Kevin Fu

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Research vision

A world where science-based security is built-in by design to all embedded systems: medical devices, healthcare delivery, autonomous transportation, manufacturing, and the Internet of Things (IoT). My physics of cybersecurity research contributes to protecting emerging sensor technology in biomedical engineering and cyberphysical systems.

Education

Massachusetts Institute of Technology Cambridge, MA
PhD in Electrical Engineering and Computer Science, *2005*.
Thesis: Integrity and access control in untrusted content distribution networks
Advisors: Frans Kaashoek and Ron Rivest

Massachusetts Institute of Technology Cambridge, MA
MEng in Electrical Engineering and Computer Science, *1999*.
Thesis: Group sharing and random access in cryptographic storage file systems
Advisor: Ron Rivest

Massachusetts Institute of Technology Cambridge, MA
SB in Computer Science and Engineering, *1998*.

Academic and federal leadership positions

U.S. Food and Drug Administration (FDA) Silver Spring, MD
Acting Director, Medical Device Cybersecurity, FDA Center for Devices and Radiological Health (CDRH) and Program Director for Cybersecurity, FDA Digital Health Center of Excellence (DHCoE), *2021–*.

Electrical Engineering & Computer Science, Univ. Michigan Ann Arbor, MI
Associate professor w/ tenure, *2013–*.

Department of Computer Science, UMass Amherst Amherst, MA
Associate professor w/ tenure, *2011–2012*.
Assistant professor, *2005–2011*.
Research scientist, *Summer 2005*.

Awards, honors

ACM SenSys COVID-19 Response Research Best Poster Award Runner Up
"Poster: Automating decontamination of N95 masks for frontline workers in COVID-19 pandemic" by Yan Long, Alexander Curtiss, Sara Rampazzi, Josiah Hester, Kevin Fu. In 18th ACM Conference on Embedded Networked Sensor Systems (SenSys'20) Best Poster Award Runner Up – COVID-19 Response Research

IEEE Security & Privacy Test of Time Award
The IEEE Computer Society Technical Committee on Security and Privacy Test of Time Award recognizes "papers published at IEEE's flagship security conference that have made

a lasting impact on the field." The 2008 paper "Pacemakers and Implantable Cardiac Defibrillators: Software Radio Attacks and Zero-Power Defenses" was recognized in the inaugural award ceremony representing the last 40 years of publications. *2019*.

IEEE Fellow
For contributions to embedded and medical device security. *2018*.

University of Michigan Regents' Distinguished Public Service Award
This award honors extraordinary distinction in public service by members of the University of Michigan faculty. The award recognizes public service activities that relate closely to teaching and research and reflect professional and academic expertise. The service activities may occur outside the University in local, state, national or international arenas. *2017*.

Dr. Dwight E. Harken Memorial Lecture Award
Selected by the President of the Association for the Advancement of Medical Instrumentation (AAMI) for contributions to improving medical device security, this endowed award honors AAMI's culture of believing, like Dr. Dwight Harken did, that innovation and progress in healthcare come from multi-disciplinary teams working collaboratively. Past recipients include innovators such as the co-founder of Boston Scientific. aami.org. *2017*.

Healthcare Information Security Leaders
Selected for Top 10 Influencers in Health InfoSec. healthcareinfosecurity.com. *January 2016*.

World Economic Forum 2013 Young Scientist Award
The World Economic Forum recognizes 40 distinguished science leaders under the age of 40 from all regions of the world and a wide range of disciplines based on a record of scientific excellence, commitment to society, and potential to contribute to transforming the world through scientific knowledge. *September 2013*.

IEEE Senior Member
August 2013.

Fed 100 Award
The Federal 100 Awards recognize government and industry leaders who have played pivotal roles in the federal government IT community—individuals who have gone above and beyond their daily responsibilities and have made a difference in the way technology has transformed their agency or accelerated their agency's mission. *March 2013*.

ACM SIGCOMM Best Paper Award
"They Can Hear Your Heartbeats: Non-Invasive Security for Implanted Medical Devices" at ACM SIGCOMM. 223 submissions. 14% acceptance. *August 2011*.

UMass Commercial Ventures & Intellectual Property
Technology Development Fund Award
Award for low-power "SMASH Memory." *March 2011*.

Association of Computing Machinery (ACM) Senior Member
February 2011.

Armstrong Fund for Science, UMass Amherst
John and Elizabeth Armstrong established the Armstrong Fund for Science to recognize researchers with aggressive research visions. *May 2010.*

Alfred P. Sloan Research Fellowship
2009. `http://www.sloan.org/sloan-research-fellowships/`

MIT Technology Review TR35
Innovator of the Year. TR35 list recognizes 35 outstanding innovators under the age of 35 each year. The awards span a wide range of fields, including medicine, computing, communications, electronics, and nanotechnology. *September 2009.*
`http://www.technologyreview.com/TR35/index.aspx?year=2009`

NSF CAREER Award
The Faculty Early Career Development (CAREER) Program. *2009.*

IEEE Security & Privacy (Oakland) Outstanding Paper Award
"Pacemakers and Implantable Cardiac Defibrillators: Software Radio Attacks and Zero-Power Defenses" at the IEEE Symposium on Security & Privacy. 249 submissions. 11.2% acceptance. *May 2008.*

UMass Commercial Ventures & Intellectual Property
Technology Development Fund Award
Award for "Zero-Power Telemetry for Implantable Medical Devices." *March 2008.*

Intel Foundation PhD Fellowship Award
Intel Fellows recommend the candidates for this award, which provides a year of support and an opportunity to conduct research at Intel. *June 2004.*

10th USENIX Security Symposium Best Student Paper Award
"Dos and Don'ts of Client Authentication on the Web." *August 2001.*

ACM International Student Research Contest, First Place Graduate Award
Award for a poster and presentation on the SFS Read-Only File System. *February 2001.*

AT&T Student Research Day
Third place graduate award for a poster on the SFS Read-Only File System. *October 2000.*

USENIX Scholar
The USENIX Scholars Fellowship provides a year of funding to students with exceptional research ability and promise. *January 2000.*

Research experience

U.S. Food and Drug Administration (FDA) Silver Spring, MD
Visiting scientist and consultant, Center for Devices and Radiological Health, *2011.*
ORISE fellowship for FDA's Network of Experts, *2012–2013.*

MIT Computer Science and AI Lab Cambridge, MA
Visiting scientist. *2011–2012*.

Beth Israel Deaconess Medical Center, Harvard Medical School Boston, MA
Visiting scientist. Cardiovascular Division. *2009–2012*.

Microsoft Research Redmond, WA
Visiting researcher. Extreme Computing Group. *July 2009, July 2010, August 2012*.

Johns Hopkins Information Security Institute Baltimore, MD
Visiting scholar for secure file systems, proxy re-encryption, and RFID security & privacy. *2003–2005*.

MIT Parallel and Distributed Operating Systems Group Cambridge, MA
Research assistant in secure file systems and Web authentication at the MIT Lab for Computer Science. *1998–2005*.

Hewlett-Packard Labs Palo Alto, CA
Internship in cryptographic key regression for secure storage. *Summer 2002*.

MIT Applied Security Reading Group Cambridge, MA
Founded the Applied Security Reading Group at the MIT Lab for Computer Science. Conducted 50 seminars for students, faculty, staff, and guests from industry. The seminar included several invited talks from leading experts in security. *1999–2003*.

Bellcore (Telcordia) — Security Research Group Morristown, NJ
Internship in home automation, secure email revocation, a fast stream cipher for video, and approximate message authentication codes for watermarking images. *Summers 1996–1998 and Fall 1998*.

MIT Media Lab, Gesture and Narrative Language Cambridge, MA
Undergraduate researcher on Renga, a system for children around the world to write a story collaboratively in real time. *Fall 1995*.

Industrial experience

Virta Labs, Inc. Seattle, WA
Co-founder. Former chief scientist, interim CEO, board member, officer. *2014–2019*.

Sightpath/Cisco Systems Waltham/Boxborough, MA
Software engineer for security issues. *1999–2002*.

MIT Information Systems – Network Security Team Cambridge, MA
Technical support. Responded to intrusions, tracked down computer crackers, reverse engineered encrypted exploits, encouraged the use of secure communication, and assisted law enforcement. *1994–2002*.

Holland Community Hospital Holland, MI
Technical support. Rollout of a paperless medical record system. *1993–1996*.

Refereed conference publications

[C1] "Why Lasers Inject Perceived Sound Into MEMS Microphones: Indications and Contraindications of Photoacoustic and Photoelectric Effects" by Benjamin Cyr, Takeshi Sugawara, Kevin Fu. To appear in *IEEE SENSORS*, November 2021.

[C2] "VeriMask: Facilitating Decontamination of N95 Masks in the COVID-19 Pandemic: Challenges, Lessons Learned, and Safeguarding the Future" by Yan Long, Alexander Curtiss, Sara Rampazzi, Josiah Hester, Kevin Fu. In *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)*, 5(3), Article 119, September 2021. (historical acceptance rate 20-25%)

[C3] "Poltergeist: Acoustic Manipulation of Image Stabilization towards Object Mis-Labeling" by Xiaoyu Ji, Yushi Cheng, Yuepeng Zhang, Kai Wang, Chen Yan, Wenyuan Xu, Kevin Fu. In *Proceedings of the 42nd Annual IEEE Symposium on Security and Privacy*, May 2021. (seasonal acceptance rate = 39/329 = 11.9%).

[C4] "Light Commands: Laser-Based Audio Injection Attacks on Voice-Controllable Systems" by Takeshi Sugawara, Benjamin Cyr, Sara Rampazzi, Daniel Genkin, Kevin Fu. In *Proceedings of the 29th USENIX Security Symposium*, August 2020. (acceptance rate = 39 / 329 = 11.9%).

