

Josiah Hester | Curriculum Vitae

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Research Interests

I work towards a sustainable future for computing and society, informed by my Native Hawaiian (Kanakanaka) heritage. I apply my work to healthcare, cyber-infrastructure, conservation, and education.

I won a Presidential Early Career Award for Scientists and Engineers (PECASE) in 2025, was named a Sloan Fellow in Computer Science, won my NSF CAREER, and a VMware Early Career Faculty Award in 2022. I was named to Popular Science's Brilliant 10, the AISES Most Promising Scientist, and won a 3M Non-Tenured Faculty Award in 2021. My work has received **thirteen Best Paper** awards and **eight Best Presentation** awards, and has been featured in The Wall Street Journal, The Washington Post, BBC, Popular Science, Scientific American, CNET, Mashable, and The Guinness Book of World Records, among many others.

Employment and Appointments

- 2024– **Director**, Center for Advancing Responsible Computing
- 2025– Associate Director of Civic Innovation and AI, Brook Byers Institute for Sustainable Systems
- 2022– **Catherine M. and James E. Allchin Early Career Professorship**
Associate Professor, College of Computing, Georgia Institute of Technology
School of Interactive Computing and School of Computer Science
School of Electrical and Computer Engineering (courtesy)
- 2025– **Executive Director**, Ulu Lahui Foundation, 501(c)(3) Native Hawaiian-led nonprofit
- 2022– **Associate Professor of Computer Engineering** (adjunct)
- 2021-22 **Allen K. and Johnnie Cordell Breed Junior Professor of Design**
- 2017-22 **Assistant Professor of Computer Engineering, Northwestern University**
Departments of Electrical and Computer Engineering, and Computer Science
Department of Preventive Medicine: Feinberg School of Medicine (courtesy)
Department of Biomedical Engineering (courtesy)

Major Awards, Honors, Highlights

- 2025 **Presidential Early Career Award for Scientists and Engineers (PECASE)**
- 2024 **The James D. Lester III Endowment Award**, College of Computing, Georgia Tech. *Presented to a faculty member who has made significant and visible contributions to their field of study.*
- 2022 **VMware Early Career Faculty Award.**
- 2022 **Alfred P. Sloan Research Fellowship.** Computer Science.
- 2022 **NSF CAREER Award.** CISE Computer Systems Research Program.
- 2021 **Popular Science's Brilliant Ten.** *Recognizes 10 young innovators moving the goalposts in their fields, national competition across science and engineering in its 16th year.*
- 2021 **The American Indian Science and Engineering Society's Most Promising Scientist.** *Single award annually across all STEM fields to a single engineer or scientist.*
- 2021 **3M Non-Tenured Faculty Award.** *Highly competitive annual award for outstanding junior faculty.*

Research Publication Awards

- 2026 **Best Paper Honorable Mention** for “Kumu Connect: Culturally-Authentic AI Tools...” (**IDC 2026**)
- 2026 **Highlight Paper (top 3%)** for “SpiderCam: Low-Power Snapshot Depth...” (**CVPR 2026**)
- 2026 **Best Paper Award** for “Raising Soil Microbial Fuel Cells into Robust Bio-Batteries...” (**ENSsys 2026**)
- 2026 **Best Paper Honorable Mention** for “Noondawind: Co-Designed Dashboard...” (**CHI 2026**)
- 2025 **Best Paper Honorable Mention** for “Sustaining Workers Who Sustain the World...” (**CSCW 2025**)
- 2025 **Special Rec. Contributions to DEI** for “Sustaining Workers Who Sustain the World...” (**CSCW 2025**)
- 2025 **Best Paper Award** for “DissolvPCB: Fully Recyclable 3D-Printed Electronics...” (**UIST 2025**)
- 2024 **Prototypes for Humanity Award in Energy Category** for “Terracell” (Top- 5 of 1600 submissions)
- 2024 **Fast Company’s 2024 Innovation by Design Honorable Mention** for “Terracell” (Sustainability)
- 2024 **Communications of the ACM Cover Feature** for “The Internet of Batteryless Things” (**CACM 2024**)
- 2023 **ACM SIGMOBILE Research Highlight** for “Protean: Adaptive Hardware-Acceler...” (**GetMobile 2023**)
- 2022 **Fast Company’s 2022 Innovation by Design Finalist** for “Interaction Harvesters” (Experimental)
- 2022 **Fast Company’s 2022 Innovation by Design Finalist** for “Interaction Harvesters” (Students)
- 2022 **Fast Company’s 2022 Innovation by Design Finalist** for “FaceBit: Smart Face Mask” (Students)
- 2022 **ACM SIGMOBILE Research Highlight** for “REHASH: A Flexible, Developer...” (**GetMobile 2022**)
- 2022 **ACM SIGMOBILE Research Highlight** for “VeriMask: Facilitating Decon...” (**GetMobile 2022**)
- 2021 **Distinguished Paper Award, IMWUT Vol. 4** for “Battery-free Game Boy” (Top 3% of papers)
- 2021 **ACM SIGMOBILE Research Highlight** for “Battery-free Game Boy” (**GetMobile 2021**)
- 2017 **Best Paper Nominee** for “Flicker: Rapid Prototyping...” (**SenSys 2017**)
- 2014 **Best Paper Award** for “Ekho: Realistic and Repeatable...” (**SenSys 2014**)

- 2022 **Best Position Paper Award** for “Circularity in Energy Harvesting Computational...” (**ENSsys 2022**)
- 2021 **Best Presentation Award** for “HeatSight: Wearable Low-power...” (**UbiComp/ISWC 2021**)
- 2021 **Best Poster Award Runner Up – COVID-19 Response Research** for “VeriMask” (**SenSys 2021**)
- 2020 **Best Presentation Award** for “Battery-free Game Boy” (**UbiComp 2020**)
- 2020 **Best Presentation Award Runner Up** for “NeckSense: A Multi-sensor...” (**UbiComp 2020**)
- 2020 **Best Poster Runner-up Award** for “Automating Decontamination...” (**SenSys 2020**)
- 2015 **Best Poster Award** for “Towards Robust Reprogrammability...” (**SenSys 2015**)
- 2013 **Best Poster Award** for “Enabling Sustainable Sensing...” (**SECON 2013**)

University Awards and Honors

- 2026 **Course Instructor Opinion Survey (CIOS) Honor Roll.** Spring 2026
- 2022 **Profile in “Clemson World”** the University’s print Alumni Magazine.
- 2022 **Awarded Chaired Professorship.** Catherine M. and James E. Allchin Early Career Professorship.
- 2022 **Daniel I. Linzer Award for Faculty Excellence in Diversity and Equity.** *Two annual awards for individuals who build a more diverse, inclusive and equitable climate at Northwestern University.*
- 2021 **Outstanding Young Alumni Award, Clemson University.** College of Engineering, Computing and Applied Sciences. *Two awards annually for graduates under 40 making a major impact.*
- 2021 **Allen Taflove Best Teacher Award.** Electrical and Computer Engineering Dept. *One award annually.*
- 2021 **Awarded Chaired Professorship.** Allen K. and Johnnie Cordell Breed Junior Professor of Design
- 2018 **Searle Teaching Fellow.** *Year long teaching intensive training for select faculty.*
- 2017 **The Outstanding Ph.D. Student in Computer Science** at Clemson University

Distinguished Awards, Honors, Highlights

- 2026 **Rhizome 7x7**, Closing keynote, 30th anniversary (re)opening of the New Muesem in NYC
- 2026 **Keynote Speaker**, Eahou Festival, Honolulu, Hawaii
- 2026 **Eahou Global Resilience Cohort**, Purple Mai'a (29 selected from ~500 applications in 50 countries)
- 2025 **Indigenous Communities Fellow**, MIT Solve (32 selected fellow out of ~2900 applicants)
- 2025 **Keynote Speaker**, North Star Relatives CS Summit
- 2025 **Distinguished Lecturer**, I-SENSE, Florida Atlantic University
- 2025 **Keynote Speaker**, STEAM Leadership Conference
- 2024 **Google Academic Research Award** (\$100k)
- 2024 **Keynote Speaker**, AI in Health Conference, Ken Kennedy Institute.
- 2024 **Keynote Speaker**, NSF CISE CAREER Workshop. George Washington University.
- 2023 **Keynote Speaker**, Southwestern University Research Alliance Fall Workshop
- 2023 **Keynote Speaker**, National Academies of Science, Engineering, and Medicine (NASEM) DEI Series
- 2022 **Plenary Speaker**, Richard Tapia Celebration of Diversity in Computing Conference
- 2022 **NSF CISE Newsletter Featured Project**. July issue on intermittent computing.
- 2022 Invited **op-ed** for **United Nations DESA Voice** monthly newsletter on sustainable computing.
- 2022 Featured in **National Science Foundation's** annual presentation to the **National Science Board**.
- 2022 **Distinguished Lecturer**. University of Washington, Allen School of CSE.
- 2021 **Expert Panelist, United Nations DESA**. *Global Policy Dialogues for Climate Action*
- 2021 **NSF CISE Newsletter Feature "Faces of CISE."** November issue, one selection per month.
- 2021 **Guinness Book of World Records 2022**. Cutting edge science: "first battery-free handheld console"
- 2021 **Plenary Panelist, UbiComp 2021**. *"Reflecting on the 30th anniversary of Weiser's famous article"*
- 2021 **CS Hero, 1 of 12, CSEdWeek 2021**. For contributions to computing sustainability and advocacy.

Education

- May **Ph.D. in Computer Science, Clemson University**
- 2017 Dissertation Title: *Sophisticated Batteryless Sensing*
 Advisor: Jacob M. Sorber
Named the Outstanding PhD Student in Computer Science for 2017
- Dec **B.S. in Computer Science, Clemson University**
- 2011 Clemson University Honors College, *General and Departmental Honors*

Publications

- Conference papers (fully reviewed, archival)
My advisees (including postdocs) are underlined in some papers where I am the senior author.
- C55 **Real-time Puncture Detection and Recovery for Pneumatic Soft Actuators**
 Tejonidhi R Deshpande, Tingyu Cheng, Josiah Hester
 IEEE International Conference on Robotics and Automation (ICRA'26)

- C54 **A Greener Edge: A Framework on Carbon-aware Edge ML System Design**
Xuesi Chen, Ilan Mandel, [Eren Yildiz](#), Josiah Hester, Udit Gupta
ACM International Conference on Mobile Systems, Applications, and Services (MobiSys'26)
[22.5% acceptance rate]
- C53 **BIONIC: A Co-Designed Hardware and Runtime for Time-Sensitive Battery-Free IoT**
[Eren Yildiz](#), Davide Cavedon, Stefano Antonio Putelli, Josiah Hester, Kasim Sinan Yildirim
ACM International Conference on Mobile Systems, Applications, and Services (MobiSys'26)
[22.5% acceptance rate]
- C52  **Kumu Connect: Culturally-Authentic AI Tools to Enable Educator Agency and Data Sovereignty for Hawaiian K-12 CS Education**
Rachel Baker-Ramos, Manas Mhasakar, Viswak Raja, Evyn-Bree Helekahi-Kaiwi, William Gelder, Benjamin Carter, Rebecca Diego, Alex Cabral and Josiah Hester
25th Interaction Design and Children Conference (IDC'26)
Best Paper Honorable Mention (Top 3 papers)
- C51 **When LLMs Slow Down: How Environmental Impacts Mediate University Students' LLM Usage**
[Hyeonwook Kim](#), Xuesi Chen, [Alex Cabral](#), Cindy Lin, Udit Gupta and Josiah Hester
International Conference on ICT for Sustainability (ICT4S'26)
- C50 **Buoy Meets World: Aquatic Sensing Insights from 169 Days of Low-cost Wetland Buoy Deployments**
[Eric Greenlee](#), [Blaine Rothrock](#), Cody Atchinson, Chris McNerney, Ellen Zegura, Josiah Hester and [Alex Cabral](#)
International Conference on ICT for Sustainability (ICT4S'26)
- C49  **SpiderCam: Low-Power Snapshot Depth from Differential Defocus**
Marcos A. Ferreira*, Tianao Li*, [John Mamish*](#), Josiah Hester, [Yaman Sangar](#), Qi Guo, Emma Alexander
Proceedings of the Computer Vision and Pattern Recognition Conference (CVPR'26)
Highlight Paper (Top 3% of accepted papers)
- C48 **ENTS: Experiences in Co-Designed Environmental Sensing**
John Madden, Stephen Taylor, Laura Jaliff, Aaron Wu, Alec Levy, Jack Lin, Ahmed Falah, Tyler Potyondy, Josiah Hester, George Wells, [Yaman Sangar](#), Pat Pannuto, Colleen Josephson
20th ACM Conference on Embedded Networked Sensor Systems (SenSys'26)
[18.9% acceptance rate]
- C47 **Whose Knowledge Counts? Co-Designing Community-Centered AI Auditing Tools with Educators in Hawai'i**
Dora Zhao, Hannah Cha, Michael J Ryan, Angelina Wang, [Rachel Baker-Ramos](#), Evyn-Bree Helekahi-Kaiwi, Rebecca Diego, Josiah Hester, Diyi Yang
ACM Conference on Human Factors in Computing Systems (CHI'26)

