the driving force behind the department's seamless operation. I am honored to work with such a talented group of women."

The department's organizational structure was not always as it is today. When Kovačević became department head in 2014, she recognized the need for reorganization that would improve the operations of the department.

"Our current organizational structure promotes cross-collaboration among various areas of the department that in turn allows for maximum operational efficiency and superb customer service to the ECE community," says Harding. "Our staff leadership team is very much in sync with one another, as leaders and as problem solvers. Together we tackle day-to-day problems, new initiatives, and long term strategic planning."

"Our senior leadership team is made up of extremely talented and professional women. Every director brings something unique to the table."

Jelena Kovačević, Department Head of Electrical and Computer Engineering

Women on the rise

Conferences are a gathering of strangers united around a common topic, all hoping to learn something they had never thought of before. At times, conferences can be overwhelming and mundane. But all conference-goers hope and wait for those moments that inspire and motivate the attendees.

As part of the department's strategic plan, ECE is dedicated to investing in staff members' personal and professional development. So when the Tepper School of Business' Executive Education courses became available, Jelena Kovačević, the department head of electrical and computer engineering, wasted no time in offering the courses and conferences to staff members.

In February 2017, female staff members were encouraged to attend the Tepper Women in Business Conference: Allies and Advocates. This program is designed to help future female leaders develop the necessary skills in their transition from "doer to leader." Held at the David L. Lawrence Convention Center, attendees heard from business school professors before choosing breakout sessions that drilled deeper on particular topics, like "gender, race, ethnicity," and "cultivating an influential network."

"The Tepper Women in Business Conference: Allies and Advocates was amazing," said Debra Vieira, senior graphic designer and conference attendee. "Even though our department is not in the business field, almost all of the topics were relatable. After leaving the conference, I was inspired and ready to take action at work. To this day, I still refer to my notes for inspiration. I encourage all women to attend this annual conference."

Later in the year, all female ECE staff members in positions of leadership were encouraged to attend another conference, Women on the Rise: Leadership for Emerging Women. Also hosted by the Tepper School of Business, this three-day workshop provided an intense and effective training necessary to enhance the skill sets of professionals on their way up. Future leaders came together to explore and gain mastery in critical areas, from building networks of influence and developing an authentic leadership brand to expanding business acumen and negotiation ability. Facilitated by experts from academia and industry, participants honed their skills through lecture, discussion, simulation, and event participation, all while forging invaluable personal and professional ties with like-minded peers.

"This workshop was exactly what every female professional needs," said Jillian McCarthy, M.S. academic program advisor. "It not only equipped attendees with extremely useful information, but it inspired and motivated us to be better leaders and colleagues."

The Tepper School of Business Executive Education program leverages Carnegie Mellon's advantage in analytics, innovation, technology, and women's leadership to meet the competitive challenges of general management today. By offering opportunities to attend conferences and workshops, the Electrical and Computer Engineering Department is empowering staff members to be better leaders and colleagues.

For more information on the Tepper School of Business Executive Education offerings, visit: tepper.cmu.edu/prospective-students/executive-education.

"It not only equipped attendees with extremely useful information, but it inspired and motivated us to be better leaders and colleagues."

Jillian McCarthy, M.S. Academic Program Advisor

Meet the new ECE faculty members

chi

My name is Yuejie Chi. I was born and grew up in Shijiazhuang, the capital city of Hebei Province in China. I obtained a B. Eng. degree from Tsinghua University, and a Ph.D. degree in Electrical Engineering from Princeton University.

Q. What excites you most about teaching at CMU?

A. I am excited to interact with the bright students at CMU.

Q. What can future students look forward to as they interact with you as a faculty member?

A. I hope to help students become independent problem-solvers using first-principle approaches. I am also a strong believer in collaborative and interdisciplinary research. I encourage students to step outside of their comfort zone to interact with as many faculty and students as possible.

Q. What is a fun fact about you that would surprise your students?

A. I am a fan of One Piece, which is a Japanese manga. I am also a fan of Manchester United.

Yuejie Chi

smith

My name is Virginia Smith. In addition to being named Virginia, I grew up in Virginia (Blacksburg) and received Bachelor's degrees in Math and Computer Science from the University of Virginia. I recently received my Ph.D. in Computer Science from UC Berkeley, and am currently a postdoc at Stanford. I'm thrilled to be joining CMU in Fall 2018!

Q. What excites you most about teaching at CMU?

A. The students! I work in optimization and machine learning, two fields that are rapidly changing. As a result, my courses and research projects tend to be dynamic and highly collaborative; I'm excited to learn as much from the students at CMU as they learn from me.