[C5] "SoK: A Minimalist Approach to Formalizing Analog Sensor Security " by Connor Bolton, Kevin Fu, Yongdae Kim, Hocheol Shin, Chen Yan, Wenyuan Xu. In *Proceedings of the 41st Annual IEEE Symposium on Security and Privacy*, May 2020. (acceptance rate = 104 / 841 = 12.4%).

[C6] "Trick or Heat? Manipulating Critical Temperature-Based Control Systems using Rectification attacks" by Yazhou Tu, Sara Rampazzi, Bin Hao, Angel Rodriguez, Kevin Fu, Xiali Hei. In *Proceedings of the 26th ACM Conference on Computer and Communications Security (CCS'19)*, London, UK, November 2019. (acceptance rate = 149/933 = 15.9%).

[C7] "Adversarial Sensor Attack on LiDAR-based Perception in Autonomous Driving" by Yulong Cao, Chaowei Xiao, Benjamin Cyr, Yimeng Zhou, Won Park, Sara Rampazzi, Qi Alfred Chen, Kevin Fu, Z. Morley Mao. In *Proceedings of the 26th ACM Conference on Computer and Communications Security (CCS'19)*, London, UK, November 2019. (acceptance rate = 149/933 = 15.9%).

[C8] "Hard Drive of Hearing: Disks that Eavesdrop with a Synthesized Microphone" by Andrew Kwong, Wenyuan Xu, Kevin Fu. In *Proceedings of the 40th Annual IEEE Symposium on Security and Privacy*, May 2019. (acceptance rate = 84/679=12.3%).

[C9] "Blue Note: How Intentional Acoustic Interference Damages Availability and Integrity in Hard Disk Drives and Operating Systems" by Connor Bolton, Sara Rampazzi, Chaohao Li, Andrew Kwong, Wenyuan Xu, Kevin Fu. In *Proceedings of the 39th Annual IEEE Symposium on Security and Privacy*, May 2018. (acceptance rate = 63/549 = 11.5%).

[C10] "WALNUT: Waging Doubt on the Integrity of MEMS Accelerometers with Acoustic Injection Attacks" by Timothy Trippel, Ofir Weisse, Wenyuan Xu, Peter Honeyman,

Kevin Fu. In *Proceedings of 2nd IEEE European Symposium on Security and Privacy (EuroS&P '17)*, Paris, France, April 2017. (acceptance rate = 38/194 = 19.5%).

[C11] "Probable Cause: The Deanonymizing Effects of Approximate DRAM" by Amir Rahmati, Matthew Hicks, Daniel E. Holcomb, Kevin Fu. In *Proceedings of the 42nd International Symposium of Computer Architecture (ISCA)*, Portland, OR, June 2015. (acceptance rate = 58/305=19%).

[C12] "Bitline PUF: Building Native Challenge-Response PUF Capability into Any SRAM" by Daniel E. Holcomb, Kevin Fu. In *Proceedings of the 16th International Conference on Cryptographic Hardware and Embedded Systems (CHES)*, September 2014. (acceptance rate = 33/128 = 25.8%)

[C13] "Current Events: Identifying Webpages by Tapping the Electrical Outlet" by Shane S. Clark, Hossen Mustafa,Benjamin Ransford, Jacob Sorber, Kevin Fu, Wenyuan Xu. In *Proceedings of the 18th European Symposium on Research in Computer Security (ESORICS)*, September 2013. (acceptance rate = 43/242 = 18%)

[C14] "Ghost Talk: Mitigating EMI Signal Injection Attacks against Analog Sensors" by Denis Foo Kune, John Backes, Shane Clark, Dan Kramer, Matthew Reynolds, Kevin Fu, Yongdae Kim, Wenyuan Xu. In *Proceedings of the 34th Annual IEEE Symposium on Security and Privacy*, May 2013. (acceptance rate = 38/315 = 12%)

[C15] "TARDIS: Time and Remanence Decay in SRAM to Implement Secure Protocols on Embedded Devices without Clocks" by Amir Rahmati, Mastooreh Salajegheh, Dan Holcomb, Jacob Sorber, Wayne Burleson, Kevin Fu. In *Proceedings of the 21st USENIX Security Symposium*, August 2012. (acceptance rate = 43/222 = 19%)

[C16] "Designing Privacy-preserving Smart Meters with Low-Cost Microcontrollers" by Andres Molina-Markham, George Danezis, Kevin Fu, Prashant Shenoy, David Irwin. In *Proceedings of the 16th International Conference on Financial Cryptography and Data Security*, February 2012 (acceptance rate = 23/88 = 26%).

[C17] "They Can Hear Your Heartbeats: Non-Invasive Security for Implanted Medical Devices" by Shyamnath Gollakota, Haitham Hassanieh, Benjamin Ransford, Dina Katabi, Kevin Fu. In *Proceedings of ACM SIGCOMM*, 12 pages, August 2011 (**Best Paper Award**, acceptance=32/223=14%).

[C18] "Mementos: System Support for Long-Running Computation on RFID-Scale Devices" by Benjamin Ransford, Jacob Sorber, Kevin Fu. In *Proceedings of 16th Architectural Support for Programming Languages and Operating Systems (ASPLOS 2011)*, 12 pages, March 2011 (acceptance=32/152=21%).

[C19] "Exploiting Half-Wits: Smarter Storage for Low-Power Devices" by Mastooreh Salajegheh, Yue Wang, Kevin Fu, Anxiao (Andrew) Jiang, Erik Learned-Miller. In *Proceedings of the 9th USENIX Conference on File and Storage Technologies (FAST '11)*, 14 pages, February 2011 (acceptance=20/74=27%).

[C20] "On the Limits of Effective Micro-Energy Harvesting on Mobile CRFID Sensors" by Jeremy Gummeson, Shane S. Clark, Kevin Fu, Deepak Ganesan. In *Proceedings of 8th Annual ACM/USENIX International Conference on Mobile Systems, Applications, and Services (MobiSys 2010)*, pp. 195–208, June 2010 (acceptance=25/124=20%).

[C21] "CCCP: Secure Remote Storage for Computational RFIDs" by Mastooreh Salajegheh, Shane Clark, Benjamin Ransford, Kevin Fu, Ari Juels. In *Proceedings of the 18th USENIX Security Symposium*, pp. 215–230, August 2009 (acceptance=26/176=15%).

[C22] "Pacemakers and Implantable Cardiac Defibrillators: Software Radio Attacks and Zero-Power Defenses" by Daniel Halperin, Thomas S. Heydt-Benjamin, Benjamin Ransford, Shane S. Clark, Benessa Defend, Will Morgan, Kevin Fu, Tadayoshi Kohno, William H. Maisel. In *Proceedings of the 29th IEEE Symposium on Security and Privacy*, pp. 129–142, May 2008 (**Outstanding Paper Award**, acceptance=28/249=11.2%).

[C23] "Maximalist Cryptography and Computation on the WISP UHF RFID Tag" by Hee-Jin Chae, Daniel J. Yeager, Joshua R. Smith, Kevin Fu. In *Proceedings of the Conference on RFID Security*, 12 pages, July 2007 (acceptance=13/26=50%).

[C24] "Initial SRAM State as a Fingerprint and Source of True Random Numbers for RFID Tags" by Daniel E. Holcomb, Wayne P. Burleson, Kevin Fu. In *Proceedings of the Conference on RFID Security*, 12 pages, July 2007 (acceptance=13/26=50%).

[C25] "Vulnerabilities in First-Generation RFID-Enabled Credit Cards" by Thomas S. Heydt-Benjamin, Daniel V. Bailey, Kevin Fu, Ari Juels, Tom O'Hare. In the *Proceedings of 11th International Conference on Financial Cryptography and Data Security*, Lecture Notes in Computer Science, Vol. 4886, pp. 2–14, February 2007 (acceptance=17/84=20%, extended version UMass Amherst Tech Report 06-055, October 2006).

[C26] "Key Regression: Enabling Efficient Key Distribution for Secure Distributed Storage" by Kevin Fu, Seny Kamara, Tadayoshi Kohno. In *Proceedings of the 13th Annual Network and Distributed System Security Symposium (NDSS)*, 20 pages, February 2006 (acceptance=13.6%).

[C27] "Improved Proxy Re-encryption Schemes with Applications to Secure Distributed Storage" by Giuseppe Ateniese, Kevin Fu, Matthew Green, Susan Hohenberger. In *Proceedings of the 12th Annual Network and Distributed System Security Symposium (NDSS)*, 15 pages, February 2005 (acceptance=16/124=12.9%, extended version in ACM TISSEC).

[C28] "REX: Secure, Extensible Remote Execution" by Michael Kaminsky, Eric Peterson, Daniel B. Giffin, Kevin Fu, David Maziéres, M. Frans Kaashoek. In *Proceedings of the 2004 USENIX Annual Technical Conference (USENIX)*, pp. 199–212, June 2004 (acceptance=21/164=13%).

[C29] "Plutus: Scalable Secure File Sharing on Untrusted Storage" by Mahesh Kallahalla, Erik Riedel, Ram Swaminathan, Qian Wang, Kevin Fu. In *Proceedings of the 2nd USENIX Conference on File and Storage Technologies (FAST)*, pp. 29–42, March 2003 (acceptance=18/67=27%).

[C30] "Dos and Don'ts of Client Authentication on the Web" by Kevin Fu, Emil Sit, Kendra Smith, and Nick Feamster. In *Proceedings of the 10th USENIX Security Symposium*, pp. 251–268, August 2001 (**Best Student Paper Award**, acceptance=28.9%, extended version MIT-LCS Tech Report #818).

[C31] "Fast and Secure Distributed Read-Only File System" by Kevin Fu, M. Frans Kaashoek, David Maziées. In the *Proceedings of the 4th USENIX Symposium on Operating Systems Design and Implementation (OSDI 2000)*, October 2000 (acceptance=24/111=21.6%).