- C46  **Noondawind: Co-Designed Dashboard for Indigenous Data Access and Environmental Policy Implementation**
Iulia Aileen McKenna, Gabriela Buraglia, Jahanvi Kolakaluri, Rachel Baker-Ramos, Samantha Carter, Joe Graveen, Jonathan Gilbert, James Rasmussen, Brandon Byrne, Darren Vogt, Josiah Hester, Kim Marion Suiseeya, Alex Cabral
 ACM Conference on Human Factors in Computing Systems (CHI'26)
Best Paper Honorable Mention (Top 5% of accepted papers)
- C45 **SoundOff: Low-cost Passive Ultrasound Tags for Non-invasive and Non-Intrusive Smart Home Sensing**
 Yibo Fu, Vivian Shen, Víctor Riera Naranjo, Bolei Deng, Alex Adams, Josiah Hester
 ACM Conference on Pervasive and Ubiquitous Computing (UbiComp'26)
Published in PACM IMMUT, Volume 9, Issue 4, Article 174 (Dec 2025)
- C44 **Designing Loofah Wearables For Embodied Ecological Reflection**
Yingting Gao, Jing Xie, Fiona Bell, Alex Cabral, Josiah Hester, HyunJoo Oh
 ACM International Conference on Tangible, Embedded, and Embodied Interaction (TEI'26)
- C43  **Sustaining Workers Who Sustain the World: Assets-Based Design for Conservation Technologies in Madagascar**
Eric Greenlee, David Klinges, Lalatiana Odile Randriamiharisoa, Kim Valenta, Jhoanny Rasojivola, Justorien Rambelonaiaina, Nicolas Naina Rasolonjatovo, Georges Razafindramavo, Joel Ratsirarson, Zovelosoa Raharinalomanana, Edouard Ramahatratra, Abigail Ross, Thomas J Kelly, Jean Claude Rakotoarivelo, Tafitasoa Mijoro, Eric Tsiriniaina Rajoelison, Efitiria Efitiria, Josiah Hester, Ellen Zegura, Alex Cabral
 ACM Conference on Computer-Supported Cooperative Work & Social Computing (CSCW'25)
Best Paper Honorable Mention (Top 5% of accepted papers)
Special Recognition for Contributions to Diversity and Inclusion
- C42  **DissolvPCB: Fully Recyclable 3D-Printed Electronics with Liquid Metal Conductors and PVA Substrates**
 Zeyu Yan, Su Hwan Hong, Josiah Hester, Tingyu Cheng, Huaishu Peng
 ACM Symposium on User Interface Software and Technology (UIST'25)
Best Paper Award (Top 3% of accepted papers)
Covered by Hackaday, New Scientist and many others
- C41 **DropPop: Designing Drop-to-Deploy Mechanisms with Bistable Scissors Structures.**
Yibo Fu, Emily Guan, Jianzhe Gu, Dinesh Patel, Justin Soza Soto, Yichi Luo, Carmel Majidi, Josiah Hester, Lining Yao
 ACM Symposium on User Interface Software and Technology (UIST'25)
- C40 **BIOGEM: A Fully Biodegradable Gelatin-Based McKibben Actuator with Embedded Sensing**
 Gaolin Ge, Haoran Lu, Yingting Gao, Qifeng Yang, Josiah Hester, Tingyu Cheng, and Yiyue Luo.
 ACM Symposium on User Interface Software and Technology (UIST'25)

- C39 **Makak: Co-designing Environmental Sensors to Protect Manoomin (Wild Rice)**
Blaine Rothrock, Eric Greenlee, Yaman Sangar, Julia McKenna, William Graveen, Kristen Hanson, Melissa Lewis, Kathleen Smith, Miles Falck, Brandon Byrne, Darren Vogt, Kimberly R Marion SuiSeeeya, Ellen Zegura, Josiah Hester, Alex Cabral
 ACM SIGCAS/SIGCHI Conference on Computing and Sustainable Societies (COMPASS'25)
- C38 **Bringing Context to the Underserved: Rethinking Context-Aware Design to Bridge the Digital Divide**
Summit Shrestha, Josiah Hester, Ashutosh Dhekne, Umakishore Ramachandran, Alex Cabral
 ACM SIGCAS/SIGCHI Conference on Computing and Sustainable Societies (COMPASS'25)
- C37 **Focal Split: Untethered Snapshot Depth from Differential Defocus.**
 Luo, Junjie, John Mamish, Alan Fu, Thomas Concannon, Josiah Hester, Emma Alexander, and Qi Guo.
 Proceedings of the Computer Vision and Pattern Recognition Conference (CVPR), pp. 26965-26974. 2025.
- C36 **Kumu Connect: Design Thinking for Place-Based Generative Educational Technology in Hawaiian Immersion Schools.**
 Baker-Ramos, Rachel, Will Gelder, Leah Cho, Jahnavi Kolakaluri, and Josiah Hester.
 Conference on Research on Equitable and Sustained Participation in Engineering, Computing, and Technology (RESPECT'25), pp. 186-195. 2025.
- C35 **User-directed Assembly Code Transformations Enabling Efficient Batteryless Arduino Applications**
 Christopher Kraemer, Will Gelder, and Josiah Hester
 ACM Conference on Pervasive and Ubiquitous Computing (UbiComp'24)
Published in PACM IMMUT, Volume 8, Issue 2, Article 44 (May 2024)
- C34 **"Those don't work for us": An Assets-Based Approach to Incorporating Emerging Technologies in Viable Hawaiian Teacher Support Tools for Culturally Relevant CS Education**
 Will Gelder, Rachel Baker-Ramos, Leaj Cho, Jahnavi Kolakaluri, Judith Uchidiuno and Josiah Hester
 ACM Conference for Research on Equitable and Sustained Participation in Engineering, Computing, and Technology (RESPECT'24), pg. 224-230
- C33 **Mālama 'Āina through Micro: bits in Kāne 'ohe: A Place-Based Approach to Teaching CS in a Kaiapuni (Hawaiian Immersion) Bilingual School Setting.**
 Amanda Nelson, Amy Guo, Marcelo Worsley, Derek Esibill, and Josiah Hester.
 In 2023 Conference on Research in Equitable and Sustained Participation in Engineering, Computing, and Technology (RESPECT), pp. 124-132. IEEE, 2023.

- C32 ⚙️ Soil-Powered Computing: The Engineer's Guide to Practical Soil Microbial Fuel Cell Design**
 Bill Yen, Laura Jaliff, Louis Gutierrez, Philothei Sahinidis, Sadie Bernstein, John Madden, Stephen Taylor, Colleen Josephson, Pat Pannuto, Weitao Shuai, George Wells, Nivedita Arora, and Josiah Hester
 ACM Conference on Pervasive and Ubiquitous Computing (UbiComp'24)
Published in PACM IMMUT, Volume 7, Issue 4 (Dec 2023)
Prototypes for Humanity Award in Energy Category for Terracell
Fast Company's 2024 Innovation by Design Awards Honorable Mention, Sustainability
Fast Company's 2024 Innovation by Design Awards Honorable Mention, Student Category
Featured by The Independent, New Atlas, hackster.io and many others.
TOP FOUR most downloaded ACM IMMUT article of all time
- C31 ⚙️ Interaction Harvesting: A Design Probe of User-Powered Widgets**
 John Mamish, Amy Guo, Thomas Cohen, Julian Richey, Yang Zhang, and Josiah Hester
 ACM Conference on Pervasive and Ubiquitous Computing (UbiComp'23)
Published in PACM IMMUT, Volume 7, Issue 3 (Sep 2023)
Fast Company's 2022 Innovation by Design Award Finalist, Experimental Category
Fast Company's 2022 Innovation by Design Award Finalist, Student Category
- C30 Characterizing and Mitigating Touchtone Eavesdropping in Smartphone Motion Sensors**
 Connor Bolton, Yan Long, Jun Han, Josiah Hester, Kevin Fu
 26th Intl. Symposium on Research in Attacks, Intrusions and Defenses (RAID '23)
 [23.5% acceptance rate]
- C29 Efficient and Safe I/O Operations for Intermittent Systems**
Eren Yıldız, Saad Ahmed, Bashima Islam, Josiah Hester, Kasım Sinan Yıldırım
 18th ACM European Conference on Computer Systems (EuroSys '23)
 [14.1% acceptance rate]
- C28 Experience: Barriers and Opportunities of Wearables for Eating Research**
 Mahdi Pedram, Glenn Fernandes, Christopher Romano, Boyang Wei, Sougata Sen, Josiah Hester, Nabil Alshurafa
 ACM Conference on Human Factors in Computing Systems, Extended Abstracts (CHI EA'23)
- C27 EquityWare: Co-Designing Wearables With And For Low Income Communities In The U.S.**
Stefany Cruz, Alexander Redding, Connie Chau, Claire Lu, Julia Persche, Josiah Hester, Maia Jacobs
 ACM Conference on Human Factors in Computing Systems (CHI'23)

- C26 **SmokeMon: Unobtrusive Extraction of Smoking Topography Using Wearable Energy-Efficient Thermal**
 Rawan Alharbi, Soroush Shahi, Stefany Cruz, Lingfeng Li, Sougata Sen, Mahdi Pedram, Christopher Romano, Josiah Hester, Aggelos K. Katsaggelos, Nabil Alshurafa
 ACM Conference on Pervasive and Ubiquitous Computing (UbiComp'23)
Published in PACM IMMUT, Volume 6, Issue 4 (Dec 2022)
 Featured on FOX channels nationally (FOX32 Chicago, San Diego, Sacramento, Kansas City, Indy and others) and by The Hill, NPR, BBC, Tech Times, Digital Trends, and others.
- C25  **Protean: An Energy-Efficient and Heterogeneous Platform for Adaptive and Hardware-Accelerated Battery-free Computing**
 Abu Bakar, Rishabh Goel, Jasper de Winkel, Jason Huang, Saad Ahmed, Bashima Islam, Przemysław Pawełczak, Kasim Sinan Yildirim, Josiah Hester
 20th ACM Conference on Embedded Networked Sensor Systems (SenSys'22)
 [24.8% acceptance rate]
 ACM SIGMOBILE Research Highlight 2023 – Featured in GetMobile Magazine
- C24 **MiniKers: Interaction-Powered Smart Environment Automation**
 Xiaoying Yang, Jacob Sayono, Jess Xu, Jiahao Li, Josiah Hester, Yang Zhang
 ACM Conference on Pervasive and Ubiquitous Computing (UbiComp'22)
Published in PACM IMMUT, Volume 6, Issue 3 (Sept 2022)
- C23 **WARio: Efficient Code Generation for Intermittent Computing**
 Vito Kortbeek, Souradip Ghosh, Josiah Hester, Simone Campanoni, Przemysław Pawełczak
 43rd ACM Conference on Programming Language Design and Implementation (PLDI 2022)
 [20.8% acceptance rate]
- C22 **Battery-free MakeCode: Accessible Programming for Intermittent Computing**
 Christopher Kraemer, Amy Guo, Saad Ahmed, Josiah Hester
 ACM Conference on Pervasive and Ubiquitous Computing (UbiComp'22)
Published in PACM IMMUT, Volume 6, Issue 1 (Mar 2022)
 Featured by Microsoft Research, in ACM Tech News, Hackster.io and many others.
- C21  **FaceBit: Smart Face Masks Platform**
 Alexander Curtiss, Blaine Rothrock, Abu Bakar, Nivedita Arora, Jason Huang, Zachary Englehardt, Aaron-Patrick Empedrado, Chixiang Wang, Saad Ahmed, Yang Zhang, Nabil Alshurafa, Josiah Hester
 ACM Conference on Pervasive and Ubiquitous Computing (UbiComp'22)
Published in PACM IMMUT, Volume 5, Issue 4 (Dec 2021)
 Fast Company's 2022 Innovation by Design Award Finalist, Students Category
 Featured in Scientific American, Gizmodo, TechCrunch, Engadget, Forbes and many others.
 Appeared live on morning shows on FOX Chicago and Houston
 Covered by 50+ media outlets, reached over 5.5 million people

- C20 **ActiSight: Wearer Foreground Extraction using a Practical RGB-Thermal Wearable**
 Rawan Alharbi, Sougata Sen, Ada Ng, Nabil Alshurafa, Josiah Hester
 20th IEEE Intl. Conference on Pervasive Computing and Communications (PerCom'22)
 [10.1% full paper acceptance rate (18/178)]
- C19 **AdaSens: Adaptive Environment Monitoring by Coordinating Intermittently-Powered Sensors**
 Shuyue Lan, Zhilu Wang, [John Mamish](#), Josiah Hester, Qi Zhu
 27th Asia and South Pacific Design Automation Conference (ASP-DAC'22)
- C18 ⚙️ **REHASH: A Flexible, Developer Focused, Heuristic Adaptation Platform for Intermittently Powered Computing**
 Abu Bakar, Alexander Ross, K.S. Yildirim, Josiah Hester
 ACM Conference on Pervasive and Ubiquitous Computing (UbiComp'21)
Published in PACM IMMUT, Volume 5, Issue 3 (Sep 2021)
ACM SIGMOBILE Research Highlight 2022 – Featured in GetMobile Magazine
- C17 ⚙️ **VeriMask: Facilitating Decontamination of N95 Masks in the COVID-19 Pandemic: Challenges, Lessons Learned, and Safeguarding the Future**
 Yan Long, [Alexander Curtiss](#), Sara Rampazzi, Josiah Hester, Kevin Fu
 ACM Conference on Pervasive and Ubiquitous Computing (UbiComp'21)
Published in PACM IMMUT, Volume 5, Issue 3 (Sep 2021)
ACM SIGMOBILE Research Highlight 2022 – Featured in GetMobile Magazine
Best Poster Award Runner Up – COVID-19 Response Research at SenSys'21
Featured in ACM TechNews and Detroit Times
- C16 **SoK: Context Sensing for Access Control in the Adversarial Home IoT**
 Weijia He, Valerie Zhao, Olivia Morkved, Sabeeka Siddiqui, Earlene Fernandes, Josiah Hester, and Blase Ur
 IEEE European Symposium on Security and Privacy (EuroS&P'21)
- C15 **BFree: Enabling Battery-Free Sensor Prototyping with Python**
 Vito Kortbeek, Abu Bakar, Stefany Cruz, K.S. Yildirim, Przemysław Pawełczak, Josiah Hester
 ACM Conference on Pervasive and Ubiquitous Computing (UbiComp'21)
Published in PACM IMMUT, Volume 4, Issue 4 (Dec 2020)
Covered by The Independent, TechTimes, De Volkskrant. Featured in Make: Magazine