Q. What can future students look forward to as they interact with you as a faculty member?

A. I have a broad range of interests - from optimization and machine learning to applications in energy and sustainability. I'm drawn to solving problems that have significant real-world impact via principled mathematical techniques. Students working with me can look forward to gaining a wide range of skills through this interdisciplinary approach.

Q. What is a fun fact about you that would surprise your students?

A. As an undergraduate, I rode my bicycle from North Carolina to California one summer in support of affordable housing. I look forward to checking out the bike trails in and around Pittsburgh!

Virginia Smith
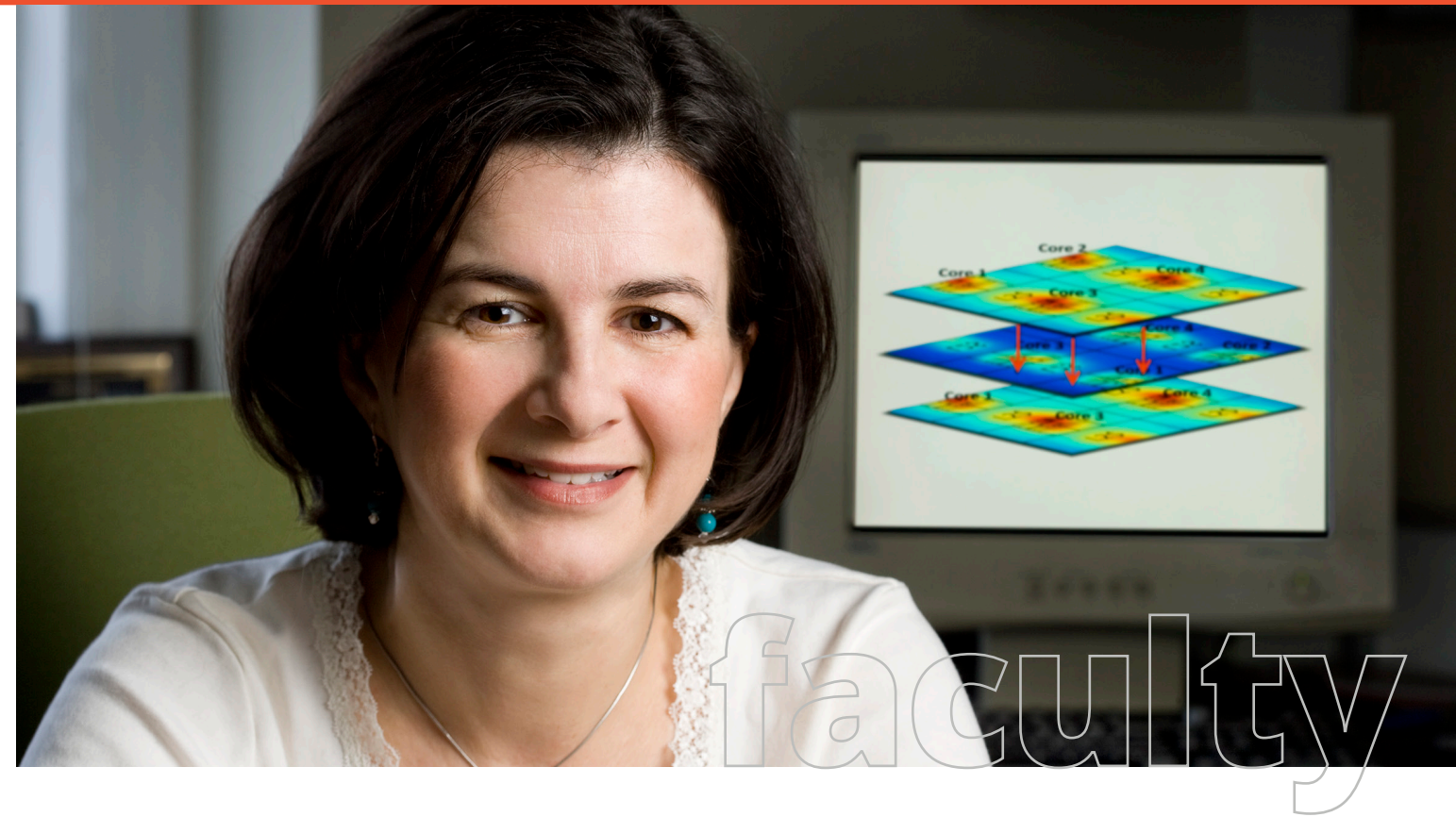
faculty

Center for Faculty Success

As in any academic institution, our partners at Carnegie Mellon University are our faculty. They are indeed our most important asset: faculty drive research, innovate in the classroom, and determine institutional reputation. Diana Marculescu envisioned the Center for Faculty Success (CFS) to be a one stop, umbrella resource for in-house and outsourced activities for faculty recruitment, mentoring, and development. CFS supports all faculty, starting from their recruitment and throughout their career at CMU.