[C32] "Revocation of Unread Email in an Untrusted Network" by Avi Rubin, Dan Boneh, Kevin Fu. In *Proceedings of the Australasian Conference on Information Security and Privacy*, Springer-Verlag, Lecture Notes in Computer Science, Vol. 1270, pp. 62–75. July 1997.

Refereed journal publications

[J1] "Protecting COVID-19 Vaccine Transportation and Storage from Analog Cybersecurity Threats" by Yan Long, Sara Rampazzi, Takeshi Sugawara, Kevin Fu. In *AAMI Biomedical Instrumentation & Technology*, pp. 112–117, September/October, 2021.

[J2] "Cybersecurity of Cardiac Implantable Electronic Devices " by David Slotwiner, Arnab Ray, Kevin Fu, Bruce L. Wilkoff. In *Efimov I.R., Ng F.S., Laughner J.I. (eds) Cardiac Bioelectric Therapy Computers in Biology and Medicine*, Springer, Cham., January 2021.

[J3] "On Cuba, Diplomats, Ultrasound, and Intermodulation Distortion" by Chen Yan, Kevin Fu, Wenyuan Xu. In *Computers in Biology and Medicine*, Elsevier Press, Volume 104, January 2019, Pages 250-266. (previously released as University of Michigan Technical Report CSE-TR-001-18).

[J4] "Cybersecurity concerns and medical devices: Lessons from a pacemaker advisory" by Dan Kramer, Kevin Fu. In *Journal of the American Medical Association (JAMA)*, October 18, 2017.

[J5] "Cybersecurity and medical devices: A practical guide for cardiac electrophysiologists" by Ben Ransford, Dan Kramer, Denis Foo Kune, Julio Auto de Medeiros, Chen Yan, Wenyuan Xu, Thomas Crawford, Kevin Fu. In *Pacing and Clinical Electrophysiology (PACE)*, 40(8), July, 2017.

[J6] "Persistent Clocks for Batteryless Sensing Devices" by Josiah Hester, Nicole Tobias, Amir Rahmati, Lanny Sitanayah, Daniel Holcomb, Kevin Fu, Wayne P. Burleson, Jacob Sorber. In *ACM Transactions on Embedded Computing Systems (TECS)*, 15(4), August 2016.

[J7] "Security for Mobile and Cloud Frontiers in Healthcare" by David Kotz, Kevin Fu, Carl Gunter, Avi Rubin. In *Communications of the ACM*, 58(8), July 2015.

[J8] "Half-Wits: Software Techniques for Low-Voltage Probabilistic Storage on Microcontrollers with NOR Flash Memory" by Mastooreh Salajegheh, Yue Wang, Anxiao (Andrew) Jiang, Erik Learned-Miller, Kevin Fu. In *ACM Transactions on Embedded*

Computing Systems, Special Issue on Probabilistic Embedded Computing, 12(2s), May 2013.

[J9] "Security and Privacy Qualities of Medical Devices: An Analysis of FDA Postmarket Surveillance" by Daniel B. Kramer, Matthew Baker, Benjamin Ransford, Andres Molina-Markham, Quinn Stewart, Kevin Fu, Matthew R. Reynolds. In *PLoS ONE*, 7(7), 7 pages, July 2012.

[J10] "Clinically Significant Magnetic Interference of Implanted Cardiac Devices by Portable Headphones" by Sinjin Lee, Kevin Fu, Tadayoshi Kohno, Benjamin Ransford, William H. Maisel. In *Heart Rhythm Journal*, 6(10), pp. 1432–1436. October 2009.

[J11] "Power-up SRAM State as an Identifying Fingerprint and Source of True Random Numbers" by Daniel Holcomb, Wayne Burleson, Kevin Fu. In *IEEE Transactions on Computers*, 58(9):1198–1210, September 2009 (earlier version in RFIDSec 2007).

[J12] "Electromagnetic Interference (EMI) of Implanted Cardiac Devices by MP3 Player Headphones" by Sinjin Lee, Benjamin Ransford, Kevin Fu, Tadayoshi Kohno, William H. Maisel. In *Circulation*, 118(18 Supplement), 1 page, November 2008. Abstract 662, 2008 American Heart Association Annual Scientific Sessions.

[J13] "Security and Privacy for Implantable Medical Devices" by Daniel Halperin, Thomas S. Heydt-Benjamin, Kevin Fu, Tadayoshi Kohno, William H. Maisel. In *IEEE Pervasive Computing, Special Issue on Implantable Electronics*, 7(1):30–39, January–March, 2008.

[J14] "Improved Proxy Re-encryption Schemes with Applications to Secure Distributed Storage" by Giuseppe Ateniese, Kevin Fu, Matthew Green, Susan Hohenberger. In *ACM Transactions on Information and System Security (TISSEC)*, 9(1):1–30, February 2006 (earlier version in NDSS 2005).

[J15] "Fast and Secure Distributed Read-Only File System" by Kevin Fu, M. Frans Kaashoek, David Maziéres. In *ACM Transactions on Computer Systems*, 20(1):1-24, February 2002 (fast tracked by OSDI program committee, earlier version in OSDI 2000).

Refereed workshop publications

[W1] "QBF-Based Synthesis of Optimal Word-Splitting in Approximate Multi-Level Storage Cells" by Daniel E. Holcomb, Kevin Fu. In *Workshop on Approximate Computing Across the System Stack (WACAS)*, March 2014.

[W2] "Refreshing Thoughts on DRAM: Power Saving vs. Data Integrity" by Amir Rahmati, Matthew Hicks, Daniel Holcomb, Kevin Fu. In *Workshop on Approximate Computing Across the System Stack (WACAS)*, 7 pages, March 2014.

[W3] "WattsUpDoc: Power Side Channels to Nonintrusively Discover Untargeted Malware on Embedded Medical Devices" by Shane S. Clark, Benjamin Ransford, Amir Rahmati, Shane Guineau, Jacob Sorber, Wenyuan Xu, Kevin Fu. In *USENIX Workshop on Health Information Technologies (HealthTech)*, 11 pages, August 2013.

[W4] "Potentia est Scientia: Security and Privacy Implications of Energy-Proportional Computing" by Shane S. Clark, Benjamin Ransford, Kevin Fu. In *Proceedings of the 7th USENIX Workshop on Hot Topics in Security (HotSec '12)*. 6 pages, August 2012.

[W5] "DRV-Fingerprinting: Using Data Retention Voltage of SRAM Cells for Chip Identification" by Dan Holcomb, Amir Rahmati, Mastooreh Salajegheh, Wayne P. Burleson, Kevin Fu. In *8th Workshop on RFID Security and Privacy (RFIDSec '12)*. Nijmegen, The Netherlands, 15 pages, July 2012.

[W6] "Ekho: Bridging the Gap Between Simulation and Reality in Tiny Energy-Harvesting Sensors" by Hong Zhang, Mastooreh Salajegheh, Kevin Fu, Jacob Sorber. In *Workshop on Power Aware Computing and Systems (HotPower 2011)*, 5 pages, October 2011.

[W7] "Take Two Software Updates and See Me in the Morning: The Case for Software Security Evaluations of Medical Devices" by Steve Hanna, Rolf Rolles, Andres Molina-Markham, Pongsin Poosankam, Kevin Fu, Dawn Song. In *Proceedings of 2nd USENIX Workshop on Health Security and Privacy (HealthSec)*, 5 pages, August 2011 (acceptance=13/38=34%).

[W8] "Private Memoirs of a Smart Meter" by Andres Molina-Markham, Prashant Shenoy, Kevin Fu, Emmanuel Cecchet, David Irwin. In *2nd ACM Workshop on Embedded Sensing Systems for Energy-Efficiency in Buildings (BuildSys)*, Zurich, Switzerland, 6 pages, November 2010, in conjunction with ACM SenSys 2010 (acceptance=14/40=35%).

[W9] "HICCUPS: Health Information Collaborative Collection Using Privacy and Security" by Andres Molina, Mastooreh Salajegheh, Kevin Fu. In *ACM Workshop on Security and Privacy in Medical and Home-Care Systems (SPIMACS)*, pp. 21–30, November 2009.

[W10] "Towards Autonomously-Powered CRFIDs" by Shane S. Clark, Jeremy Gummeson, Kevin Fu, Deepak Ganesan. In *Workshop on Power Aware Computing and Systems (HotPower 2009)*, 5 pages, October 2009.

[W11] "Getting Things Done on Computational RFIDs with Energy-Aware Checkpointing and Voltage-Aware Scheduling" by Benjamin Ransford, Shane Clark, Mastooreh Salajegheh, Kevin Fu. In *USENIX Workshop on Power Aware Computing and Systems (HotPower 2008)*, 6 pages, December 2008.

[W12] "Absence Makes the Heart Grow Fonder: New Directions for Implantable Medical Device Security" by Tamara Denning, Kevin Fu, Tadayoshi Kohno. In *USENIX Hot Topics in Security Workshop (HotSec)*, 7 pages, July 2008, (acceptance=32%).

[W13] "Cryptanalysis of Two Lightweight RFID Authentication Schemes" by Benessa Defend, Kevin Fu, Ari Juels. In *Proceedings of Fourth IEEE International Workshop on Pervasive Computing and Communication Security (PerSec) Workshop*, 5 pages, March 2007 (acceptance=29%).

[W14] "Secure Software Updates: Disappointments and New Challenges" by Anthony Bellissimo, John Burgess, Kevin Fu. In *USENIX Hot Topics in Security Workshop (HotSec)*, 7 pages, July 2006 (acceptance=19.6%).

[W15] "Privacy for Public Transportation" by Thomas S. Heydt-Benjamin, Hee-Jin Chae, Benessa Defend, Kevin Fu. In *6th Workshop on Privacy Enhancing Technologies (PET)*, Lecture Notes in Computer Science, Vol. 4258, pp. 1–19, June 2006 (acceptance=26%).