- C14  **Battery-free Game Boy**
Jasper de Winkel, Vito Kortbeek, Josiah Hester, and Przemysław Pawełczak
ACM Conference on Pervasive and Ubiquitous Computing (UbiComp'20)
Published in PACM IMWUT, Volume 4, Issue 3 (Sep 2020)
Distinguished Paper Award, IMWUT Vol. 4 (Top 3% of accepted papers)
ACM SIGMOBILE Research Highlight 2021 – Featured in GetMobile Magazine
Guinness World Records 2022 – Cutting Edge Science
Best Presentation Award–Audience Choice
Covered by 125 media outlets, reached over 20 million people
Most downloaded ACM IMWUT article of all time
- C13  **NeckSense: A Multi-Sensor Necklace for Detecting Eating Activities in Free-Living Conditions**
Shibo Zhang, Yuqi Zhao, Dzung Nguyen, Runsheng Xu, Sougata Sen,
Josiah Hester, and Nabil Alshurafa
ACM Conference on Pervasive and Ubiquitous Computing (UbiComp'20)
Published in PACM IMWUT, Volume 4, Issue 2 (Jun 2020)
Best Presentation Award–Audience Choice, Runner-Up
Covered by the Chicago Sun-Times
- C12 **Reliable Timekeeping for Intermittent Computing**
Jasper de Winkel, Carlo Delle Donne, Kasim Sinan Yildirim,
Przemysław Pawełczak and Josiah Hester
Architectural Support for Programming Languages and Operating Systems (ASPLOS '20)
[18.1% acceptance rate]
- C11 **Time-sensitive Intermittent Computing Meets Legacy Software**
Vito Kortbeek, Kasim Sinan Yildirim, Abu Bakar, Jacob Sorber,
Josiah Hester and Przemysław Pawełczak
Architectural Support for Programming Languages and Operating Systems (ASPLOS '20)
[18.1% acceptance rate]
- C10 **Experience: Design, Development and Evaluation of a Wearable Device for mHealth Applications**
George Boateng, Varun Mishra, Vivian Motti, John Batsis, Josiah Hester and Dave Kotz
25th Annual Conference on Mobile Computing and Networking (MobiCom'19)
[16.1% acceptance rate]
- C09 **To Mask? or Not to Mask: Balancing Privacy with Visual Confirmation Utility in Activity-Oriented Wearable Cameras**
Rawan Alharbi, Mariam Tolba, Lucia Petito, Josiah Hester, and Nabil Alshurafa
ACM Conference on Pervasive and Ubiquitous Computing (UbiComp'19)
Published in PACM IMWUT, Volume 3, Issue 3 (Sep 2019)

- C08 **InK: Reactive Kernel for Tiny Batteryless Sensors**
 Kasim S. Yildirim, Amjad Majid, Dimitris Patoukas, Koen Schaper,
 Przemek Pawelczak and Josiah Hester
 16th ACM Conference on Embedded Networked Sensor Systems (SenSys'18)
 [15.3% acceptance rate]
- C07 **Application Memory Isolation on Ultra-Low-Power MCUs**
 Taylor Hardin, Ryan Scott, Patrick Proctor, Josiah Hester, Jacob Sorber and David Kotz
 2018 USENIX Annual Technical Conference (USENIX ATC'18)
 [20.1% acceptance rate]
- C06 **The Future of Sensing is Batteryless, Intermittent, and Awesome**
Josiah Hester and Jacob Sorber.
 15th ACM Conference on Embedded Networked Sensor Systems (SenSys'17)
 [23.5% acceptance rate]
- C05  **Flicker: Rapid Prototyping for the Batteryless Internet-of-Things**
Josiah Hester and Jacob Sorber.
 15th ACM Conference on Embedded Networked Sensor Systems (SenSys'17)
 [17.2% acceptance rate]
Best Paper Nominee (top 3%)
- C04 **Timely Execution on Intermittently Powered Batteryless Sensors**
Josiah Hester, Kevin Storer, and Jacob Sorber
 15th ACM Conference on Embedded Networked Sensor Systems (SenSys'17)
 [17.2% acceptance rate]
- C03 **Amulet: An Energy-Efficient, Multi-Application Wearable Platform**
*Josiah Hester, Tianlong Yun, Travis Peters, Ron Peterson, Joseph Skinner,
 Barghav Golla, Kevin Storer, S. Hearndon, Kevin Freeman, Sarah Lord,
 Ryan Halter, David Kotz, and Jacob Sorber*
 14th ACM Conference on Embedded Networked Sensor Systems (SenSys'16)
 [17.6% acceptance rate]
- C02 **Tragedy of the Coulombs: Federating Energy Storage for Tiny,
 Intermittently-Powered Sensors**
Josiah Hester, Lanny Sitanayah, and Jacob Sorber
 13th ACM Conference on Embedded Networked Sensor Systems (SenSys'15)
 [19.8% acceptance rate]
- C01  **Ekho: Realistic and Repeatable Experimentation for Tiny Energy-Harvesting Sensors**
Josiah Hester, Timothy Scott and Jacob Sorber.
 12th ACM Conference on Embedded Networked Sensor Systems (SenSys'14)
 [17.9% acceptance rate]
Best Paper Award

Journal articles

- J23 **SCRIBE Design and Validation: Simultaneous Cardiac and Respiratory Impedance Biomarkers with Electromechanics**
Jacob M Cook, Chuoqi Chen, Fatih B Inan, Christopher J Nichols, Farhan N Rahman, Afra Nawar, Lara J Reichelt, Michael Cho, Yaman Sangar, Josiah Hester, Omer T Inan
IEEE Sensors Journal (2026) [Impact Factor: 4.5]
- J22 **Design of a wireless, fully implantable platform for in-situ oxygenation of encapsulated cell therapies**
Chris Wright, Abhijith Surendran, Inkyu Lee, Juan E Villacres, Alex Ezerins, Alexander Curtiss, Nathan Brown, Junyi Liu, Blaine Rothrock, Peter Rios, Daisy Lopez, Ira Joshi, Hafsa Nasir, Han Wang, Cody Fell, Anthony Davis, Jose Oberholzer, Josiah Hester, Tzahi Cohen-Karni, Jonathan Rivnay, Omid Veisheh
Device, Cell Press (2026) [Impact Factor: 8.0]
- J21 **Optimization and control of actuator networks in variable geometry truss systems using genetic algorithms**
Jianzhe Gu, Ziwen Ye, Tucker Rae-Grant, Shuhong Wang, Ding Zhao, Josiah Hester, Victoria A. Webster-Wood & Lining Yao
Nature Communications, 16, Article number: 8432 (2025) [Impact Factor: 15.7]
- J20 **From Component to System: Rethinking Edge Computing Design through a Carbon-Aware Lens.**
Chen, Xuesi, Ariel Goldner, Eren Yildiz, Ilan Mandel, Tingyu Cheng, Josiah Hester, and Udit Gupta.
ACM SIGENERGY Energy Informatics Review 5, no. 2 (2025): 125-131.
- J19 **Development of a battery free, solar powered, and energy aware fixed wing unmanned aerial vehicle.**
Liller, Jackson, Rishabh Goel, Abdul Aziz, Josiah Hester, and Phuc Nguyen.
Scientific Reports 15, no. 1 (2025): 6141. [Impact Factor: 3.9]
- J18 **Slower is Greener: Acceptance of Eco-feedback Interventions on Carbon Heavy Internet Services.**
Kim, Hyeonwook, Sydney Young, Xuesi Chen, Udit Gupta, and Josiah Hester.
ACM Journal on Computing and Sustainable Societies 3, no. 2 (2025): 1-21.
- J17 **“The Devil You Know”: Barriers and Opportunities for Co-Designing Microclimate Sensors, A Case Study of Manoomin.**
Greenlee, Eric, Blaine Rothrock, Hyeonwook Kim, Ellen Zegura, and Josiah Hester
ACM Journal on Computing and Sustainable Societies 2, no. 3 (2024): 1-30.

- J16 **Bioinspired Camouflage Fibers with Computer Vision-Guided Chromatic Adaptation.**
Huang, Luyao, Tingyu Cheng, Xianzhe Zhang, Haichao Zhang, Tejonidhi Deshpande, Yuan-qiao Li, Zhi Xu, Gregory D. Abowd, Yun Fu, Yongmin Liu, Josiah Hester, Jun Li, Hongli Zhu
ACS nano 19, no. 21 (2025): 19697-19705. [Impact Factor: 16.0]
- J15 **Empowering Users to Make Sustainability-Forward Decisions for Computing Services**
Sydney Young, Udit Gupta, Josiah Hester
Communications of the ACM, Volume 68, 7 (June 2025). 80 - 85. [Impact Factor: 22.7]
- J14 **NIR-sighted: A Programmable Streaming Architecture for Low-Energy Human-Centric Vision Applications**
John Mamish, Yaman Sangar, Rawan Alharbi, Panchami Kamath, Sougata Sen, Shashank Holla, Nabil Alshurafa, Josiah Hester
ACM Transactions on Embedded Computing Systems.
Volume 23, Issue 6 (September 2024) Article No.: 101, Pages 1 - 26
- J13 **Perceptions of Wearable Health Tools Post the COVID-19 Emergency in Low-Income Latin Communities: Qualitative Study**
Stefany Cruz, Claire Lu, Mara Ulloa, Alexander Redding, Josiah Hester, Maia Jacobs
Journal of Medical Internet Research Mhealth and Uhealth. 2024. Volume 12.
Covered by CBS News Chicago, Crain's Chicago Business
- J12 **Greentooth: Robust and Energy Efficient Wireless Networking for Batteryless Devices**
Simeon Babatunde, Arwa Alsubhi, Josiah Hester, Jacob Sorber
ACM Transactions on Sensor Networks. Volume 20, Issue 3, Article No.: 66, pp 1–31
- J11  **The Internet of Batteryless Things**
Saad Ahmed, Bashima Islam, Kasim Sinan Yildirim, Marco Zimmerling, Przemysław Pawełczak, Muhammad Hamad Alizai, Brandon Lucia, Luca Mottola, Jacob Sorber, and *Josiah Hester*.
Communications of the ACM 67, 3 (March 2024), 64–73. [Impact Factor: 22.7]
Cover Feature
- J10 **Electrocatalytic on-site oxygenation for transplanted cell-based-therapies**
Inkyu Lee, Abhijith Surendran, Samantha Fleury, Ian Gimino, Alexander Curtiss, Cody Fell, Daniel Shiwerski, Omar El-Refy, Blaine Rothrock, Seonghan Jo, Tim Schwartzkopff, Abijeet Singh Mehta, Sharon John, Xudong Ji, Georgios Nikiforidis, Adam Feinberg, *Josiah Hester*, Douglas J. Weber, Omid Veisesh, Jonathan Rivnay, Tzahi Cohen- Karni
Nature Communications, 14, Article number: 7019 (2023) [Impact Factor: 15.7]
- J09  **User-Centered Perspectives on the Design of Batteryless Wearables**
Arwa Alsubhi, Reza Ghaiumy Anaraky, Simeon Babatunde, Abu Bakar, Thomas Cohen, *Josiah Hester*, Bart Knijnenburg, Jacob Sorber
International Journal of Human–Computer Interaction, Vol. 39. Issue 1 (Nov 2023)

- Jo8 **Rationale and design of the SenseWhy project: A passive sensing and ecological momentary assessment study on characteristics of overeating episodes**
 Nabil I. Alshurafa, Tammy K. Stump, Christopher S. Romano, Angela F. Pfammatter, Annie W. Lin, Josiah Hester, Donald Hedeker, Evan Forman, and Bonnie Spring.
 Sage DIGITAL HEALTH. 2023; 9. [Impact Factor: 4.687]
- Jo7 **Waking from Paralysis: Revitalizing Conceptions of Climate Knowledge and Justice for More Effective Climate Action**
 Kimberly R. Marion Suiseeya, Margaret G. O'connell, Edith Leoso, Marvin Shingwe Biness Neme Defoe, Alexandra Anderson, Megan Bang, Pete Beckman, Anne-Marie Boyer, Jennifer Dunn, Jonathan Gilbert, *Josiah Hester*, Daniel E. Horton, Dylan Bizhikiins Jennings, Philomena Kebec, Nancy C. Loeb, Patricia Loew, William M. Miller, Katie Moffitt, Aaron I. Packman, Michael Waasegiizhig Price, Beth Redbird, Jennie Rogers, Rajesh Sankaran, James Schwoch, Pamala Silas, Weston Twardowski, Nyree Zerega
 The ANNALS of the American Academy of Political and Social Science, Vol. 700. Issue 1, p. 166-182, (May 2022)
- Jo6 **Counting Bites With Bits: Expert Workshop Addressing Calorie and Macronutrient Intake Monitoring**
 Annie Wen Lin, Fengqing Zhu, Roozbeh Ghaffari, *Josiah Hester*, Edward Delp, John A Rogers, Bonnie Spring and Nabil Alshurafa
 Journal of Medical Internet Research (JMIR), 21(12), p.e14904 (November 2019)
 [Impact Factor: 5.43]
- Jo5 **Remote and Wireless Long-term Vibration Monitoring of Historic Monuments**
Josiah Hester, Saurabh Prabhu, Sez Atamturkter and Jacob Sorber
 Procedia Engineering, Volume 199, Pages 3302-3307, (2017)
 Peer reviewed by EUROLYN 2017
- Jo4 **Realistic and Repeatable Emulation of Energy Harvesting Environments**
Josiah Hester, Lanny Sitanayah, Timothy Scott and Jacob Sorber
 ACM Transactions on Sensor Networks (TOSN), Volume 13, Issue 2 (June 2017)
- Jo3 **Shoulder Angel: An Open Platform for Reprogramming Wayward Wireless Sensors**
 Nicole Tobias, Michael Bolton, *Josiah Hester* and Jacob Sorber
 IEEE Embedded Systems Letters, Volume 8, Issue 4 (December 2016)
- Jo2 **Persistent Clocks for Batteryless Sensing Devices**
Josiah Hester, Nicole Tobias, Amir Rahmati, Lanny Sitanayah, Daniel Holcomb, Kevin Fu, Wayne Burlison and Jacob Sorber
 ACM Transactions on Embedded Computing (TECS), 15, 4, Article 77 (August 2016)