"Faculty are our most important asset. They drive innovation and create successful stories."

Diana Marculescu
David Edward Schramm Professor
Associate Department Head for Academic Affairs

The Center for Faculty Success is organized into four working groups:

· The junior faculty program provides support for junior faculty from recruitment to the college faculty body until they become established members of our community.

· The faculty development program is for mid-career faculty interested in professional development and leadership in academia.

· The Plaidvocates program organizes workshops in unconscious (implicit) bias training and mitigation. Plaidvocates are faculty advocates trained in identifying and minimizing the effects of implicit bias. They can typically be part of faculty search committees, serve as faculty mentors, or lead administrative units.

· The family-friendly program creates policies that improves the quality of life of faculty throughout their academic tenure, which is essential for their success in becoming established leaders in their field.

CENTER FOR FACULTY SUCCESS

Department seminars

During the academic year, the department hosts weekly seminars featuring prominent professors and researchers. Open to Carnegie Mellon students, faculty, and staff, seminars typically highlight ongoing research in the electrical and computer engineering field. This year, the department welcomed these brilliant women during the Judith Resnik Year of Women in ECE.

Dr. Jelena Kovačević
September 8, 2016
The State of the Electrical and Computer Engineering Department

Dr. Manuela M. Veloso
September 15, 2016
Autonomous Service Robots: Learning and Explanations in Human-Robot Interaction

Dr. Carlee Joe-Wong
September 22, 2016
Smart Data Pricing: Incentives in Networked Resource Allocation

Dr. Martha A. Kim
September 29, 2016
The Search for Energy Efficiency: From Hardware to Software And Back

Dr. Jana Kosecka
February 23, 2017
Semantic Understanding for Robot Perception

Dr. Mingyan Liu
March 2, 2017
Quantitative Cybersecurity Assessment: From Breach Prediction to Incentive Design

Dr. Xiaobo Sharon Hu
March 9, 2017
Exploiting Unique Characteristics of Beyond- CMOS Transistors for Spatial-Temporal Information Processing

Dr. Viviana Gradinaru
March 23, 2017
Optogenetic and Tissue Clearing Approaches to Understand and Influence Whole-Animal Physiology and Behavior
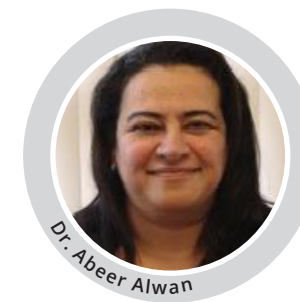
Dr. Yasamin Mostofi
October 6, 2016
Robotics and RF: From X-Ray Vision with WiFi to Communication-Aware Robotics

Dr. Kimberly Keeton
October 20, 2016
Memory-Driven Computing

Dr. Emina Soljanin
October 27, 2016
Cloud Storage Space vs. Download Time for Large Files

Dr. Dina Katabi
November 3, 2016
Extracting Health Information from Radio Signals

Dr. Muriel Medard
March 30, 2017
Network Coding - A Personal Account of Combining Theory and Practice

Dr. Victoria Stodden
April 6, 2017
Reproducibility in Computationally-Enabled Research

Dr. Elisa Franco
April 13, 2017
Programming Circuits and Materials with Nucleic Acids

Dr. Abeer Alwan
April 27, 2017
Human and Machine Recognition of Noisy Speech and of Speaker Identity

Dr. Ana Claudia Arias
December 1, 2016
The Role of Flexible Electronics in Health Monitoring and Diagnosis

Dr. Corina Pasareanu
Decmeber 8, 2016
ISSTAC -- Integrated Symbolic Execution for Space-Time Analysis of Code

Dr. Margaret Martonosi
January 26, 2017
Internet of Things: History and Hype, Technology and Policy

Dr. Aarti Singh
February 2, 2017
Efficient sampling for signals on large graphs and large sample linear regression

Dr. Nina Mishra
May 4, 2017
Streaming Anomaly Detection

Dr. Zoya Popovic
February 9, 2017
High-Performance Radi-Frequency Circuits and Applications

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