Book chapter

[B1] "Maximalist Cryptography and Computation on the WISP UHF RFID Tag" by Hee-Jin Chae, Mastooreh Salajegheh, Daniel J. Yeager, Joshua R. Smith, Kevin Fu. Book chapter in *Wirelessly powered sensor networks and computational RFID*, Joshua R. Smith (ed.), 12 pages, (earlier version in RFIDSec 2007).

Invited papers

[Col1] "Inside Risks: How to Curtail Oversensing in the Home" by Connor Bolton, Kevin Fu, Josiah Hester, Jun Han. Inside Risks Column in *Communications of the ACM (CACM)*, 63(6), June 2020.

[Col2] "How We Reverse Engineered the Cuban 'Sonic Weapon' Attack" by Kevin Fu, Wenyuan Xu, Chen Yan. In *IEEE Spectrum*, March 2018.

[Col3] "Inside Risks: Risks of Trusting the Physics of Sensors " by Kevin Fu, Wenyuan Xu. Inside Risks Column in *Communications of the ACM (CACM)*, 61(2), February 2018.

[Col4] "Focus on Health IT: Six Factors essential for Mitigating Cyber Risks in healthcare" by Kevin Fu, Juuso Leinonen, Ben Ransford, Harold Thimbleby. In *AAMI News* (an earlier version appeared in HealthIT News), October, 2017.

[Col5] "How to Safely Divine Clinical Risk from Cybersecurity Risk?" by Ben Ransford and Kevin Fu. In *American College of Clinical Engineering (ACCE)*, Summer, 2017.

[Col6] "勒索软件:我们如何爬出泥沼 " by Kevin Fu, Harold Thimbleby, Wenyuan Xu. In *Journal of China Medical Devices* (an earlier version appeared in HealthIT News), July, 2017.

[Col7] "Ransomware: How we can climb out of this mess" by Kevin Fu, Harold Thimbleby. In *HealthIT News*, June, 2017.

[Col8] "Dealing with Infrastructure Disruption: IoT Security" by Kevin Fu. In *ACM Ubiquity Magazine Blog*, December, 2016.

[Col9] "Commentary: Hospitals need better cybersecurity, not more fear" by Kevin Fu, John Halamka, Jack Kufahl, Mary Logan. In *Modern Healthcare*, September, 2016.

[Col10] "Comments on FDA draft postmarket guidance on cybersecurity" by Kevin Fu. Submitted in response to FDA's call for comments in the Federal Register, April 2016.

[Col11] "On the Technical Debt of Medical Device Security" by Kevin Fu. In *National Academy of Engineering Frontiers of Engineering)*, September 2015. (a version appears in the NAE Bridge, Winter 2016)

[Col12] "Controlling for Cybersecurity Risks of Medical Device Software" (reprint) by Kevin Fu, James Blum. In *Association for the Advancement of Medical Instrumentation (AAMI) Horizons)*, Spring 2014. (reprinted from CACM)

[Col13] "Inside Risks: Controlling for Cybersecurity Risks of Medical Device Software" by Kevin Fu, James Blum. Inside Risks Column in *Communications of the ACM (CACM)* 56(10), October 2013.

[Col14] "Design Challenges for Secure Implantable Medical Devices" by Wayne P. Burleson, Shane S. Clark, Benjamin Ransford, Kevin Fu. In *Proceedings of the 49th Design Automation Conference (DAC '12)*, 6 pages, June 2012.

[Col15] "Inside Risks, Reducing Risks of Implantable Medical Devices: A Prescription to Improve Security and Privacy of Pervasive Health Care" by Kevin Fu. Inside Risks Column in *Communications of the ACM (CACM)* 52(6), June 2009.

[Col16] "Using SFS for a Secure Network File System" by Kevin Fu, Michael Kaminsky, and David Maziéres. In *;login: The USENIX Magazine*, December 2002.

[Col17] "Web Cookies: Not Just a Privacy Risk" by Emil Sit and Kevin Fu. Inside Risks Column in *Communications of the ACM (CACM)* 44(9):120, September 2001.

Commissioned papers and testimony

[Com1] "Infrastructure Disruption: Internet of Things Security" by Kevin Fu. Oral and written testimony to the U.S. House Energy and Commerce Committee, Subcommittee on Communications and Technology & Subcommittee on Commerce, Manufacturing, and Trade joint hearing on Understanding the Role of Connected Devices in Recent Cyber Attacks, Wednesday, November 16, 2016.

[Com2] "Knowledge-based authentication (KBA)" by Kevin Fu. Oral and written testimony to the hearing on The IRS Data Breach: Steps to Protect Americans' Personal Information, U.S. Senate Committee on Homeland Security and Governmental Affairs, Tuesday, June 2, 2015.

[Com3] "On the expectations of smart cards to reduce Medicare fraud" by Kevin Fu. Oral and written testimony to the Subcommittee on Health, Committee on Energy and Commerce, United States House of Representatives, Hearing on Examining Options to Combat Health Care Waste, Fraud and Abuses, Wednesday, November 28, 2012.

[Com4] "Software issues for the medical device approval process" by Kevin Fu. Written testimony to the Special Committee on Aging, United States Senate, Hearing on a delicate balance: FDA and the reform of the medical device approval process, Wednesday, April 13, 2011.

[Com5] "Trustworthy Medical Device Software" by Kevin Fu. In *Public Health Effectiveness of the FDA 510(k) Clearance Process*, IOM (Institute of Medicine), National Academies Press, Washington, DC, 2011.

Posters and Unrefereed publications

[U1] "Poster: Automating decontamination of N95 masks for frontline workers in COVID-19 pandemic" by Yan Long, Alexander Curtiss, Sara Rampazzi, Josiah Hester, Kevin Fu. In 18th ACM Conference on Embedded Networked Sensor Systems (SenSys'20) Best Poster Award Runner Up – COVID-19 Response Research

[U2] "On Cuba, Diplomats, Ultrasound, and Intermodulation Distortion" by Chen Yan, Kevin Fu, Wenyuan Xu. University of Michigan Technical Report CSE-TR-001-18, March 2018.

[U3] "Pacemaker Recall Exposes National Need for Research and Education in Embedded Security" by Kevin Fu. Computing Community Consortium (CCC), www.cccblog.org, September 2017.

[U4] "Safety and Security for Intelligent Infrastructure" by Kevin Fu, Ann Drobnis, Greg Morrisett, Elizabeth Mynatt, Shwetak Patel, Radha Poovendran, Ben Zorn. A Computing Community Consortium (CCC) white paper, May 2017.

[U5] "Systems Computing Challenges in the Internet of Things" by Rajeev Alur, Emery Berger, Ann W. Drobnis, Limor Fix, Kevin Fu, Gregory D. Hager, Daniel Lopresti, Klara Nahrstedt, Elizabeth Mynatt, Shwetak Patel, Jennifer Rexford, John A. Stankovic, Benjamin Zorn. A Computing Community Consortium (CCC) white paper, April 2016.

[U6] "Current Events: Identifying Webpages by Tapping the Electrical Outlet" by Shane S. Clark, Benjamin Ransford, Jacob Sorber, Wenyuan Xu, Erik Learned-Miller, Kevin Fu. Tech report UM-CS-2011-030, Department of Computer Science, University of Massachusetts Amherst. Amherst, MA, July 2012.

[U7] "Recent Results in Computer Security for Medical Devices" by Shane S. Clark, Kevin Fu. In *International ICST Conference on Wireless Mobile Communication and Healthcare (MobiHealth), Special Session on Advances in Wireless Implanted Devices*. 8 pages, October 2011.

[U8] "Hybrid-powered RFID sensor networks" by Shane S. Clark, Jeremy Gummeson, Kevin Fu, Deepak Ganesan. Demo at ACM SenSys 2009.

[U9] "Privacy of home telemedicine: Encryption is not enough (poster)" by Mastooreh Salajegheh, Andres Molina, Kevin Fu. Presented at *Design of Medical Devices Conference*, Minneapolis, MN, April 2009.

[U10] "Protecting Global Medical Telemetry Infrastructure" by Benessa Defend, Mastooreh Salajegheh, Kevin Fu, Sozo Inoue. Institute of Information Infrastructure Protection (I3P), Technical Report, January 2008.

[U11] "Demonstration of an RFID-enabled espresso machine" by Hee-Jin Chae, Benessa Defend, Kevin Fu. MIT RFID Academic Convocation, January 2006.

[U12] "In Memory of David Huffman." In *ACM Crossroads Magazine* 6(3), Spring 2000.

[U13] "RTLinux: An Interview with Victor Yodaiken." In *ACM Crossroads Magazine* 6(1), Fall 1999.

[U14] "Linux" (guest editor). In *ACM Crossroads Magazine* 6(1), Fall 1999.

[U15] "Group Sharing and Random Access in Cryptographic Storage File Systems." MIT MEng Thesis, May 1999.

[U16] "Approximate Message Authentication Codes" by Richard Graveman, Kevin Fu. In *Army Research Labs, Advanced Telecommunications & Information Distribution Research Program*, February 1999.

[U17] "Networks and Distributed Systems" (guest editor). In *ACM Crossroads Magazine* 5(2), Winter 1998.

Research funding

[G1] Gift from Google. supporting SPQR Lab diversity, equity, and inclusion for workshop on embedded security, $5K. *8/2020*.

[G2] Gift from Qualcomm. supporting SPQR Lab diversity, equity, and inclusion for workshop on embedded security, $5K. *8/2020*.

[G3] NSF Secure and Trustworthy Computing "RAPID: SaTC: COVID19: Science of using wirelessly powered sensors to quickly scale up verifiable decontamination of individual N95 respirator masks." $200K PI: Kevin Fu. Co-PI: Sara Rampazzi. NSF CNS Award #2031077. *6/2020–5/2021*.