- J01 **uRespond: iPad as Interactive, Personal Response System**
 Sam Bryfczynski, Rebecca Brown, *Josiah Hester*, Andrew Herrmann, Danielle Koch, Melanie Cooper, and Nathaniel Grove
 Journal of Chemical Education 2014 91 (3), 357-363 (February 2014)
-
- Notes, Briefs, and Workshop Papers (reviewed, archival)
- W20  **Raising Soil Microbial Fuel Cells into Robust Bio-Batteries**
 Simon Guterman, Pichaya Limprayoon, Diego Shipmon, John Mamish, Josiah Hester and Yaman Sangar
 14th Intl. Workshop on Energy Harvesting & Energy-Neutral Sensing Systems (ENSsys 2026)
Best Paper Award
- W19 **"I Would Never Trust Anything Western": Kumu (Educator) Perspectives on Use of LLMs for Culturally Revitalizing CS Education in Hawaiian Schools.**
 Mhasakar, Manas, Rachel Baker-Ramos, Benjamin Carter, Evyn-Bree Helekahi-Kaiwi, and Josiah Hester.
 Proceedings of the Extended Abstracts of the CHI Conference on Human Factors in Computing Systems, pp. 1-10. 2025.
- W18 **Enabling Restorative Hawaiian Futurism via a Tabletop Role-Playing Game and Digital Ha 'i Mo 'olelo.**
 Baker-Ramos, Rachel, Michael Parkin, Angelica Raza-Furtado, Alika Spahn Naihe, Jack Hobbs, Jeffrey Vierra, Aaron Ramirezz, Josiah Hester.
 Companion Proceedings of the 2024 Annual Symposium on Computer-Human Interaction in Play (CHI PLAY), pp. 11-17. 2024.
- W17 **Transient Internet of Things: Redesigning the Lifetime of Electronics for a More Sustainable Networked Environment**
 Tingyu Cheng, Gregory D Abowd, HyunJoo Oh, *Josiah Hester*
 2nd ACM Workshop on Sustainable Computer Systems (HotCarbon '23)
- W16 **Exploring Batteryless UAVs by Mimicking Bird Flight**
 Rishabh Goel, Tien Pham, Phuc Nguyen, *Josiah Hester*
 9th Workshop on Micro Aerial Vehicle Networks, Systems, and Applications (DroNet '23)

- W15 **Augmented Reality's Potential for Identifying and Mitigating Home Privacy Leaks**
 Stefany Cruz, Logan Danek, Shinan Liu, Christopher Kraemer, Zixin Wang, Nick Feamster,
 Danny Yuxing Huang, Yaxing Yao, *Josiah Hester*
 Usable Security and Privacy Symposium (USEC 2023)
- W14  **Circularity in Energy Harvesting Computational "Things"**
 Nivedita Arora, Vikram Iyer, Hyunjooh Oh, Gregory Abowd, *Josiah Hester*
 10th Intl. Workshop on Energy Harvesting & Energy-Neutral Sensing Systems (ENSsys 2022)
Best Position Paper Award
- W13 **Towards a Toolkit for Free Living Wearable Development**
 Blaine Rothrock, Alexander Curtiss, Juyang Bai, *Josiah Hester*
 10th Intl. Workshop on Human Activity Sensing Corpus and its Application (HASCA 2022)
- W12 **Impacts of Image Obfuscation on Fine-grained Activity Recognition in Egocentric Video**
 Soroush Shahi, Rawan Alharbi, Yang Gao, Sougata Sen, Aggelos K Katsaggelos,
Josiah Hester, Nabil Alshurafa
 18th IEEE Workshop on Context and Activity Modeling and Recognition (CoMoRea 2022)
- W11  **HeatSight: Wearable Low-power Omni Thermal Sensing**
 Rawan Alharbi, Chunlin Feng, Sougata Sen, Jayalakshmi Jain, *Josiah Hester*, Nabil Alshurafa
 25th ACM International Symposium on Wearable Computers (ISWC'21)
Best Presentation Award
- W10 **hls4ml: An Open-Source Co-Design Workflow to Empower Scientific Low-Power Machine Learning Devices**
 Farah Fahim, Benjamin Hawks, Christian Herwig, James Hirschauer, Sergio Jindariani,
 Nhan Tran, Luca Carloni, Giuseppe Di Guglielmo, Philip Harris, Jeffrey Krupa,
 Dylan Rankin, Manuel Blanco Valentin, *Josiah Hester*, Yingyi Luo, John Mamish,
 Seda Memik, Thea Aarrestad, Hamza Javed, Vladimir Loncar, Maurizio Pierini,
 Adrian Alan Pol, Sioni Summers, Javier Duarte, Scott Hauck, Shih-Chieh Hsu,
 Jennifer Ngadiuba, Mia Liu, Duc Hoang, Edward Kreinar and Zhenbin Wu
 1st International Research Symposium on Tiny Machine Learning (tinyML'21)
- Wo9 **Towards Battery-Free Body Sensor Networks**
 Sougata Sen, Sunghoon Ivan Lee, Robert Jackson, Rui Wang,
 Nabil Alshurafa, *Josiah Hester* and Jeremy Gummeson
 8th ACM Workshop on Energy Harvesting & Energy Neutral Sensing Systems (ENSsys'20)
- Wo8 **"I Am Not an Engineer": Understanding How Clinicians Design & Alter Assistive Tech**
 Rahaf Alharbi, Ada Ng, Rawan Alharbi and *Josiah Hester*
 Extended Abstracts of the 2020 CHI Conference on Human Factors in Computing Systems

- W07 **On the Accuracy of Network Synchronization Using Persistent Hourglass Clocks**
Eren Curuk, Kasim Sinan Yildirim, Przemyslaw Pawelczak and *Josiah Hester*
7th ACM Workshop on Energy Harvesting & Energy Neutral Sensing Systems (ENSsys'19)
- W06 **Feasibility of Multi-Tenancy on Intermittent Power**
Dimitris Patoukas, Kasim Sinan Yildirim, Amjad Yousef Majid,
Josiah Hester, and Przemyslaw Pawelczak
6th ACM Workshop on Energy Harvesting & Energy Neutral Sensing Systems (ENSsys'18)
- W05 **Making Sense of Intermittent Energy Harvesting**
Abu Bakar and *Josiah Hester*
6th ACM Workshop on Energy Harvesting & Energy Neutral Sensing Systems (ENSsys'18)
- W04 **Backing Out of Backscatter for Intermittent Wireless Networks**
Carlo Delle Donne, Kasim Sinan Yildirim, Amjad Yousef Majid,
Josiah Hester, and Przemyslaw Pawelczak
6th ACM Workshop on Energy Harvesting & Energy Neutral Sensing Systems (ENSsys'18)
- W03 **Personalized Medicine in the Wearable Era: Translational Barriers and Call to Action**
Nabil Alshurafa and *Josiah Hester*
ACM Workshop on Human-centered Sensing, Networking, and Systems (HumanSys'17)
- W02 **Deploying Data-Driven Security Solutions on Resource-Constrained Wearable IoT Systems**
Hang Cai, Tianlong Yun, *Josiah Hester* and Krishna Venkatasubramanian
Workshop on the Internet of Things Computing and Applications (IoTCA'17)
- W01 **Realistic Simulation for Tiny Batteryless Sensors**
Matt Furlong, *Josiah Hester*, Kevin Storer and Jacob Sorber
4th ACM Workshop on Energy Harvesting & Energy Neutral Sensing Systems (ENSsys'16)

Opinions, Viewpoints, and Other Articles

- R22 **Who Owns the Wai (Water)? AI, Power, and the Public Trust**
Josiah Hester
Communications of the ACM (2026)
- R21 **AI Data Centers Are the New Plantations—Unless Hawai'i Builds Them Differently**
Keolu Fox, Josiah Hester, Kelsey Amos, Keoni Defranco
Civil Beat – Community Voices (2026)
- R20 **Georgia's Data Center Boom Requires a Strategy, Not Just Hoping for the Best**
Ahmed Saaed, Josiah Hester
The Atlanta Journal-Constitution (2026)

- R19 **Mālama ‘Āina: Coding To Restore Land and Identity In Hawaii**
 Josiah Hester
 Hello World. Issue 29. Raspberry Pi Foundation (2026)
- R18 **A research *jiimaan*: Adapting to protect manoomin**
 Jeff Feng, Michael Waasegiizhig Price, Josiah Hester, Kimberly Marion Suiseeya
 IAGLR Lakes Letter, Summer 2024, No. 22
- R17 **Community-Driven Mobile and Ubiquitous Computing**
 Blaine Rothrock, Eric Greenlee, Josiah Hester
 GetMobile: Mobile Computing and Communications 27 (3), 5-9
- R16  **Protean: Adaptive Hardware-Accelerated Intermittent Computing**
 Abu Bakar, Rishabh Goel, Jasper de Winkel, Jason Huang, Saad Ahmed, Bashima Islam, Przemysław Pawełczak, Kasim Sinan, *Josiah Hester*
 GetMobile: Mobile Computing and Communications. March 2023, Vol. 27 Iss. 1. pp 5-10
Selected as Research Highlight 2023
- R15 **Arms Length: The Future of Clean Computing May Be Dirty**
 Colleen Josephson, Weitao Shuai, Gabriel Marciano, Pat Pannuto,
Josiah Hester, George Wells
 GetMobile: Mobile Computing and Communications. September 2022, Vol. 26 Iss. 3.
- R14 **Perpetual Computing with CircuitPython**
 Vito Kortbeek, Przemysław Pawełczak, *Josiah Hester*
 Make Magazine. August 2022, Vol. 82
- R13  **Heuristic Adaptation for Intermittently Powered Batteryless Sensors**
 Abu Bakar, Alexander Ross, K.S. Yildirim, *Josiah Hester*
 GetMobile: Mobile Computing and Communications. June 2022, Vol. 26 Iss. 2. pp 20-24
Selected as Research Highlight 2022
- R12  **VeriMask: Sensor Platform for Decontamination of N95 Masks**
 Yan Long, Alexander Curtiss, Sara Rampazzi, *Josiah Hester*, Kevin Fu
 GetMobile: Mobile Computing and Communications. June 2022, Vol. 26 Iss. 2. pp 25-28
Selected as Research Highlight 2022
- R11 **An inclusive vision of computing will help us accelerate progress on the SDGs**
Josiah Hester
 United Nations DESA Voice: SDG Blog, May (2022)
- R10  **Battery-Free Game Boy: Sustainable Interactive Devices**
 Jasper de Winkel, Vito Kortbeek, *Josiah Hester*, Przemysław Pawełczak
 GetMobile: Mobile Computing and Communications. June 2021, Vol. 25 Iss. 2. pp 22-26
Selected as Research Highlight 2021

- R09 **Technical Perspective: eBP Rides the Third Wave of Mobile Health**
Josiah Hester
 Communications of the ACM, August 2021, Vol. 64 No. 8, Page 117 (2021)
- R08 **The World Needs Native Scientists Now**
Josiah Hester
 Northwestern Magazine, Voices Feature, Spring (2021)
- R07 **How to Curtail Oversensing in the Home**
 Connor Bolton, Kevin Fu, *Josiah Hester* and Jun Han
 Communications of the ACM, June 2020, Vol. 63 No. 6, Pages 20-24 (2020)
- R06 **Augmenting Self-Reports with Wearable Video Camera Data to Improve Diet-Recall**
 Erin Bruns, Annie Lin, Rawan Alharbi, Sougata Sen, *Josiah Hester*, Nabil Alshurafa.
 Annals of Behavioral Medicine, San Francisco, CA. (2020)
Oral Abstract Presentation at 41st Annual Meeting of the Society of Behavioral Medicine
- R05 **Batteries Not Included**
Josiah Hester and Jacob Sorber
 XRDS: Crossroads, The ACM Magazine for Students, 26 (1), 23-27 (2019)
- R04 **KeyNote: Why Wear a Battery? The Future of Wearables May be Batteryless**
Josiah Hester
 5th ACM Workshop on Wearable Systems and Applications (WearSys'19)
- R03 **Holistic Energy Management with μ Processor Co-Optimization in Fully Integrated Battery-less IoTs**
Josiah Hester, Tianyu Jia and Jie Giu
 31st IEEE International System-On-Chip Conference (SOCC'18)
- R02 **PhD Forum: Sophisticated Sensing on Transient Power**
Josiah Hester
 13th ACM Conference on Embedded Networked Sensor Systems (SenSys'15)
- R01 **Classroom Uses for BeSocratic**
 Sam Bryfczynski, Rebecca Brown, *Josiah Hester*, Andrew Herrmann, Danielle Koch, Melanie Cooper and Nathaniel Grove
 The Impact of Pen and Touch Technology on Education, Springer, 2015, 127-136

Posters and Demos

- P07  **Poster: Automating decontamination of N95 masks for frontline workers in COVID-19 pandemic**
 Yan Long, Alexander Curtiss, Sara Rampazzi, *Josiah Hester*, Kevin Fu
 18th ACM Conference on Embedded Networked Sensor Systems (SenSys'20)
Best Poster Award Runner Up – COVID-19 Response Research

- P06 **Poster: The Energy Harvesting Mode Abstraction**
 Abu Bakar and *Josiah Hester*
 16th ACM Conference on Embedded Networked Sensor Systems (SenSys'18)
- P05 **Demo: The Amulet Wearable Platform**
Josiah Hester, Tianlong Yun, Travis Peters, Ron Peterson, Joseph Skinner,
 Barghav Golla, Kevin Storer, S. Hearndon, Ryan Halter, David Kotz, and Jacob Sorber
 14th ACM Conference on Embedded Networked Sensor Systems (SenSys'16)
- P04  **Poster: Towards Robust Reprogrammability for Wireless Sensors**
 Nicole Tobias, Connor Bolton, *Josiah Hester*, Lanny Sitanayah and Jacob Sorber
 13th ACM Conference on Embedded Networked Sensor Systems (SenSys'15)
Best Poster Award
- P03 **Poster: A Hardware Platform for Separating Energy Concerns in Tiny, Intermittently-Powered Sensors**
Josiah Hester, Lanny Sitanayah and Jacob Sorber
 13th ACM Conference on Embedded Networked Sensor Systems (SenSys'15)
- P02 **Poster: Ekho: Realistic And Repeatable Experimentation For Tiny Energy-harvesting Sensors**
Josiah Hester, Timothy Scott and Jacob Sorber
 12th ACM Conference on Embedded Networked Sensor Systems (SenSys'14)
- P01  **Enabling Sustainable Sensing in Adverse Environments**
Josiah Hester, Larry King, Jay Propst, Kalyan Piratla, and Jacob Sorber
 IEEE International Conference on Sensing, Communication, and Networking (SECON'13)
Best Poster Award