[G4] NSF Secure and Trustworthy Computing "RAPID: SaTC: COVID19: Science of using wirelessly powered sensors to quickly scale up verifiable decontamination of individual N95 respirator masks." $200K PI: Kevin Fu. Co-PI: Sara Rampazzi. NSF CNS Award #2031077. *6/2020–5/2021*.

[G5] Archimedes Center for Medical Device Security, approximately $350K/yr in ARR from healthcare and medical device industry. *2013–present*.

[G6] MCity "Protecting Automotive Analog Sensor Security (PA2SS)", $200K. PI: Fu *9/2018–8/2020*.

[G7] DHS "ISOSCELES: Intrinsically Secure, Open, and Safe Control of Essential LayErS." ($25K Michigan). Lead PI: Todd Carpenter (Adventium Labs). BSS HSHQDC-14-R-B00016. *8/2018–1/2019*.

[G8] Gifts from Analog Devices, Inc. supporting SPQR Lab on analog cybersecurity research, $220K. *9/2016–present*.

[G9] DHS "ISOSCELES: Intrinsically Secure, Open, and Safe Control of Essential LayErS." $2.2M ($24K Michigan). Lead PI: Ken Hoyme (Adventium Labs). BSS HSHQDC-14-R-B00016. *12/2015–12/2018*.

[G10] NSF Secure and Trustworthy Computing "TWC: Frontier: Collaborative: Enabling trustworthy cybersystems for health and wellness." $10M ($1,997K Michigan). Lead PI: David Kotz (Dartmouth College). NSF CNS Award #1330142. ($80K REU and $46K workshop supplements). *9/2013–8/2020*.

[G11] Microelectronics Advanced Research Corporation (MARCO) "TerraSwarm Research Center" $27.5M ($5.3M Michigan). Lead PI: Edward Lee (Berkeley). *1/2013–1/2018*.

[G12] Microelectronics Advanced Research Corporation (MARCO) "Center For Future Architectures Research (C-FAR)." $28M. Lead PI: Todd Austin (Michigan). *1/2013–1/2018*.

[G13] NSF Computing Systems Research "CSR: Small: Towards Autonomous, Ultra-low power RFID-Scale Sensing Systems." $490K. PI: Deepak Ganesan. CoPI: Kevin Fu. NSF CNS Award #1218586. *9/2012–8/2015*.

[G14] Microsoft Research. $7,500. PI: Kevin Fu. *4/2011–2012*.

[G15] UMass Commercial Ventures & Intellectual Property (CVIP) Technology Development Fund Award: "SMASH Memory: Smarter Storage for Low Power Devices." $25K. PI: Kevin Fu. *3/2011–3/2012*.

[G16] Armstrong Fund for Science at UMass Amherst: "Security and Privacy for Wirelessly Controlled Healthcare Technology." $20K. PI: Kevin Fu. *8/2010–7/2012*.

[G17] HHS SHARP Security: "Strategic Healthcare IT Advanced Research Projects on Security (SHARPS)." $15M ($727K UMass). Lead UIUC PI: Carl Gunter. UMass CoPI: Kevin Fu. *4/2010–2/2014*.

[G18] NSF Trustworthy Computing: "TC: Medium: Collaborative Research: Pay-as-you-Go: Security and Privacy for Integrated Transportation Payment Systems." $1,175K ($844,997 UMass). PI: Wayne Burleson. CoPIs: John Collura, Kevin Fu, Anna Lysyanskaya, Christof Paar, Marguerite Zarrillo. NSF CNS Award #0964641. *6/2010–5/2013*.

[G19] NSF Major Research Instrumentation: "MRI: Acquisition of an RFID Testbed Using Renewable Energy for Object Identification and Habitat Monitoring." $450,010. PI: Kevin Fu. CoPIs & Sr. Pers.: Charles Ross, Yanlei Diao, Deepak Ganesan, Wayne Burleson, Mark Corner, Prashant Shenoy. NSF CNS Award #0923313. *10/2009–9/2012*.

[G20] NSF Trustworthy Computing: "CAREER: Computational RFID for Securing Zero-Power Pervasive Devices." $475K. PI: Kevin Fu. NSF CNS Award #0845874 (now #1331652). *9/2009–8/2014*.
Supplement: REU ($16K) *5/2010–8/2014*.

[G21] US Dept. of Transportation, MIT Subcontract: "Integrated Transportation Payment Systems: Principles, Concepts, and Applications" $33,914. PI: John Collura, CoPIs: Wayne Burleson, Kevin Fu. *9/2009–8/2011*.

[G22] National Security Agency/Dept. of Defense: "A Student Research Education Program in Information Command and Analysis" $100,015. PI: Brian Levine. CoPIs: Mark Corner, Kevin Fu, David Jensen, Gerome Miklau. NSA H98230-09-1-0399. *9/2009–8/2010*

[G23] Alfred P. Sloan Research Fellowship. $50K. PI: Kevin Fu. *9/2009-8/2011*.

[G24] NSF Cyber Trust: "CT-ISG: Improving Security and Privacy in Pervasive Healthcare." $449,685. PI: Kevin Fu. NSF CNS Award #0831244. *9/2008–8/2011*.
Supplement: REU ($16K) *6/2009–8/2011*.

[G25] UMass President's Science & Technology (S&T) Fund "Integrated Payment Systems: Consortium on Security and Privacy." $125K. PI: Wayne Burleson. Co-PIs: John Collura, Kevin Fu, Marguerite Zarrillo. *8/2008-7/2010*.

[G26] Institute for Information Infrastructure Protection (I3P) at Dartmouth College: "I3P Scholar Program. Research on Securing Medical Cyberinfrastructure." $90K. PI: Kevin Fu. Scholar: Shane Clark. *8/2008-8/2009*.

[G27] UMass Commercial Ventures & Intellectual Property (CVIP) Technology Development Fund Award: "Zero-Power Telemetry for Implantable Medical Devices." $30K. PI: Kevin Fu. *6/2008-5/2009*.

[G28] Institute for Information Infrastructure Protection (I3P) at Dartmouth College: "Protecting Global Medical Telemetry Infrastructure." $25K. PI: Kevin Fu. *11/2007-12/2007*.

[G29] NSF Cyber Trust: "Collaborative Research CT-ISG: New Directions and Applications of Proxy Re-cryptography." $276,142 ($62,980 UMass, $213,163 JHU). Lead JHU PI: Susan Hohenberger. JHU CoPI: Giuseppe Ateniese. UMass CoPI: Kevin Fu. NSF CNS Award #0716386. *9/2007–8/2010*.
Supplement: REU ($16K) *6/2009–8/2010*.

[G30] Gifts from RSA Labs (Security Division of EMC Corporation). $10K, *2006–2007*; $40K, *3/2008–*. PI: Kevin Fu.

[G31] Intel Research Seattle. RFID equipment donation valued at $7,600, *2007*. PI: Kevin Fu

[G32] ThingMagic. RFID equipment donation valued at $5K, *2007*. PI: Kevin Fu.

[G33] NSF Cyber Trust: "Collaborative Research CT-T: Security for Smart Tags." $1.1 million ($750K UMass, $350K JHU). Lead PI: Kevin Fu. CoPIs & Sr. Pers.: Wayne Burleson, Adam Stubblefield (JHU), Ari Juels (RSA Labs). NSF CNS Award #0627529. *9/2006–8/2010*.
Supplements: Travel for collaboration in Japan ($40K) *9/2007–8/2009*; REU ($15K) *6/2007–8/2008*; REU ($6K) *6/2008–8/2009*; Travel for collaboration in France and Switzerland ($15K) *6/2009–8/2010*; JHU Subcontract ($50K) *8/2009–7/2010*.

Invited talks and panels since 2006

[T1] Invited speaker, Purdue Weldon School of Biomedical Engineering, Distinguished Lecture, Planned January 2022.

[T2] Invited speaker, Indiana University Kelley School of Business, Cybersecurity in Healthcare and the Life Sciences, Planned November 19, 2021.

[T3] Invited speaker, DallasCIO / Inspire CIO Biomedical Technology Cyber Security Program, Planned November 17, 2021.

[T4] Invited speaker, Michigan Healthcare Cybersecurity Council, Upper Peninsula Healthcare Cybersecurity Summit, Planned November 12, 2021.

[T5] Invited speaker, Association for Executives in Healthcare Information Security (AEHIS), Healthcare Security Leaders Forum, Planned November 10, 2021

[T6] Invited speaker, Diabetes Technology Society, Regulation of Diabetes Technology, Planned November 5, 2021.

[T7] Invited speaker, IoT Security Foundation Annual Conference, Planned November 4, 2021.

[T8] Invited speaker, DoD/VA and Government HIT Summit, Planned October 14, 2021

[T9] Invited speaker, Boston Scientific Corporation, Annual Product Security Summit, Planned October 2021.

[T10] Cybersecurity for Future Leaders, University of Michigan Ford School of Public Policy, October 11, 2021

[T11] Invited speaker, "Cybersecurity Unauthorized," Regulatory Affairs Professionals Society (RAPS), Cybersecurity Unauthorized, October 6, 2021.

[T12] Invited speaker, AdvaMed MedTech Conference, September 29, 2021.

[T13] Invited speaker, DEFCON Biohacking Village, August 2021.

[T14] Invited speaker, Engineering in Medicine & Biology Society, IEEE-EMBS International Conference on Biomedical and Health Informatics (BHI'21), July 2021.

[T15] Invited speaker, Billington CyberSecurity 5G Secure Summit, June 2021.

[T16] Invited speaker, Association for the Advancement of Medical Instrumentation (AAMI) Annual Conference, June 2021.

[T17] Invited speaker, Medical Device Innovation Consortium (MDIC) Annual Public Forum, June 2021.

[T18] Invited speaker, American Society of Anesthesiologists, Cybersecurity Task Force (CSTF), May 2021.