Funding

Funding awarded since 2017: **\$14.6 million** as **PI/Lead**, and **\$60 million total**

- 2025 **SCC-IRG: Edge AI, Biofabrication, and Data Science for Disaster Preparedness and Community Wellbeing in Hawaii (CNS-2531574)**
 National Science Foundation, \$1,249,999 Role: **Co-PI**, Awarded: Sep 2025
https://www.nsf.gov/awardsearch/showAward?AWD_ID=2531574
- 2024 **ROGUE - Rx On-site Generation Using Electronics**
 Advanced Research Projects Agency for Health (ARPA-H) – REACT Program
Total: \$45,021,264 **Lab Share:** \$4,539,727 Role: **TA3/Integration Lead**, Awarded: Jul 2024

- 2023 **Targeted Hybrid Oncotherapeutic Regulation (THOR)**
Advanced Research Projects Agency for Health (ARPA-H) – Open BAA
Total: \$45,021,264 **Lab Share:** \$4,897,076 **Role:** **Integration Lead**, **Awarded:** Sep 2023
- 2023 **Collaborative Research: DESC: Type 2: Delphi: Life-time aware design frameworks for sustainable edge devices (CNS-2324861)**
National Science Foundation, \$570,000, **Role:** **Co-PI**, **Awarded:** Sep 2023
https://www.nsf.gov/awardsearch/showAward?AWD_ID=2324861
- 2023 **SCC-IRG Track 1: Strengthening Resilience of Ojibwe Nations Across Generations (STRONG) (CNS-2233912)**
National Science Foundation, \$2,00,000, **Role:** **Co-PI**, **Awarded:** Aug 2023
https://www.nsf.gov/awardsearch/showAward?AWD_ID=2233912
- 2023 **Self-sustaining sensorized muscle-based biohybrid technologies with integrated control**
Department of Defense, Multidisciplinary University Research Initiative (MURI)
Total: \$6,250,000 **GT Share:** \$1,031,996 **Role:** **Co-PI**, **Awarded:** Apr 2023
- 2022 **Collaborative Research: HCC: Small: Toolkits for Creating Interaction-powered Energy-aware Computing Systems (CNS-2228983)**
National Science Foundation, \$250,000, **Role:** **PI**, **Awarded:** Sep 2022
https://www.nsf.gov/awardsearch/showAward?AWD_ID=2228983
- 2022 **Focused CoPe: Strengthening Resilience of Manoomin, the Sentinel Species of the Great Lakes, with Data-Science Supported Seventh Generation Stewardship**
National Science Foundation, \$5,000,000, **Role:** **PI and Director**, **Awarded:** Aug 2022
https://www.nsf.gov/awardsearch/showAward?AWD_ID=2209226
This award established the first NSF Coastlines and People Hub in the Great Lakes
- 2022 **CAREER: Enabling Dynamic, Adaptive, and Reliable Battery-free Embedded Computing (CNS-2145584)**
National Science Foundation, \$631,886, **Role:** **PI**, **Awarded:** Feb 2022
https://www.nsf.gov/awardsearch/showAward?AWD_ID=2145584
- 2021 **Center for Native American and Indigenous Research Phase II (905-06863)**
Mellon Foundation, \$1,464,000, **Role:** Co-PI, **Awarded:** Jun 2021
<https://mellon.org/grants/grants-database/grants/northwestern-university/1905-06863/>
- 2021 **From Soil to Space: Combining Novel Sensors and Satellite Imagery for Wetland Ecosystem Monitoring to Support Resilience for Tribal Communities**
Research Catalyst Program at Northwestern, \$95,920 **Role:** **PI**, **Awarded:** Oct 2021

- 2021 **Collaborative Research: BPC-DP: Culturally Relevant Physical Computing for Sustainability Programs for Native Hawaiian Students (CNS-2137784)**
National Science Foundation, \$347,699, (\$103k at NU) Role: **PI**, Awarded: Nov 2021
https://www.nsf.gov/awardsearch/showAward?AWD_ID=2137784
- 2021 **NSF-BSF: CNS Core: Small: Reliable and Zero-Power Timekeepers for Intermittently Powered Computing Devices via Stochastic Magnetic Tunnel Junctions (CNS-2106562)**
National Science Foundation, \$498,899, Role: **PI**, Awarded: Aug 2021
https://www.nsf.gov/awardsearch/showAward?AWD_ID=2106562
- 2021 **Collaborative Research: CNS Medium: Systems Foundations for Battery-free Body Area Intelligence and Sensing (CNS-2107400)**
National Science Foundation, \$300,000, (\$600k total) Role: **PI**, Awarded: Jun 2021
https://www.nsf.gov/awardsearch/showAward?AWD_ID=2107400
- 2021 **EAT: A Reliable Eating Assessment Technology for Free-living Individuals**
National Institute of Diabetes and Digestive and Kidney Diseases
\$3,868,150, Role: Co-PI, Awarded: Jun 2021
- 2021 **Normalizing Timing of Rhythms Across Internal Networks of Circadian Clocks (NTRAIN)**
Defense Advanced Research Projects Agency (DARPA) – BTO, ADAPTER Program
Total: \$21,701,894 **Lab Share:** \$1,076,749 Role: **Integration Co-Lead**, Awarded: May 2021
- 2021 **SCC-CIVIC-PG Track B: Strengthening Resilience of Ojibwe Nations across Generations (STRONG): Sovereignty, Food, Water, and Cultural (in)Security (CNS-2044053)**
National Science Foundation, \$50,000 Role: Co-PI, Awarded: May 2021
https://www.nsf.gov/awardsearch/showAward?AWD_ID=2038853
- 2020 **CPS: Medium: Batteryless Sensors Enabling Smart Green Infrastructure (CNS-2038853)**
National Science Foundation, \$1,232,000, Role: **PI**, Awarded: Sep 2020
https://www.nsf.gov/awardsearch/showAward?AWD_ID=2038853
- 2020 **SWIFT: LARGE: Dynamics and Security Aware Predictive Spectrum Sharing with Active and Passive Users (ECCS-2030251)**
National Science Foundation, \$550,000, Role: Co-PI, Awarded: Sep 2020
https://www.nsf.gov/awardsearch/showAward?AWD_ID=2030251
- 2020 **R21 Trailblazer: BehaviorSight: Privacy Enhancing Wearable System to Detect Health Risk Behaviors in Real Time (EB030305-01)**
National Institute of Biomedical Imaging and Bioengineering,
\$606,713, Role: Co-PI, Awarded: Sep 2020
<https://www.nibib.nih.gov/node/121116>

- 2020 **RAPID: Low-cost, Batteryless Smart Personal Protective Equipment (PPE) Tackling the COVID-19 Pandemic (CNS-2032408)**
National Science Foundation, \$200,000, Role: **PI**, Awarded: Jun 2020
https://www.nsf.gov/awardsearch/showAward?AWD_ID=2032408
- 2019 **NSF-BSF: CCSS: Resistance Tomography with 2D Sensor Membranes (ECCS-1912694)**
National Science Foundation, \$490,751, Role: Co-PI, Awarded: Jul 2019
https://www.nsf.gov/awardsearch/showAward?AWD_ID=1912694
- 2019 **EAGER: SaTC: Early-Stage Interdisciplinary Collaboration: Privacy Enhancing Framework to Advance Behavior Models (CNS-1915847)**
National Science Foundation, \$315,471, Role: Co-PI, Awarded: Jun 2019
https://www.nsf.gov/awardsearch/showAward?AWD_ID=1915847
- 2019 **CRII: CSR: Systems and Tooling Enabling Adaptive Intermittent Computing (CNS-1850496)**
National Science Foundation, \$199,000, Role: **PI**, Awarded: Feb 2019
https://www.nsf.gov/awardsearch/showAward?AWD_ID=1850496
- 2017 **Harnessing Microbial Fuel Cells for Long Term Water System Monitoring**
Northwestern Institute on Complex Systems, \$30,000, Role: Co-PI, Awarded: July 2017

Research Artifacts

Many of my projects have software and hardware artifacts which I push to [open-source](#) and release to enable community research efforts and reduce access barriers. See: <https://github.com/ka-moamoa>

- 2024 **Soil-Powered Computing for Practical SMFC Design [C32]**
Designs, schematics, BOM for building Soil Microbial Fuel Cells for computing.
https://github.com/ka-moamoa/Practical_SMFC_Design_Guide
- 2022 **Protean hardware and software accompanying [C25]**
Hardware schematics, layouts, BOM, along with firmware for Protean.
<https://protean.systems/>
- 2022 **Battery-free MakeCode accompanying [C22]**
Modified Microsoft MakeCode compiler for intermittent computing.
<https://github.com/ka-moamoa/makecode-ic>
- 2022 **FaceBit hardware and software accompanying [C21]**
Hardware designs in Altium, firmware, and phone application for smart face masks.
<https://facebit.health/>

- 2021 **VeriMask hardware and software accompanying [C17]**
Hardware designs in Altium, firmware, and phone application for mask decontamination.
<https://spqr1ab1.github.io/N95deconProject.html>
- 2021  **Battery-free Embedded Python Runtime accompanying [C15]**
BFREE runtime system, and hardware module.
<https://github.com/TUDSSL/BFree>
Over 250 stars on GitHub, featured on AdaFruit's Blog
- 2020 **Battery-free Game Boy platform accompanying [C14]**
ENGAGE hardware and MPatch differential checkpointing system
<http://freethegameboy.info/>
- 2020 **NeckSense hardware / software and eating dataset accompanying [C13]**
Algorithms, hardware designs, and the largest wearable eating dataset to date.
<http://www.necksense.info/>
- 2020 **BOTOKS timekeeper hardware and software accompanying [C12]**
Accurate and reliable timekeeping for batteryless, intermittently powered devices
<https://github.com/TUDSSL/Botoks>
- 2020 **TICS automated checkpointing system accompanying [C11]**
Automatic checkpointing system for intermittent programs.
<https://github.com/TUDSSL/TICS>
- 2019 **Intermittent kernel (InK) code accompanying [Co8]**
Task based runtime system for intermittently powered energy harvesting devices.
<https://github.com/tudssl/ink>
- 2019  **Amulet wearable platform described in [Co3, C10]**
Open source release of full stack HW/SW wearable platform and toolchain.
<https://github.com/AmuletGroup/amulet-project>
Used in 11 (and counting) NIH funded studies. 100+ participants/wearers.
- 2017 **Flicker battery-free rapid prototyping platform accompanying [Co5]**
Open hardware platform for prototyping batteryless, energy harvesting devices.
<https://github.com/PERSISTLab/FlickerPlatform>
- 2017 **Mayfly language and runtime accompanying [Co4] superseded by [Co8]**
Task-graph based language and runtime for time sensitive energy harvesting devices.
<https://github.com/PERSISTLab/mayfly-lang>
- 2017 **Ekho energy harvesting emulator code and hardware described in [Co1, Jo4]**
Ekho records and replays energy harvesting environments for repeatable testing.
<https://github.com/PERSISTLab/ekho>

- 2016 **Ekho simulator and toolchain accompanying [Wo1]**
 Energy harvester aware instruction level simulator for intermittently powered devices.
<https://github.com/PERSISTLab/BatterylessSim>

Patents

- 2026 **“Consumer-Facing Eco-Feedback System, Model, And Interface For Reducing Large-Scale Ai Carbon Emissions And Energy Use”**
 US Patent Application No. 19/532,966 Filed: February 06, 2026
- 2026 **“Battery-free unmanned aerial vehicle”**
 US Patent 12,539,984. Granted. Josiah Hester, Rishabh Goel, VP Nguyen, Tien Pham
- 2025 **“Programmable streaming architecture for low-energy human-centric vision applications”**
 US Patent App. 19/227,080. Pending. John Mamish, Josiah Hester, R Alharbi, N Alshurafa
- 2025 **“Terrestrial microbial fuel cell”**
 US Patent App. 18/989,416. Pending. Josiah Hester, GF Wells, B Yen, W Shuai, N Arora
- 2025 **Method and system for a smart mask**
 US Patent App. 18/718,693. Pending. Josiah Hester, A Curtiss, B Rothrock, NI Alshurafa
- 2022 **“Systems And Methods For Interaction-powered Smart Environment Automation”**
 US Patent App. 63/375,188. Pending. Yang Zhang, *Josiah Hester*, Xiaoying Xi
- 2022 **“Method and System for Activity Detection with Obfuscation” – US Patent US11336823B2**
 Granted: May 17, 2022. Nabil Alshurafa, *Josiah Hester*
- 2020 **“Batteryless Sensor for Detecting Occupancy and Activity” – US Patent US11536832B2**
 Granted: Dec 27, 2022. Jacob Sorber, *Josiah Hester*, Harsh Desai, Nicole Tobias, Arwa Alshubi, Taylor Hardin

Talks and Panels

All first-author conference papers listed above were also given as presentations at the respective conference and are not listed here. [ Denotes plenary, keynote, or distinguished speaker honor.]