[T19] Invited speaker, Food and Drug and Law Institute (FDLI) Annual Conference, May 2021.

[T20] Invited speaker, Consumer Technology Association (CTA), FDA Working Group, May 2021.

[T21] Invited speaker, Michigan Biosciences Industry Association (MICHBIO) Medical Device Summit, May 2021.

[T22] Invited speaker, Health Information Sharing and Analysis H-ISAC Spring Summit, May 2021.

[T23] Invited speaker, Cybersecurity Summit Connected Devices, March 2021.

[T24] University of Maryland iSchool, Sociotechnical Cybersecurity (STC) Interest Group Seminar Series, May 2021.

[T25] "Medical device cybersecurity," IEEE P2933 Working Group Leadership, 2021.

[T26] "Medical device cybersecurity," Archimedes Center for Healthcare and Device Security Virtual Symposium, April 12, 2021.

[T27] Tufts Computer Science Virtual Colloquium, Planned April 8, 2021.

[T28] "Cybersecurity Unauthorized," Regulatory Affairs Professionals Society (RAPS), Planned March 17, 2021.

[T29] "Medical device cybersecurity," Society of Quality Assurance (SQA) 37th Annual Meeting and Quality College, April 12-15, 2021.

[T30] "New Role and Goals as Acting Director of Medical Device Security," Medical Device Security Information Sharing Council, Planned February 25, 2021.

[T31] "Medical Device Cybersecurity," Mayo Clinic Grand Rounds, Clinical Informatics, February 8, 2021.

[T32] Invited talks since 2014 appear on my website and are too numerous to track.

[T33] Invited speaker, "Cybersecurity for Medical Devices." Association for the Advancement of Medical Instrumentation (AAMI) Webinar, January 2014

[T34] Invited speaker, "Medical Device Cybersecurity: The First 164 Years."
Princeton University, October 2013
National Science Foundation WATCH Seminar, Arlington, VA, November 2012
Medical Device Connectivity Conference, Boston, MA, October 2012

[T35] Invited speaker, "Protecting your medical device against hacking and intrusions."
Wireless Connectivity in Medical Devices, Munich, Germany, May 2013

[T36] Invited speaker, "Medical Device Cyber Security: The First 164 Years."
Great Lakes Homeland Security Training Conference & Expo, May 2013

[T37] Invited panelist, "Role of Advisory Committees."
CCC Leadership in Science Policy Institute, April 2013

[T38] Invited panelist, "Medical Device Cybersecurity Considerations."
AAMI/FDA Conference on Medical Device Standards & Regulations, March 2013

[T39] Invited speaker, "Manufacturing a Programmable RFID Sensor Device for Security Research," RFIDSec Asia, Taipei, Taiwan, November 2012.

[T40] Invited speaker, "Regulatory Responsibilities for Medical Device Security," Regulatory Affairs Professionals Society (RAPS), October 2012.

[T41] Invited speaker, "Computer Security: Microchip-Based Implants for Managing Diabetes," Joslin Diabetes+Innovation Conference, September 2012.

[T42] Invited speaker, "Medical Device System Security," American College of Clinical Engineering (ACCE) Teleconferencing Series, July 2012.

[T43] Invited panelist, "Sensors for Physical World Interfaces: Application Landscape for Future Integrated Sensors: Security and Privacy for Implantable Medical Devices," SRC/SFI/NSF Forum on Integrated Sensors for Cybersystems, Dublin, March 2012.

[T44] Keynote speaker, "The Cutting Edge of Medical Device Security and Privacy," 14th International Symposium on Recent Advances in Intrusion Detection (RAID 2011), Menlo Park, CA, September 2011.

[T45] Invited speaker, "Trustworthy Medical Device Software."
Brown University, Providence, RI, September 2012
Emory University, Atlanta, GA, April 2012
Duke University, Durham, NC, November 2011
Johns Hopkins University Distinguished Lecture, Baltimore, MD, October 2011
Department of Homeland Security InfoSec Technology Transition Council, 2011
UC Irvine, Irvine, CA, May 2011
Williams College, Williamstown, MA, April 2011
Univ. Pennsylvania PRECISE, Philadelphia, PA, April 2011
UCSB, Distinguished Undergraduate Lecture Series, Santa Barbara, CA, April 2011
EPFL Workshop on Security/Privacy of Implantable IMDs (SPIMD), Lausanne, Switzerland, April 2011
Ruhr-Universität Bochum, Lehrstuhl Embedded Security, Bochum, Germany, March 2011
Rice University, Computer Science Colloquium, Houston, TX, October 2010
5th Workshop on Embedded Systems Security (WESS'10), Scottsdale, AZ, October 2010

[T46] Distinguished Lecture, Johns Hopkins University, Computer Science, October 2011.

[T47] Invited speaker, "Your Abstractions are WorthˆHˆHˆHˆHˆHPowerless! Non-Volatile Storage and Computation on Embedded Devices* (*Batteries Not Included)."
New York University, NY, NY, December 2011
Microsoft Research, Redmond, WA, July 2011
University of Washington, Seattle, WA, July 2011
EMC, Cambridge, MA, June 2011
Rambus, Sunnyvale, CA, May 2011

[T48] Invited speaker, "Medical Device Security and Privacy Concerns," National Institute of Standards and Technology (NIST) Information Security and Privacy Advisory Board (ISPAB), Washington, DC, July 2011.

[T49] Invited panelist, "Hackers and Attackers: How Safe is Your Embedded Design," Design Automation Conference (DAC), Embedded Systems and Software, San Diego, CA, June 2011.

[T50] Invited panelist, "Can I Hack Your Brain?" IEEE International Symposium on Hardware-Oriented Security and Trust (HOST), San Diego, CA, June 2011.

[T51] Invited panelist, CES/Amphion Forum, Las Vegas, NV, January 2011.

[T52] Invited participant, National Academy of Engineering, U.S. Frontiers of Engineering Symposium, Armonk, NY, September 2010.
http://www.naefrontiers.org/

[T53] Distinguished speaker, 2nd ACM S^3 Workshop on Wireless of the Students, by the Students, for the Students, Chicago, September 2010.

[T54] Invited speaker, "Trustworthy Medical Device Software," Institute of Medicine at the National Academies of Science panel on Public Health Effectiveness of the FDA 510(k) Clearance Process, Washington, DC, July 2010.
http://www.iom.edu/Activities/PublicHealth/510KProcess/2010-JUL-28.aspx

[T55] Invited panelist, "Reliability—How to Define Quality of Service," Joint FCC–FDA Public Meeting: Enabling the Convergence of Communications and Medical Systems, Washington, DC, July 2010.
http://www.fda.gov/MedicalDevices/NewsEvents/WorkshopsConferences/ucm215046.htm

[T56] Invited speaker, "Trustworthy Computing," President's Innovation and Technology Advisory Committee (PITAC), Washington, DC, June 2010.
http://www.whitehouse.gov/sites/default/files/microsites/ostp/pitac-agenda-june.pdf

[T57] Invited speaker. "Implantable Medical Devices: Security and Privacy for Pervasive, Wireless Healthcare," Dartmouth College Computer Science Colloquium, Hanover, NH, April 2010.

[T58] Invited speaker. "Implantable Medical Devices: Security and Privacy for Pervasive, Wireless Healthcare," Samsung Research, Dallas, Texas, January 2010.

[T59] Invited speaker. "Cooking Scientific Discovery," Annual Make-a-Difference Conference, Hong Kong, January 2010.

[T60] Invited speaker. "MIT Emerging Technologies Symposium (EmTech 2009)," Cambridge, September 2009.

[T61] Invited speaker. "MIT Bankcard Payment Workshop," Cambridge, MA, September 2009.

[T62] Invited speaker. "Workshop on Confidential Data Collection for Innovation Analysis in Organizations," Redmond, WA, September 2009.

[T63] Invited speaker. "Implantable Medical Devices: Security and Privacy for Pervasive Wireless Healthcare," CMU CyLab Seminar, Pittsburgh, PA, March 2009.

[T64] Invited speaker. "Security and Privacy for Wireless Implantable Devices: Pacemakers, Defibrillators, and More," CMOS Workshop, Banff, Canada, February 2009.

[T65] Invited speaker. "Energy-Aware Circuits for RFID," CMOS Workshop, Banff, Canada, February 2009.

[T66] Invited speaker. "Implantable Medical Devices: Security and Privacy for Pervasive, Wireless Healthcare," University of Massachusetts Amherst, Isenberg School of Management, The Institute for Operations Research and the Management Sciences (INFORMS) Seminar Series, December 2008.

[T67] Invited speaker. "Security Vulnerabilities in Wireless Implantable Medical Devices," Microsoft Research Redmond, September 2008.

[T68] Invited speaker. "Implantable Medical Devices: Security and Privacy for Pervasive, Wireless Healthcare," Johns Hopkins University Security Seminar Series, September 2008.

[T69] Invited speaker. "Security Vulnerabilities in Wireless Implantable Medical Devices," UMass Amherst ECE Security Seminar, September 2008.

[T70] Invited speaker. "Security Vulnerabilities in Wireless Implantable Medical Devices," Texas Instruments, September 2008.

[T71] Invited co-speaker. "New Classes of Security and Privacy Vulnerabilities for Implantable Wireless Medical Devices," Black Hat USA Briefings 2008, Las Vegas, August 2008.

[T72] Invited speaker. "Pay on the Go: Consumers & Contactless Payment" Federal Trade Commission Town Hall Meeting, Seattle, July 2008.

[T73] Invited panelist. "Is it Legal?" Panel on wireless privacy and security at the ACM/USENIX MobiSys Conference, Denver, June 2008.

[T74] Invited panelist. "RFID Security & Privacy: What's in Your Pocket?"
8th Payments Conference: Payments Fraud, Perception versus Reality hosted by the Federal Reserve Bank of Chicago, June 2008.