- 2026  **Rhizome 7x7 co-presenter with AfrotroniX – “ENEHANA | KÖDKLA”**
 New Muesem, NYC – *closing artist/technologist pair*
- 2026 **Elevating Indigenous Excellence in STEM**
 Virtual Panel, SACNAS

- 2026  **AI is the Next Plantation: Unless we rethink it**
Eahou Fest, Honolulu Hawaii, Keynote Speaker
- 2025  **Batteries Not Included: Reimagining Computing for the Next Trillion Devices**
Florida Atlantic University, Institute for Sensing and Embedded Network System Engineering (I-SENSE), Distinguished Lecture Series
- 2025  **Sustainability and IoT**
Resideo Tech Speaker Series, Keynote Speaker
- 2025  **‘Āina and Academia: Cultivating Curiosity by Connecting Place, Culture, and STEAM Research.**
STEAM Leadership Conference 2025, Keynote Speaker
- 2025  **The Present and Future of Sustainable Smart Medical Devices.**
GT WISH Center x NSF SUSMED Joint Workshop, Keynote Speaker
- 2024  **Graceful Failure Recovery– The NSF CAREER Pursuit.**
NSF CISE CAREER Workshop Plenary Speaker
- 2024  **Reimagining Personalized Health with Biosensors, Biologics, and Behavioral Sensing**
Keynote, AI in Health Conference, Ken Kennedy Institute
- 2023  **The Nexus of Community Engagement and Coastal Research**
Plenary, Southwestern University Research Alliance Fall Workshop
- 2023  **An Inclusive Vision of Computing is Key to a Sustainable Future for All**
Keynote, National Academies of Sciences, Engineering, and Medicine DEI Speaker Series
- 2023  **Indigenous Data Sovereignty and Management**
Keynote Speaker, Great Lakes Indigenous Data Sovereignty and Governance Workshop Hosted by Trent University.
- 2023 **Panel: Hardware is Hard—is it Worth it?**
Panelist, 2023 CHI Conference on Human Factors in Computing Systems (CHI 2023)
- 2023 **Batteries Not Included: Reimagining Computing for the Next Trillion Devices**
Invited Talk, VMware Research
- 2023 **Indigenous Health and AI**
Panel Speaker, Indigenous Innovation, Data Economies, and AI (IDEAS) Summit
- 2023  **Plenary Panel: Sustainability in Computing**
Panelist, 21st Conference on Pervasive Computing and Communications (PerCom 2023)

- 2022 **Reimagining Computing for Sustainability and Responsible Environmental Stewardship**
Seminar Series, Brook Byers Institute for Sustainable Systems, Georgia Tech
- 2022 ⚙️ **A Batteryless Internet-of-Things: My Story of Handling Failure in Computing**
Plenary Speaker, Richard Tapia Celebration of Diversity in Computing Conference
- 2022 **Panel: Scientific Research and Funding Opportunities**
Invited Panelist, 2022 Design Automation Conference (DAC) Early Career Workshop
- 2022 **Batteries Not Included: Reimagining Computing for the Next Trillion Devices**
Invited Talk, Carnegie Mellon University, Human-Computer Interaction Institute Seminar
- 2022 **Batteries Not Included: Reimagining Computing for the Next Trillion Devices**
Invited Talk, Argonne National Laboratory, Microelectronics Colloquium Series
- 2022 **Batteries Not Included: Reinventing Data Science Infrastructure at the Trillion Device Edge**
Invited Talk, UC San Diego, HDSI Departmental Seminar
- 2022 **Batteries Not Included: Reimagining Computing for the Next Trillion Devices**
Invited Talk, UC San Diego, CSE Departmental Seminar
- 2022 **Batteries Not Included: Reimagining Computing for the Next Trillion Devices**
Invited Talk, Georgia Tech, College of Computing Seminar
- 2022 **Batteries Not Included: Reimagining Computing for the Next Trillion Devices**
Invited Talk, Duke University, ECE Departmental Seminar
- 2022 ⚙️ **Batteries Not Included: Reimagining Computing for the Next Trillion Devices**
Distinguished Lecture Series, University of Washington Allen School of CSE
- 2022 **Rethinking Wearables for Modern Health: Tackling Energy-efficiency, Privacy, and Burden**
Invited Talk, Rice University, ECE Departmental Seminar
- 2021 **Batteries Not Included: Reimagining Computing for the Next Trillion Devices**
Computing Landscapes for Environmental Accountability and Responsibility @ ISCA'21
- 2021 **A Discussion with "Coded Bias" film Director Shalini Kantayya**
McCormick School of Engineering, Northwestern University (moderator)
- 2020 **Batteries Not Included: Reimagining Computing for the Next Trillion Devices**
Invited Talk, University of Massachusetts Amherst (joint with ECE and CS departments)
- 2020 **Batteries Not Included: Reimagining Computing for the Next Trillion Devices**
Invited Talk, University of California Merced (CS department)

- 2020 **Batteries Not Included: Reimagining Computing for the Next Trillion Devices**
Invited Talk, Northwestern University (Chemical & Biological Engineering and the Center for Engineering Sustainability and Resilience)
- 2019 **Why Wear a Battery? The Future of Wearables May be Batteryless**
Invited Talk, University of Hawaii at Manoa (joint with ECE and CS departments)
- 2019 ⚙️ **Why Wear a Battery? The Future of Wearables May be Batteryless**
Keynote, 5th ACM Workshop on Wearable Systems and Applications (Seoul, Korea)
- 2019 **Directions for Wearables in Health Sensing**
Psychiatry and Behavioral Health, Lurie Children's Hospital (Chicago, Illinois)
- 2019 **Computation and Sensing without Reliable Power**
Invited Talk, University of Chicago Computer Science
- 2018 **Gracefully Handling Failure in Computing**
Panelist and Speaker, CRA-W Circuits to Systems Summer School
- 2018 **Computation and Sensing without Reliable Power**
EECS Meet the Faculty Seminar, Northwestern University
- 2018 **Computation and Sensing without Reliable Power**
7th Greater Chicago Area Systems Research Workshop (GCASR'18)
- 2017 **Panel: New Directions – The Future of Sensing is Batteryless, Intermittent, and Awesome**
Panelist with Jacob Sorber, ACM SenSys 2017
- 2017 **Trials and Tribulations of a Sensor Networks Deployment on Fort Sumter National Monument**
1st ACM International Workshop on the Engineering of Reliable, Robust, and Secure Embedded Wireless Sensing Systems (FAILSAFE)
- 2017 **Maintenance Free Sensor Networks for Building, Habitat, and Infrastructure Monitoring**
Environmental Engineering Seminar Series, Northwestern University
- 2016 **Sophisticated Batteryless Sensing**
Invited Talk, University of Michigan – Ann Arbor Computer Science and Engineering
- 2016 **Towards A Language and Runtime for Intermittently Powered Devices**
1st Workshop on Hilariously Low-Power Computing (Atlanta, Georgia)

Advising and Management

— Current PhD advisees

2025– **Nikola Maruszewski**. Computer Science. Georgia Tech

- 2025– **Haisley Kim**, Computer Science, Georgia Tech
- 2024– **Yibo Fu**, Computer Science, Georgia Tech
- 2024– **Xinye Wang**, Computer Science, Georgia Tech
- 2023– **Jacob Cook**, Electrical and Computer Engineering, Georgia Tech
- 2024– **Connor Pan**, Electrical and Computer Engineering, Georgia Tech
- 2024– **Moeini ‘Moi’ Reilly**, Computer Science, Georgia Tech
- 2023– **Yingting Gao**, Human Centered Computing, Georgia Tech
- 2023– **Diana Wang**, Computer Science, Georgia Tech
- 2023– **Tejonidhi Deshpande**, Robotics, Georgia Tech
- 2022– **Eric Greenlee**, Computer Science, Georgia Tech
Georgia Institute of Technology President’s Fellowship, BBISS Graduate Fellow
- 2022– **Rishabh Goel**, Robotics, Georgia Tech
- 2021– **Blaine Rothrock**, Computer Science, Northwestern University
- 2020– **Alex Curtiss**, Electrical and Computer Engineering, Northwestern University
- 2019– **Chris Kraemer**, Computer Science, Georgia Tech
- 2019– **John Mamish**, Computer Science, Georgia Tech

Graduated Ph.D. Students

- 2026 **Sixu Li (co-advise w/ Celine Lin)**, Computer Science, Georgia Tech
Thesis Title: The Algorithm-Hardware Specialization Spectrum of Multi-Stage Intelligence Pipelines: From Dedicated Accelerators to Heterogeneous Systems
First Job: NVIDIA
- 2025 **Stefany Cruz**, Electrical and Computer Engineering, Northwestern University
Thesis Title: Equityware: Designing Responsible AI Driven Wearables for Safety, Health, and Well-being
Microsoft Research Ada Lovelace Fellow
Best Computer Engineering PhD Thesis Award. First Job: Univ. Washington Postdoc
- 2024 **Abu Bakar**, Computer Science, Georgia Tech
Thesis Title: Adaptive And Intelligent Battery-free Computing Systems: Platforms, Runtime Systems, and Tools
Selected as Cyber-Physical Systems (CPS) Rising Star 2022. First Job: Qualcomm
- 2022 **Rawan Alharbi (co-advise w/ Nabil Alshurafa)**, Computer Science, Northwestern University
Thesis Title: “Re-imagining Visual Wearable Systems”
Selected as EECS Rising Stars 2020. First Job: Research Scientist at Apple

Postdoctoral Researchers

- 2026– **Sylvia Janicki**, Georgia Institute of Technology
- 2025– **Eren Yildiz**, Georgia Institute of Technology
MobiSys Rising Star Forum Selectee

- 2024– **Alex Cabral**, Georgia Institute of Technology
- 2026 *Now Asst. Prof of EECS and DUSP at Massachusetts Institute of Technology*
Outstanding Postdoctoral Research Award from Georgia Tech
- 2024 **Tingyu Cheng**, Georgia Institute of Technology
Now Asst. Prof of Computer Science at Notre Dame
- 2023– **Yaman Sangar**, Georgia Institute of Technology
- 2026 *Now Asst. Prof of Electrical and Computer Engineering at Cal Poly*
- 2020– **Saad Ahmed**, Georgia Institute of Technology
Outstanding Postdoctoral Research Award from Georgia Tech
- 2021– **Nivedita Arora**, Georgia Institute of Technology
- 2023 *ACM Doctoral Dissertation Award Winner*
Now Asst. Prof of Computer Engineering at Northwestern University
- 2019– **Sougata Sen (co-advise w/ Nabil Alshurafa)**, Northwestern University
- 2020 *Now an Asst. Prof of Computer Science at BITS Pilani Goa*

Other Research Management Experience (Staff, Reports)

- 2024– **Gabriela Buraglia**, Researcher (Part-time), Ka Moamoa, Georgia Institute of Technology
- 2023– **Julia McKenna**, Data Steward, Ka Moamoa, Northwestern University
- 2023– **Rachel Baker-Ramos**, Research Scientist, Ka Moamoa, Georgia Institute of Technology
Outstanding Research Scientist Award, College of Computing 2025
- 2023– **Dr. Nicole Kennard**, Assistant Director of Community Engaged Research, BBISS, Georgia Institute of Technology
- 2021– **Thomas Cohen**, Research Engineer, Ka Moamoa, Northwestern University
- 2024

Undergraduate advisees (*Year graduated or left lab listed, not comprehensive*)

- 2026 **Ben Carter**, Computer Science, Georgia Institute of Technology
- 2026 **Diego Shipmon**, Biology, Georgia Institute of Technology
- 2023 **Amy Guo**, Ka Moamoa Group, Northwestern University (now at Amazon)
- 2023 **Alex Cindric**, Ka Moamoa Group, Northwestern University (now at Rush Medical)
- 2022 **Evan Costa**, Ka Moamoa Group, Northwestern University (now at Paradox)
- 2022 **Zach Englehardt**, Ka Moamoa Group, Northwestern University (now at UW for PhD)
- 2022 **Alexander Redding**, Ka Moamoa Group, Northwestern University (now at UCSD for PhD)
- 2020 **Aaron Empedrado**, Ka Moamoa Group, Northwestern University (now at Hinge)
- 2020 **Logan Danek**, Ka Moamoa Group, Northwestern University (now at Burro)
- 2020 **Julian Richey**, Ka Moamoa Group, Northwestern University (now at Amazon)
- 2019 **Rahaf Alharbi**, Ka Moamoa Summer Intern, Northwestern University (now at Michigan)
- 2019 **Derya Kitis**, Ka Moamoa Summer Intern, Northwestern University
- 2019 **Amro Ashmeik**, Habits Lab Summer Intern, Northwestern University
- 2020 **Alvin Tan**, Ka Moamoa Group, Northwestern University (now at UC Berkeley for PhD)
- 2020 **Jason Liu**, Ka Moamoa Group, Northwestern University (now at Meta)
- 2018 **Andrew Levin**, Thesis Mentor, Northwestern University (now at Vector Launch Inc.)
- 2016 **Taylor Hardin**, PERSIST Lab, Clemson University (Ph.D. Dartmouth College)
- 2016 **Connor Bolton**, PERSIST Lab, Clemson University (PhD at Michigan, now at Sandia)
- 2016 **Austin Anderson**, PERSIST Lab Clemson University (now at Google)
- 2016 **Matthew Furlong**, PERSIST Lab, Clemson University (now at Univ. of Michigan, Ann Arbor)

- 2014 **Diana Zhang**, REU, Clemson University (finished PhD at Carnegie Mellon University)
- 2014 **Kyle McGuigan**, PERSIST Lab, Clemson University (now at SPARC)

Professional Memberships

- 2015– **Senior Member, Institute of Electrical and Electronics Engineers (IEEE)**
- 2014– **Senior Member, Association for Computing Machinery (ACM)**
- 2021– **Member, American Indian Science and Engineering Society (AISES)**
- 2021– **Member, ACM Special Interest Group on Embedded Systems (SIGBED)**
- 2017– **Member, ACM Special Interest Group for Mobile Computing (SIGMOBILE)**
- 2025– **Member, American Association for the Advancement of Science (AAAS)**

Teaching Experience

— at Georgia Tech

CS 3251: Computer Networking I

Instructor, Fall 2025 (163 students, co-lead for two total sections for ~465 students)

CS 6603/8803 SDG: Sustainability and Computing

Instructor and Course Designer, Fall 2023 (~22 students), Spring 2025 (~45 students)