[T75] Invited Speaker. "Maximalist Cryptography and Computation on the WISP UHF RFID Tag," Intel Research Seattle, January 2008.

[T76] Invited Speaker. "I Can See You: RFID — The Next Generation Identity Theft Threat," 17th Annual International Fraud Investigators Conference hosted by the Toronto Police Service-Fraud Squad, December 2007.

[T77] Invited Speaker. "Security & Privacy for Pervasive Computation: RFID and Implantable Medical Devices,"
EMC Corporation Innovation Conference, Franklin, MA, October 2007.

[T78] Invited Speaker. "RFID Security and Privacy: Fundamental Lessons and Principles," 19th Workshop on Info. Sec. and Cryptography, Cheonan, Korea, September 2007; National Security Research Institute, Daejeon, Korea, September 2007; Korea University, Division of Computer & Comm. Eng., Seoul, Korea, September 2007.

[T79] Invited Panelist. "RFID Privacy," MITRE Privacy Technical Exchange, Bethesda, MD, June 2007.

[T80] Invited Speaker. "Data Security Risks: RFID Lab Research," Boston Federal Reserve, Emerging Payments Research Group, May 2007.

[T81] Invited Panelist. "Ubiquitous Computing in the Retail Store of the Future," 17th Annual Computers, Freedom and Privacy Conference, May 2007.

[T82] Invited Panelist and Moderator. "Wireless ID Issues: Privacy, Efficiency and Security," Dartmouth College Centers Forum on Freedom and Technology, April 2007.

[T83] Invited Speaker. "Vulnerabilities in First-Generation RFID-Enabled Credit Cards," UC Berkeley TRUST seminar, March 2007; Katholieke Universiteit (KU) Leuven Seminar, Belgium, March 2007.

[T84] Invited Panelist. "RFID: How Can Privacy and Security Be Built into the Technology," 8th Annual TACD Meeting with EC and US government officials, Brussels, Belgium, March 2007 (`http://www.tacd.org/events/meeting8/`).

[T85] Panel Moderator. "RFID Security & Privacy Panel," Financial Cryptography Conference, Tobago/Trinidad, February 2007.

[T86] Invited Speaker. "Computer System Security and Medical Devices," Food and Drug Administration (FDA), Office of Science and Engineering Laboratories, Center for Devices and Radiological Health, October 2006.

[T87] Invited Speaker. "Building RFID Applications with Security and Privacy," Workshop on RFID Security, Graz, Austria, July 2006.

[T88] Invited Panelist. "When Public Databases Cause Security Vulnerabilities," American Association for the Advancement of Science (AAAS), St. Louis, MO, February, 2006.

Professional service: leadership

Association for the Advancement of Medical Instrumentation
Editorial Board Member, AAMI's Biomedical Instrumentation & Technology (BI&T) and Publications Editorial Board, *2021–*

UCSF-Stanford Distinguished Speaker Series
Moderator. Joint FDA and UCSF-Stanford Center of Excellence in Regulatory Science and Innovation Distinguished Speaker Series on Cybersecurity for Biomedical Engineering. https://pharm.ucsf.edu/cersi/cybersecurity *2021–*.

USENIX Security Symposium
Program Chair, *2014*. Invited Talks Chair, *2018*. Steering Committee Member: *2014–*. Test of Time Award Committee Chair *2020–*.

AAMI Awards Committee
Member. *2018*.

CCC/USENIX Leadership in Embedded Security Workshop
Co-chair. *2018*.

IEEE Fellows Committee
Member, Computer Society Fellows Evaluation Committee. *2018*.

Computing Community Consortium (CCC)
The mission of Computing Research Association's Computing Community Consortium (CCC) is to catalyze the computing research community and enable the pursuit of innovative, high-impact research. CCC conducts activities that strengthen the research community, articulate compelling research visions, and align those visions with pressing national and global challenges. CCC communicates the importance of those visions to policymakers, government and industry stakeholders, the public, and the research community itself.
Council Member, Chair of Cybersecurity Task Force: *2015–2019*.

Samsung Strategy and Innovation Center
Advisor on IoT security, *2014–2016*.

ACM Committee on Computers and Public Policy
The CCPP oversees the ACM Risks Forum and the CACM Inside Risks articles. Committee Member: *2013–*.

AAMI Working Group on Medical Device Security
The Association for the Advancement of Medical Instrumentation (AAMI) standards program is accredited by the American National Standards Institute (ANSI)—the organization that coordinates the development and promotion of all U.S. voluntary standards and that officially represents the United States in international standards-setting—under the scope of medical devices and healthcare products and services. AAMI working groups are chartered to create international standards, recommended practices, and technical publications.
Co-Chair: *2013-2015*, Member: *2013–*.

NIST Information Security and Privacy Advisory Board Washington, DC
The Board provides advice on information security and privacy issues pertaining to Federal Government information systems, including thorough review of proposed standards and guidelines developed by NIST. The Board reports its findings to the Secretary of Commerce, the Director of the Office of Management and Budget, the Director of the National Security Agency, and the appropriate Congressional committees.
Board Member: *October 2011–October 2015*.

ACM SIGCOMM Workshop on Medical Communication Systems Helsinki
Program Chair of MedCOMM: *August 2012*.

USENIX Health Security and Privacy Workshop (HealthSec/HealthTech)
Co-Founder. Steering Group Member: *2010–2015*. Co-Chair: *August 2010, August 2013*. Member: *August 2011*

RFID Security Conference/Workshop (RFIDSec) Europe
General Chair: *June 2011*. Steering Group Member: *September 2007–2013*.

Workshop on Wirelessly Powered Sensor Networks and Computational RFID (WISP Summit) Berkeley, CA
Co-Chair: *November 2009*.

Privacy Enhancing Technologies (PET) Award Selection Committee
Selection committee, PET Outstanding Research Award. *June 2010*.

MIT TR35 Award Selection Committee
Selection committee, MIT Technology Review's TR35 awards. *April 2010*.

Institute for Information Infrastructure Protection (I3P) Hanover, NH
UMass Amherst representative: *2007–2012*.

Professional service: program committees

N95Decon.org
N95DECON seeks to synthesize and disseminate scientific information on respiratory protection during the COVID-19 pandemic. Founding member, *2020.*

Cryptographic Hardware and Embedded Security (CHES)
Member: *2018-2019.*

USENIX Security Symposium
Member: *August 2013, August 2012, August 2007, August 2003, August 2002*.

Dependable Computing and Communications Symposium (DCCS) Boston, MA
Member: *June 2012*

IEEE Symposium on Security & Privacy Oakland, CA
Member: *2017–2018*, *May 2011*, *May 2009*, *May 2008*, *May 2006*.

World Wide Web Conference: Security, Privacy, Reliability and Ethics Track
Member: *May 2007, May 2006, May 2003*.

ACM Workshop on Security and Privacy in Medical and Home-Care Systems (SPIMACS) Chicago, IL
Member: *November 2009*.

ACM Conference on Embedded Networked Sensor Systems (SenSys) Berkeley, CA
Member: *November 2009*.

ACM/USENIX International Conference on Mobile Systems, Applications, and Services (MobiSys) Kraków, Poland
Member: *June 2009*.

International Conference on
Financial Cryptography and Data Security Cozumel, Mexico
Member: *January 2008*.

International Conference on
Applied Cryptography and Network Security (ACNS) Zhuhai, China
Member: *June 2007*.

Network & Distributed System Security Symposium San Diego, CA
Member: *February 2006*, *February 2004*.

IEEE International Security in Storage Workshop (SISW) San Francisco, CA
Member: *December 2005*.

The Storage Security and Survivability (StorageSS) Workshop Fairfax, VA
Member: *November 2005*.

National Science Foundation Arlington, VA
Panelist and reviewer: *2005–*.

Patents issued

"Protecting motion sensors from acoustic injection attack" by Kevin Fu, Peter Honeyman, Timothy Trippel, Ofir Weisse. US patent #2020300883A1. Filed May 2016. Issued September 24, 2020.

"Physical Unclonable Function Using Augmented Memory For Challenge-Response Hashing" by Daniel E. Holcomb, Kevin Fu. US patent #9,787,481. August 2014. Issued October 2017.

"Methods and Systems for Improving Security in Zero-Power Devices" by Kevin Fu, Jacob Sorber, Mastooreh Salajegheh. US patent #9,158,361. Priority 2011. Issued 2015.

"Unidirectional Proxy Re-encryption" by Susan R. Hohenberger, Kevin Fu, Giuseppe Ateniese, Matthew Green. US patent #8,094,810. February 2006. Issued 2012.

"Method and System for Relating Cryptographic Keys" by Kevin Fu, Mahesh Kallahalla, Ram Swaminathan. US patent #7,313,238. Hewlett-Packard Labs. Filed 2003. Issued 2007.

"Windowed Backward Key Rotation" by Kevin Fu, Mahesh Kallahalla, Ram Swaminathan. US patent #7,697,690. Hewlett-Packard Labs. Filed 2003. Issued 2010.

Patents filed

"Methods and Systems for Characterizing and Identifying Electronic Devices" by Kevin Fu, Daniel Holcomb, Wayne P. Burleson. June 2013.

"Methods and Systems for Low-Power Storage for Flash Memory" by Kevin Fu, Erik Learned-Miller, Mastooreh Salajegheh. December 2010.

Completed advisees

PhD (advisor role)
Shane Clark (2013), Andres Molina-Markham (2012), Benjamin Ransford (2013), Mastooreh Salajegheh (2012).

Research Scientist (supervisor role)
Sara Rampazzi (2017–2021, now UFL faculty).

Postdoctoral research associates (supervisor role)
Denis Foo Kune, Matthew Hicks, Daniel Holcomb, Mastooreh Salajegheh, Colleen Swanson.