— at Northwestern University

COMP_ENG 395/495: Wearable and Physical Computing

Instructor and Course Designer, Fall 2021

COMP_ENG 347-1+2: Microprocessor System Projects

Instructor, Winter and Spring 2022

COMP_ENG 346: Microprocessor System Design

Instructor and Course Designer, Spring 2018, 2019, 2020, Summer 2020

COMP_ENG 365/465: Internet-of-things Sensors, Systems, And Applications

Instructor and Course Designer, Winter 2018, 2019, 2020, Fall 2020, Spring 2022

COMP_ENG 395/495: Advanced Topics in Modern Embedded Systems

Instructor and Course Designer, Winter 2021

— at Clemson University

CPSC 4820/6820: Embedded Systems Prototyping

Instructor and Course Designer, Fall Semester 2015

CPSC 3220: Operating Systems

Guest Lecturer, Spring Semester 2015

CPSC 2150: Software Development Foundations

Teaching Assistant, Spring Semester 2012

Service

— International Service

- 2025 **Expert Consultant** (pro-bono). Advanced Research and Invention Agency (ARIA), UK
Opportunity Space: Scoping our planet. *Perpetual Flight*.
- 2021 **Expert Panelist** for **United Nations** Department of Economic and Social Affairs (UN DESA)
“Global Policy Dialogues for Climate Action, Promoting Digital Solutions”. This panel informed
recommendations from the “Financing for Sustainable Development Report 2021” ahead of the
UN Climate Change Conference (Glasgow, November 2021), and UN DESA’s policy briefs related to
climate action and COVID-19.
*The event had over 600 registrants across the world. The results of the discussion are shared
with UN leadership and informed UN DESA policy briefs for COP26.*

National Service

- 2022 **Invited Expert** for The **National Academies of Sciences, Engineering, and Medicine’s**
Committee on Emerging Science for Environmental Health Decisions.
*Futurecasting exercise which brings together scientists and decision-makers to define critical and
emerging scientific and technological issues to inform public health policy and research practice
(e.g., research from mechanism to humans to interventions to prevention – a broad continuum
from fundamental basic science to applied science).*

Major organizing

- 2026 **Vice Program Chair**
ACM International Conference on Architectural Support for Programming Languages and
Operating Systems (ASPLOS’27)
- 2025 **Organizing Committee**
2nd Summit on Responsible Computing, AI, and Society
220 registered, doctoral colloquium, 20 invited speakers, 6 sessions
- 2025– **Associate Editor**
IEEE Transactions on Sustainable Computing (T-SUSC)
- 2024 **Organizing Committee**
1st Summit on Responsible Computing, AI, and Society
200 registered, doctoral colloquium, 28 invited speakers, 3 concurrent tracks
- 2024 **General Chair**
14th IEEE International Green and Sustainable Computing Conference (IGSC)
- 2023 **Organizing Committee**
EECS Rising Stars Workshop 2023, Georgia Institute of Technology
- 2023 **Technical Program Committee Chair**
13th IEEE International Green and Sustainable Computing Conference (IGSC)

- 2022– **Associate Editor**
ACM Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)
- 2021– **Steering Committee**
ACM 8th Workshop on Energy Harvesting & Energy-Neutral Sensing Systems ([ENSsys](#))
- 2022 **General Chair**
ACM SenSys/BuildSys 2022 Joint PhD Forum
6 PhD student presentations, panel, and networking co-located with SenSys'22
- 2020 **Technical Program Committee Chair**
ACM 8th Workshop on Energy Harvesting & Energy-Neutral Sensing Systems ([ENSsys](#))
17 papers/poster, ~80 attendees, keynote, virtually co-located with SenSys'20
- 2020 **General Chair and Local Organizer**
Greater Chicago Area Systems Research Workshop (GCASR) – [gcasr.org](#)
Called off / postponed at last minute due to COVID-19
- 2019 **Technical Program Committee Chair**
ACM 7th Workshop on Energy Harvesting & Energy-Neutral Sensing Systems ([ENSsys](#))
12 papers/poster, ~50 attendees, keynote and panel, co-located with SenSys'19
- 2019 **General Chair**
Greater Chicago Area Systems Research Workshop (GCASR) – [gcasr.org](#)
12 speakers, ~150 attendees, 48 student posters, keynote and panel
- Other conference and workshop, internal organizing
- 2024 **Organizer and Speaker**
AI + Climate at Tech: Teaming and Ideas for Impact
- 2020 **Publicity Chair (USA Region)**
ACM/IEEE Conference on Internet of Things Design and Implementation (IoTDI)
- 2016– **Publicity Chair**
2018 ACM Workshop on Energy Harvesting & Energy Neutral Sensing Systems (ENSsys)
- Appointments Held

Georgia Tech

Director, Center for Advancing Responsible Computing
Director, Ka Moamoa– Ubiquitous and Mobile Computing Lab
Associate Director of Civic Innovation and AI
(prior) Interim Associate Director of Community Engaged Research,
 Brook Byers Institute for Sustainable Systems

Northwestern

Core Faculty, Technology and Social Behavior PhD Program
Advisory Board and Affiliate, Center for Native American and Indigenous Research
Faculty Affiliate, Center for Engineering Sustainability and Resilience
Fellow, Northwestern-Argonne Institute of Science and Engineering

— As a member of university, college, and unit committees/initiatives

- 2026– **Faculty Executive Board, Academic Faculty Senate**, Georgia Institute of Technology
Representing the College of Computing
- 2025– **University Wide Standing Review Committee**, Georgia Institute of Technology.
- 2025– **Academic Faculty Senate**, Georgia Institute of Technology
- 2028 *Representing the School of Interactive Computing*
- 2025 **NSF CAREER workshops for junior faculty**, College of Computing
- 2024 **Executive Director Search Committee**, Brook Byers Institute of Sustainable Systems
- 2024– **Strategic initiatives Committee**, School of Interactive Computing
- 2023 **Dean Search Committee Member**, College of Computing
- 2021 **Diversity Committee Member**, Electrical and Computer Engineering
- 2020 **Faculty Hiring Committee Member**, Computer Science
- 2019– **Diversity Initiatives Committee co-Founder and Member**, Computer Science
- 2017– **PhD Admissions Committee Member**, Computer Engineering, Computer Science, Technology and Social Behavior
- 2017– **Instructional Lab Committee Member**, Electrical Engineering and Computer Science
- 2019
- 2017– **Undergraduate Curriculum Committee Member**, Computer Engineering

— As a PhD committee member (*With year PhD granted (or expected) noted on the left.*)

- 2026 **Xiaoying Yang**, Electrical and Computer Engineering, UCLA
“Harnessing the Power of User Interactions”
- 2026 **Zeyu Yan**, Computer Science, University of Maryland
“Toward Sustainable Electronics Through Localized Computational Refabrication”
- 2025 **John Berkebile**, Electrical and Computer Engineering, Georgia Institute of Technology
“Advancing Wearable Cardiopulmonary Monitoring Through Multimodal Sensing Of Cardiovascular, Pulmonary, and Respiratory Muscle Function”
- 2025 **Christopher Nichols**, Bioengineering, Georgia Institute of Technology
“Advancing Wearable Sensing for Musculoskeletal Health Monitoring in Dynamic Everyday Environments”

- 2024 **Yoon Jae Lee**, Electrical and Computer Engineering, Georgia Institute of Technology
"Study Of Intelligent Wearables And Adaptive Systems To Measure Physiological And Physical Data For Human- Machine Interfaces"
- 2024 **Tingyu Cheng**, School of Interactive Computing, Georgia Institute of Technology
"Circular Interactive Material: Making Ubiquitous Computing More Scalable And Sustainable"
- 2023 **Yixin Shao**, Electrical and Computer Engineering, Northwestern University
"Low-power nano-scale magnetic tunnel junctions for intelligent computing systems"
- 2023 **Nurani Saoda**, Computer Engineering, University of Virginia
"Designing Batteryless Energy Harvesting Sensors for Sustainable Internet of Things"
- 2022 **Kristine Richardson**, Electrical and Computer Engineering, Georgia Institute of Technology
"Enabling Remote Monitoring Of Joint Health With Signal Processing and Machine Learning"
- 2022 **Emily Ruppel**, Electrical and Computer Engineering, Carnegie Mellon University
"Peripheral and Power Management in Batteryless, Energy-Harvesting Systems"
- 2022 **Nivedita Arora**, School of Interactive Computing, Georgia Institute of Technology
"Sustainable Interactive Wireless Stickers - From Materials to Devices to Applications"
- 2022 **Zhilu Wang**, Electrical and Computer Engineering, Northwestern University
"Cross-Layer Design and Adaptation of Safety- Critical Cyber-Physical Systems "
- 2021 **Shuyue Lan**, Electrical and Computer Engineering, Northwestern University
"Efficient and Adaptive Computer Vision for Cyber-physical Systems"
- 2020 **Saad Ahmed**, Computer Science, Lahore University of Management Sciences (LUMS)
"Fast and Energy Efficient Intermittent Computing"
- 2020 **Emirhan Poyrez**, Electrical and Computer Engineering, Northwestern University
"User Experience Aware System Optimizations For Mobile Systems"
- 2020 **Spencer Florence**, Computer Science, Northwestern University
"A Constructive Calculus for Esterel"
- 2020 **Fatemah Mansoori**, Electrical and Computer Engineering, Northwestern University
"Methods for Large Scale Distributed Optimization"
- 2020 **Begum Birsan Egilmez**, Electrical and Computer Engineering, Northwestern University
"Determining Prognostic Physiological Attributes of Stress Using Wearable Sensors"
- 2018 **Curtis Wang**, Electrical Engineering and Computer Science, Northwestern University
"Real-time Control in Embedded Systems using Deep Neural Network-based Estimation Applied to Joule Heating"

As a MS committee member or project advisor

- 2025 **Manas Mhasakar**, Computer Science
- 2024 **Karina Bhattacharya**, Industrial Design
- 2024 **Harsh Kumar Verma**, Materials Science and Engineering
- 2024 **Xinke Wu, Sydney Young, and Hyeonwook Kim**, Human Computer Interaction
- 2024 **Leah Cho, Will Gelder, and Rachel Baker**, Human Computer Interaction
"KumuConnect"
- 2022 **Scott Beard**, Biomedical Engineering, Northwestern University
- 2022 **Alexander Ross**, Electrical and Computer Engineering, Northwestern University
"REHASH++: Machine Learning Enhanced Heuristic Selection for Energy-Aware Task-Based Adaptation in Intermittently Powered Devices"

- 2021 **Maria Ali**, Electrical and Computer Engineering, Northwestern University
"Flap Surgery Monitoring Devices: Practical Application of Near-Infrared Spectroscopy"
- 2021 **Ashwin Chidambaram**, Electrical and Computer Engineering, Northwestern University
"HeatSight: Egocentric Activity Recognition with Thermal Imaging"
- 2021 **Chixiang Wang**, Electrical and Computer Engineering, Northwestern University
"Smart PPE"
- 2021 **Xinran Li**, Electrical and Computer Engineering, Northwestern University
"Multistage Coilgun with Face Recognizing Smart Pan Tilt Platform"
- 2021 **Yunhao Li**, Electrical and Computer Engineering, Northwestern University
"Large Scale Specular Object 3D Reconstruction And Pattern Recognition"
- 2020 **Ting Ying**, Electrical and Computer Engineering, Northwestern University
"Reproducing Machine-based Detection and Classification for Bone Marrow Aspirate Differential Counts"

As a conference program technical committee member

- 2026 **ACM SenSys, ACM EWSN, ACM COMPASS**
- 2025 **ACM SenSys**
- 2024 **ACM SenSys**
- 2023 **ACM PLDI, ACM HotCarbon, ACM SenSys**
- 2022 **ACM SenSys, ACM ASPLOS, ACM/IEEE IPSN**
- 2021 **ACM/IEEE IPSN, ACM IoTDI, ACM MobiSys, ACM SenSys**
- 2020 **ACM MobiSys, ACM HotMobile, ACM IoTDI, ACM ENSsys**
- 2019 **IEEE WristSense, ACM ENSsys**
- 2018 **IEEE WristSense, ACM ENSsys, IEEE SmartSys, ACM DATA, ACM UbiComp-CPD**
- 2017 **ACM ENSsys**
- 2016 **ACM ENSsys**

As a journal reviewer

- 2023 **Communications of the ACM (CACM) – Editor, Special Issue on Sustainability**
Scoping, vision, coordination, and operations, also contributed 6 reviews
- 2018– **ACM Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)**
16-24 reviews per year
- 2018– **IEEE Transactions on Mobile Computing (IEEE TMC)**
1-2 reviews per year
- 2017– **ACM Transactions on Sensor Networks (ACM TOSN)**
2-4 reviews per year
- 2019– **ACM Transactions on Architecture and Code Optimization (TACO)**
1-2 reviews per year
- 2018– **IEEE Embedded Systems Letters (IEEE ESL)**
1-2 reviews per year
- 2020– **Communications of the ACM (CACM)**
1-2 reviews per year

As an advocate (highlights, not comprehensive)

- 2025– **Hawaii Department of Education AI and Physical Computing Piloting**
Piloting AI products like KumuConnect across all 15 complex areas in Hawaii. Providing regular updates, connections, and guidance around other AI tools and physical computing curricula.
- 2025– **Purple Mai'a Foundation Collaboration on KILO: The Ahupua'a Dashboard**
Working with PMF in Hawaii, to create a scalable, accessible platform that supports ecosystem restoration through the collaborative efforts of Indigenous communities, conservationists, and researchers, while ensuring the sovereignty and control of local knowledge systems. Helped with a hackathon, sensor deployments, design and research publications.
- 2023 **American Indian Science and Engineering Society (AISES) Research Experience Leader**
Taught an online research-focused course for ~10 Native and Indigenous students, supported by AISES and Google, over the course of 8 weeks. Presented on research concepts and helped each student shape goals. Multiple students applied and were accepted to graduate programs.
- 2021– **Co-Organizer and Technology Expert for Waikalua Loko I'a Summer STEM program**
 2024 *Native Hawaiian students (K4-10) in the community and from Pū'ōhala School, learn how to program, and use this skill to program embedded computers with Microsoft Makecode to help safeguard an ancient fishpond maintained by Native Hawaiians the past millennia. 27 students, 4 teachers, and 5 community partners participated June 2021. More to come.*
- 2021 **Computer Science Education Week: virtual panel discussion with CS Heroes**
Panelist and CS Hero in the opening session for CSEdWeek, on the theme of #CSEverywhere. Moderated by the 2021 CSEdWeek Master of Ceremonies, Shiela Lee and Nate Myers. The event was recorded and captured numerous views afterwards online.
- 2020– **Faculty mentor and co-Founder of [Code'n'Color](#), support group for BIPOC PhD students**
 2023 *PhD student support group at Northwestern University for Black, Indigenous, and other People of Color (BIPOC) who are in computing and coding related disciplines. We meet weekly for coffee breaks and host BIPOC PhD holders who are leaders in the computing industry and academia, as well as put on events to build an inclusive university.*
- 2021 **Helped organize and moderate campus-wide virtual panel, “Fostering Diversity: Lessons from Recent Events and Making Change Happen”**
Featuring Black Engineers in academia and community leaders: Ayanna Howard (Dean of OSU), James West (National Academy Member), Timothy Pinkston (ACM/IEEE Fellow), Maisha Moses (Director of the Young People's Project). The event had 139 registrants, 100 live attendees. The event was recorded and captured numerous views afterwards online.

- 2021 **Interviewee as Teacher** for NSF funded Inclusive STEM Teaching Project
I gave recorded interviews on best practices for inclusive teaching, this was part of a video series that made up an online course offered broadly across the country, developed by a team at Boston University, Northwestern, University of Michigan, Des Moines Area Community College, The University of Utah, University of Wisconsin, and University of Georgia.
Over 1,000 people registered for the course before it even began on June 15, 2021.
This informed the campus-wide “Northwestern Principles of Inclusive Teaching”
- 2021 Organized and moderated campus-wide Q&A with Coded Bias Director Shalini Kantayya
Across campus the event had 398 registrants, 147 live attendees to the Q&A. The film was streamed for a week beforehand for broad impact and was watched over 1000 times.
- 2020 Featured for Native American Heritage Month on Seeker (~8 million online audience)
- 2020 **Northwestern Now:** “Lifting up Native Science” for Native American Heritage Month
- 2018– **SACNAS** research abstract and poster abstract reviewer
- As a proposal reviewer for the federal government
- 2024 **NSF Computer and Information Sciences Directorate (2x)**
- 2023 **NSF Computer and Information Sciences Directorate (3x)**
- 2022 **NSF Computer and Network Systems Division**
- 2021 **NSF Computer and Network Systems Division**
- 2021 **NSF Division of Engineering Education and Centers**
- 2020 **NSF Computer and Network Systems Division**
- 2018 **NSF Computer and Network Systems Division**
- 2018 **NSF Information and Intelligent Systems Division**

SUPPLEMENTAL: Selected Press Coverage

Popular Science (2026). “Jumping spiders inspire wildly efficient 3D camera” June 15

Honolulu Civil Beat (2026). “AI Data Centers Are The New Plantations Unless We Build Them Differently...” May 10

Atlanta Journal Constitution (2026). “Georgia’s data center boom requires a strategy, not just hoping for the best” May 2

Hacker News (2026). “Battery-free, quiet, and inherently private” — These 3D-printed metal tags...” April 28

Interesting Engineering (2026). “New passive ultrasonic sensors track motion without electricity or batteries” May 4

New Atlas (2026). “Ingenious unpowered sensor detects motion by generating ultrasound” May 2

TechRadar (2026). “Battery-free, quiet, and inherently private” — These 3D-printed metal tags...” April 28

TechXplore (2026). “These penny-size ultrasonic tags ditch batteries and silently turn everyday objects...” April 21.

NewScientist (2025). “3D-printed electronics can dissolve in water for quick recycling” August 25.

hackster.io (2025). “What to Do When Good Boards Go Bad” August 22

Hackaday (2025). “A Solderless, Soluble, Circuit Board” August 19.

The New York Times (2024). “How Wild Rice Forecasts Climate Change” May 21.

CBS News Chicago (2024). “COVID-19 led to changing views on wearable tech, Northwestern study finds” May 14.

Crain’s Chicago Business (2024). “Low-income Latinos warming to wearable health tech, Northwestern researcher finds” May 5.

Northwestern Now (2024). “COVID-19 pandemic changed attitudes toward wearables” May 2.

Mongabay (2024). “Culture and conservation thrive as Great Lakes tribes bring back native wild rice” March 4.

Daily Mirror (2024). “New dirt fuelled power source that ‘can last forever’ - based on a 113-year-old technology” Jan 16.

The Independent (2024). “Scientists invent dirt-fuelled power source that ‘lasts forever’.” Jan 16.

New Atlas (2024). ““Dirt-powered fuel cell” draws near-limitless energy from soil” Jan 16.

Hackster.io (2024). “It’s a Dirty Job, But Somebody Has to Do It” Jan 16.

Northwestern Now (2024). “Dirt-powered fuel cell runs forever” Jan 16.

New York Post (2023). “Scientists developing implant to cure cancer in just 60 days...” Sep 30.

NSF Science Matters (2023). “Indigenous-led monitoring protects wild rice in Great Lakes region.” Sep 7.

Daily Mail (2023). “Scientists are developing an implant smaller than a crayon that doctors hope will cure cancer...” Sep 29.

Forbes (2023). “Feds Investing Nearly \$115 Million In Three New Cancer Technology Research Projects” Sep 28.

Georgia Tech Research News (2023). “Computing Faculty Supporting Research That Could Cut Cancer Deaths in Half” Sep 26.

The White House (2023). “As Part of President Biden’s Unity Agenda, White House Cancer Moonshot Announces New...” Sep 13.

Good Day Chicago – FOX32 (2023). “New ‘necklace’ could help cigarette smokers quit” Feb 21.

WGN9 Chicago Nightly News (2023). “Data-tracking necklace helps smokers kick habit” Feb 15.

The Hill (2023). “Data-tracking necklace aims to help smokers kick habit” Feb 20.

Hackster.io (2023). “Reading Smoke Signals” Feb 15.

Digital Trends (2023). “Wearing this smart necklace could help you stop smoking forever” Feb 14.

Tech Times (2023). “Researchers Develop Smart Necklace To Help Quit Smoking” Feb 14.

Northwestern Now (2023). “Smart necklace to help you stop smoking” Feb 14.

TechRadar (2022). “The quest for the solar-powered gaming console” Oct 31. *Quoted extensively for gaming history piece.*

Georgia Tech Research News (2022). “Professor Using ‘Minikers’ to Harvest Energy Through Everyday Activities” Oct 6.

Northwestern Now (2022). “Northwestern partners with Indigenous scientists to conserve Great Lakes wetlands” Aug 29.

Make Magazine (2022). “Perpetual Computing with Circuit Python” Aug 1. *Tutorial on our work released in top maker mag.*

UN DESA Voices (2022). “An inclusive vision of computing will help us accelerate progress on the SDGs” May 5.

Adafruit Blog (2022). “Battery-free MakeCode empowers kids to code sustainably” Apr 14.

Microsoft Stories and News (2022). “Battery-free MakeCode empowers kids to code sustainably” Apr 1.

ACM Tech News (2022). “Battery-free MakeCode empowers kids to code sustainably” Apr 1.

Hackster.io (2022). “Battery-free MakeCode Brings Drag-and-Drop Educational Programming to Energy Harvesting...” Mar 30.

Northwestern Now (2022). “Battery-free MakeCode empowers kids to code sustainably” Mar 30.

National Science Foundation News (2022). “‘Fitbit for the face’ can turn any face mask into smart monitoring device” Feb 1.

Washington Post (2022). “Different masks for different workouts as exercise evolves with covid-19” Jan 22.

Mashable (2022). “Researchers developed a way to track your health through a face mask — Future Blink” Jan 22.

Chicago Tribune (2022). “New sensor can tell if face mask fits properly.” Jan 22.

Australian Broadcasting Corporation – News (2022). “‘A Fitbit for the face’: How new mask prototypes can detect leaks...” Jan 19.

Good Day Chicago – FOX32 (2022). “FaceBit: Smart monitoring device for masks” Jan 17. *Interviewed live by Sylvia Perez.*

Engadget (2022). “Face mask sensor can detect leaks and your heart rate.” Jan 15.

SlashGear (2022). “FaceBit mixes face mask with fitness device.” Jan 14.

ACM TechNews (2022). “‘Fitbit for the Face’ Can Turn Any Face Mask into Smart Monitoring Device.” Jan 14.

Wired – Italy (2022). “Il gadget da mettere dentro la mascherina.” Jan 14.

Daily Mail (2022). “‘Fitbit for the face’: Prototype sensor the size of a quarter can turn any face mask into...” Jan 13.

New Atlas (2022). “‘Fitbit for the face’ monitors workers’ vital signs via their masks.” Jan 13.

Gizmodo (2022). “‘Fitbit for the Face’: Engineers Debut Fitness Tracking Mask That Can Detect Leaks.” Jan 13.

TechCrunch (2022). “This device attaches magnetically to a face mask to monitor the wearer’s vitals.” Jan 13.

Forbes (2022). “‘Smart Face Masks’— Researchers Have Created A Way To Digitize Masks.” Jan 13.

The Hill (2022). “Engineers create ‘Fitbit for the face’.” Jan 12. *Featured in “Changing America – Well-Being.”*

Scientific American (2022). “New Sensor Tells You How Well Your Mask Is Working.” Jan 12.

Northwestern Now (2022). “‘Fitbit for the face’ can turn any face mask into smart monitoring device.” Jan 12.

De Volkskrant (2021). “Dit platform van de TU Delft moet de batterijloze...” Nov 26. *Oldest and 2nd largest Dutch daily newspaper.*

Bulletin of the Atomic Scientists (2021). “No battery? That’s no problem for the future Internet of Things.” Nov 3.

The Independent (2021). “Battery-free Electronics Breakthrough Could Radically Reduce E-waste In Landfills.” Sep 23.

Tech Times (2021). “Battery-Free Electronics With Infinite Life May Arrive Soon! The New BFree...” Sep 23.

Interesting Engineering (2021). “A New Battery-Free System Gives Devices an ‘Infinite Lifetime’” Sep 23.

International Business Times (2021). “Engineers Develop Battery-Free Energy-Harvesting Game Boy That Can Run Forever.” Sep 23.

TechXplore (2021). “Now everyone can build battery-free electronic devices.” Sep 22.

Northwestern Now (2021). “Now everyone can build battery-free electronic devices.” Sep 22.

Popular Science (2021). “The Brilliant 10: The most innovative up-and-coming minds in science.” *Featuring my batteryless work.*

Communications of the ACM (2021). “A Battery-Free Internet of Things.” *My work featured in the news section.* July Issue.

Smithsonian Magazine (2021). “This Implant Could One Day Control Your Sleep and Wake Cycles.” Jun 18

The Telegraph (2021). “Smartphone-controlled implant the size of little finger could cure jetlag.” May 22

Axios (2021). “The military wants to conquer jetlag.” May 15

Daily Mail (2021). “Implantable ‘living pharmacy’ could control the circadian clock of war fighters...” May 14

IFL Science (2021). “Implantable ‘Living Pharmacy’ That Lets You Fall Asleep On Demand Wins DARPA Funding.” May 14

Northwestern Now (2021). “Implantable ‘living pharmacy’ could control body’s sleep/wake cycles.” May 13.

Northwestern Engineering Magazine (2021). “A Future Played without Batteries.” *Feature story in the spring issue.* Apr 21.

MUSE Magazine (2021). *Short article blurb featuring the Battery-free Game Boy.*

Scholastic Science World (2021). *Short article featuring the Battery-free Game Boy.*

ACM TechNews (2021). “Sensor Takes Guesswork Out of N95 Decontamination.” Feb 19.

Seeker | Focal Point (2020). “This Battery-Free Game Boy Will Spark the Next Gaming Revolution.” *Video interview feature.* Dec 20.

Northwestern Now (2020). “Making a better world.” *Featured my Battery-Free Game Boy project.* Dec 14.

Northwestern Now (2020). “Lifting up Native science.” *Interviewed on how we can engage Indigenous folks in STEM.* Nov 24.

The Wall Street Journal (2020). “Battery-Free, Energy-Harvesting Perpetual Machines: The Weird Future of Computing.” Oct 3.

The Naked Scientists Podcast. (2020). “A Battery-free Game Boy.” Sep 25.

Mashable – Future Blink (2020). “Play old school games forever on this solar-powered GameBoy.” Sep 11.

Hackaday (2020). “Game Boy Plays Forever.” Sep 11.

BBC Newsday (2020). *Interviewed on the Battery-free Game Boy on the morning show broadcast on BBC, NPR, etc.*

PC Mag (2020). “Solar-Powered Game Boy Provides Infinite Play.” Sep 8.

Engadget (2020). “Researchers created a Game Boy that doesn’t need batteries.” Sep 7.

The Verge (2020). “This Game Boy doesn’t need batteries, but shuts off every 10 seconds.” Sep 4.

Gizmodo (2020). “This Battery-Free Game Boy Is the First Step Toward Ensuring Gaming Doesn’t Wreck the Planet.” Sep 4.

Independent (2020). “Battery-free Game Boy Powered By Button Pushing Can Run Forever, Scientists Say.” Sep 4.

The Register (2020). "There's a battery-free Game Boy that runs solely on the power of sunlight..." Sep 4.
Daily Mail (2020). "Battery-free Game Boy can be charged MILLIONS of times..." Sep 3.
TechXPlore (2020). "Battery-free Game Boy runs forever." Sep 3.
Nintendo Life (2020). "This Battery-Free Game Boy Could Be The Future Of Portable Tech." Sep 3.
Tech Times (2020). "This Game Boy-Like Gaming Console is Battery-Free, So You Can Play All You Want..." Sep 3.
Wired – Italy (2020). "Engage, il Game Boy a energia solare." Sep 2.
CNET (2020). "The first battery-free Game Boy wants to power a gaming revolution." Sep 2.
EE Power (2020). "Researchers Pave the Way for Timekeeping Battery-less IoT Devices." Jul 11.
Northwestern Now (2020). "Your necklace knows you binged on Chunky Monkey." Jul 8
Chicago Sun-Times (2020). "New necklace tracks eating patterns to help scientists understand, address bad habits." Jul 8.
Voice of America (2020). "COVID-19 Sparks Technology Innovation." Jun 19.
Northwestern Now (2020). "Smart PPE project receives NSF RAPID grant." Jun 9.
TU Delft Stories (2020). "Intermittent Computing to Replace Trillions of Batteries." Jun 9.
EE News Europe (2020). "Energy harvesting boost from new timing design." May 29.
Northwestern Now (2020). "Solving battery-free devices' short-term memory loss." May 27.