Masters (advisor role)
Miran Alhaideri (2013), Hee-Jin Chae (2007), Benessa Defend (2008), Shane Clark (2011), Shane Guineau (2013), Thomas S. Heydt-Benjamin (2007), Julia Lanier (2021), Robert Lychev (2008), Benjamin Ransford (2010), Joel Van Der Woude (2015), Hong Zhang (2012).

Current advisees

PhD track (advisor role)
Connor Bolton, Yan Chen, Benjamin Cyr

Thesis committees

Thesis committees (external member role)
Fadel Adib (MIT EECS, PhD 2016, now MIT faculty), Shyamnath Gollakota (MIT EECS, PhD 2012, now UW faculty).

Thesis committees at Michigan (member role)
Yulong Cao (CSE, PhD 2022 expected), Sina Shiehian (CSE, PhD 2019), Chantzis Fotios (University of Piraeus, PhD in progress).

Thesis committees at UMass Amherst (member role)
Georg Becker (ECE, PhD 2013), Daniel Holcomb (ECE, masters 2007), Lang Lin (ECE, masters 2009), Ashwin Lakshminarasimhan (ECE, masters in progress), Penny Ridgdill (Math, PhD 2009), Weifeng Xu (ECE, PhD 2007), Serge Zhilyaev (ECE, masters 2010).

Undergraduate research

Partial list: John Brattin (CS, 2009), Shane Clark (CS, 2006-07), David Eiselen (ECE, 2007), Teresa Fiore (REU, 2011), Shane Guineau (CS, 2011), Andrew Hall (REU, 2011), Nicole Kaufman (REU, 2011), Olga Korobova (REU, 2011), Jean Fredo Louis (REU, 2008), Erin McBride (REU, 2011), William Morgan (CS, 2007), Rene Santiago (ECE, 2007), Deepti Sreepathi (microbiology, 2009), Quinn Stewart (REU, 2009-), John Tuttle (CS, 2008), Zak Wirima (REU, 2008), Vladislav Yazhbin (CS, 2009-10), Mankin Yuen (CS, 2008).

Teaching

EECS 496: Major Design Experience Professionalism (2 units)
Winter 2020 (≈400 students). Lecturer. Design principles for multidisciplinary team projects, team strategies, entrepreneurial skills, ethics, social and environmental awareness, and life long learning.

EECS 280: Programming and Elementary Data Structures (4 units)
Fall 2013, Winter 2015, Fall 2019 (140-160 students). Lecturer. Techniques and algorithm development and effective programming, top-down analysis, structured programming, testing, and program correctness. Program language syntax and static and runtime

semantics. Scope, procedure instantiation, recursion, abstract data types, and parameter passing methods. Structured data types, pointers, linked data structures, stacks, queues, arrays, records, and trees.

EECS 588: Graduate Computer and Network Security (4 units)
Winter 2018. Lecturer. This intensive research course covers foundational work and current topics in computer systems security with an emphasis on embedded security. We will analyze research papers, write technical essays, and carry out benchtop experiments. Students will be prepared for graduate research in computer security. Students will learn methodologies for reproducible research, and experience the art of technical writing to communicate complex thoughts in simple prose. Students will gain hands-on experience designing and evaluating secure computer systems.

EECS 388: Introduction to Computer Security (4 units)
Fall 2018, Fall 2017, Fall 2015 (120 students). Lecturer. This course teaches the security mindset and introduces the principles and practices of computer security as applied to software, host systems, and networks. It covers the foundations of building, using, and managing secure systems. Topics include standard cryptographic functions and protocols, threats and defenses for real-world systems, incident response, and computer forensics

EECS 475: Introduction to Cryptography (4 units)
Winter 2014 (140 students). Lecturer. Foundations of cryptography and the humility of building practical cryptographic systems. Topics include fundamentals of cryptography, applications, attacks, and theory. The class draws on material from public key cryptography, number theory, usable security, hash functions, symmetric cryptography, secure storage, cryptographic protocols, homomorphic encryption, theoretical notions of security, and cryptographic attacks.

EECS 598-008: Medical Device Security (3 credits)
Winter 2013. Instructor. Graduate-level course on methods from computer engineering, human factors, and regulatory policy to improve the information security of increasingly interconnected and wirelessly controlled medical devices.

CMP SCI 201: Architecture & Assembly Language (4 credits)
Spring 2009, 2010. Instructor. $\sim$30 students. Introduction to the architecture and machine-level operations of modern computers at the logic, component, and system levels.

CMP SCI 466 Applied Cryptography (3 credits, previously CMP SCI 591D)
Fall 2010, Spring 2008, Spring 2007, Spring 2006. Instructor. $\sim$20 students. Teaches upper-level undergraduates the foundations of applied cryptography and the humility of building practical systems that rely on cryptography.

CMP SCI 660: Advanced Information Assurance (3 credits)
Fall 2007, Fall 2012, instructor; Fall 2006, co-instructor. Teaches graduate students the foundational material to enter the research community of information assurance.

MIT's Network and Computer Security (6.857)
Head TA and guest lecturer (Fall 2001, Fall 2002). $\sim$80 undergraduate/graduate students.

MIT's Computer System Engineering (6.033)
Head TA (Spring 1999), TA (Spring 1998). ∼300 students.

MIT's Computer System Engineering Lab (6.906)
Lab TA (Spring 1998, Spring 1999).

CMP SCI 191A: First-Year TAP Seminar (1 credit)
Fall 2006, co-organizer. This seminar introduces first-year undergraduates to major topics in Computer Science. Each week there is a new guest lecturer.

CMP SCI 291E: RFID Electronic Identification Lab (1 credit)
Fall 2007. Instructor. My lab teaches sophomores about hands-on problem solving in the context of RFID.

CMP SCI 691I: Hot Topics in Information Security (1 credit)
Fall 2007, instructor; Fall 2005, co-instructor. This seminar covers cutting-edge papers to identify novel research problems in security.

RFID Security and Privacy Tutorial (1 day)
USENIX Security Tutorial by Kevin Fu, Ari Juels, and Adam Stubblefield. Vancouver, Canada, August 2006.

RFID Security Summer School (1 lecture)
"Special topics in RFID security," Technical University of Graz, Austria, July 2006.

MIT's Introduction to the Theory of Computation (6.840)
Grader (Fall 1998).

Departmental service: U-M

COE Awards Committee, 2018–2020; Undergraduate CE Advisor, 2019–2020; Awards Committee, 2017–2018; Exploring Graduate Studies, 2014–; University Information and Infrastructure Assurance Council, 2014–2016; University IT Council, 2014; Graduate Recruiting & Admissions Committee, 2012–13; CoE Safety Committee, 2013–2014; Undergraduate CS/Eng Advisor, 2013–2014, 2017.

Departmental service: UMass

Admissions Committee, 2006–2007, 2009–2011;
Awards Committee, 2009–2010; Computing Committee, 2005–2007;
Distinguished Lecture Series (DLS)/Special Events Chair, 2008–2009;
ECE Senior Faculty Search Committee, 2008–2009;
Graduate Program Committee, 2007–2009, 2012;
Personnel Committee, 2007–2008; Recruiting Committee, 2005–2006.

Other service

Ad hoc reviewer
ACM Transactions on Information and System Security (TISSEC); IEEE/ACM Transactions on Networking (TON); ACM Transactions on Sensor Networks (TOSN); ACM Transactions on Computer Systems (TOCS); NordSec; IEEE Security & Privacy Magazine; IEEE Internet Computing; International Conference on Distributed Computing Systems (ICDCS); International Workshop on Information Security Applications (WISA);

USENIX Annual Technical Conference; Symposium on Operating Systems Principles (SOSP); USENIX Conference on File and Storage Technologies (FAST); International Workshop on Peer-to-Peer Systems (IPTPS); Workshop on Hot Topics in Operating Systems (HotOS); Symposium on Operating Systems Design and Implementation (OSDI).

Graduate Resident Tutor — MIT Residential Life Burton-Conner
Live-in "life" tutor for 30 MIT undergraduates. Facilitation of conflict resolution, off-campus retreats, medical emergencies, and culinary productions. *2000–2003*.

Academic Advising — MIT Department of EECS Cambridge, MA
Associate academic advisor to help undergraduates develop their four-year academic plans. Co-advised with Alex d'Arbeloff, MIT Chairman of the Corporation. *1999–2003*.

Association of Computing Machinery New York, NY
General editor and contributor to the *ACM Crossroads Magazine*. *1998–2000* (`http://www.acm.org/crossroads/`).

French Culinary Institute New York, NY
Received certificate of achievement in artisanal bread making while producing the bread for the student-run L'Ecole restaurant. *June 2004*.

Selected media coverage of research

"Could Ordinary Household Objects Be Used To Spy On You?" by Charles Bergquist and Sophie Bushwick. On *Science Friday*, October 29, 2021.

"With a Laser, Researchers Say They Can Hack Alexa, Google Home or Siri" by Nicole Perlroth. In *The New York Times*, Technology Section, Nov 4, 2019.

"It's Possible to Hack a Phone With Sound Waves, Researchers Show" by John Markoff. In *The New York Times*, Technology Section, Mar 14, 2017.

"Of Fact, Fiction and Cheney's Defibrillator" by Gina Kolata. In *The New York Times*, Science Section, Oct 27, 2013.

"A New Cyber Concern: Hack Attacks on Medical Devices" by Dina Fine Maron. In *Scientific American*, June 25, 2013.

"Computer Viruses Are Rampant on Medical Devices in Hospitals" by David Talbot. In *MIT Technology Review*, October 17, 2012.

"Headphones Can Disrupt Implanted Heart Devices" by Joseph Shapiro. In *National Public Radio, All Things Considered*, October 22, 2009.

"A Heart Device Is Found Vulnerable to Hacker Attacks" by Barnaby J. Feder. In *The New York Times*, Business Section, Mar 12, 2008.

"Questions on Credit Card Safety" by John Schwartz. In *The New York Times*, Business Section, Page B1, October 23, 2006.