College of Engineering
UNIVERSITY OF WISCONSIN–MADISON

FALL 2026 NEWSLETTER

DEPARTMENT OF

ELECTRICAL & COMPUTER ENGINEERING



ECE SPARK: Igniting the next generation of Badger engineers



Greetings!

Stepping in as interim chair, I find myself leading the department during an exciting time of strategic and purposeful growth. We are rapidly evolving to meet the opportunities and challenges arising out of the unprecedented pace at which our field is changing. We continue to uphold the tradition of ECE Badgers as leaders in research, industry and academia through a rich student experience, strategic hiring and forward-thinking facilities.

One of our key priorities is to provide early-career undergraduates with an opportunity to directly engage in research. Thanks to the generosity of our alumni, we launched ECE SPARK (Summer Program for Advanced Research and Knowledge) this past summer. This 10-week program places students directly into labs to work with faculty and graduate mentors. Between SPARK and our annual spring Undergraduate Research Symposium, we are making sure that hands-on experience with the challenging problems of our times is an important component of an ECE Badger education.

Strategic hiring also continues to strengthen and expand the department, with three accomplished faculty members joining us this fall. Omar Chehab joins us as an assistant professor, strengthening our expertise in machine learning and data-driven methods. Dan Costinett comes on board as a full professor, bringing a world-class program in advanced power electronics. His expertise will enhance our long-standing strength through the Wisconsin Electric Machines and Power Electronics Consortium (WEMPEC). Finally, Hezi Zhang joins as an assistant professor specializing in quantum computing architectures. These new faculty members are already bringing fantastic energy and new mentorship opportunities to our halls.

State-of-the-art facilities that support the ongoing work of our faculty and students are also critical to our vision. Aligned with the College's Making Quantum Practical moonshot initiative and as a key part of the Wisconsin Quantum Institute, we are building a new Quantum Sensing Center right here in Engineering Hall. This center is supported in part by a generous gift from the Wisconsin Alumni Research Foundation (WARF). The center will house several laboratories designed to foster intensive, collaborative research in quantum sensing technologies, bringing together faculty and student researchers from ECE and across campus to advance this emerging field. To meet the growing workforce demands in this area, we are also building a cutting-edge teaching lab where students gain experience working with hardware focused on quantum sensing, quantum optics and photonic integrated circuits, giving ECE Badgers a head start as they launch their careers.

The world is a better place when Badgers lead the way. We're doing the work necessary to build an even stronger future for our field, our students, and the communities we serve. Thank you for being part of the ECE community and for your continued interest in the work happening here.

On, Wisconsin!

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SPARK experience ignites a passion for research in engineering undergrads

Many undergraduates wonder if graduate school is the right next step for them. But making that choice can be difficult, especially if they don't fully understand the day-to-day routine of working in a laboratory.

That's one of the many reasons ECE launched the Summer Program for Advanced Research and Knowledge (SPARK). The pilot program supported 32 motivated undergraduates who worked full time in a research lab 20-40 hours a week for 10 weeks during summer 2026. The idea was to give students a feel for what it's like to work on real research projects and offer them a chance to interact with current graduate students and faculty.

"Sometimes knowing what you don't like and being able to cross it off the list is just as important as knowing what you do like," says Carly Andrew, an academic program specialist in ECE who helped administer the program.

Students were assigned graduate student mentors who helped them adjust to life in the lab and develop a research project or goal. The program provided participating undergrads a stipend and once a month, the SPARK group came together for a seminar and chance to chat about their experiences. To cap things off, all of the students presented their research at an end of summer poster session.

Interest in the program was high. One SPARK student was Ahmed Ibrahim. He had worked in a research lab during the semester, but working full time was a completely different beast.

"It was enlightening. It unlocked a completely new perspective for me," he says. "Having more time in the lab, you get more exposure to graduate students and the way they think. You get immersed in that culture."

Ibrahim says the experience confirmed his desire to attend graduate school, where he hopes to study quantum computing and sensing.

Gwenyth Severson, a junior in ECE, says she had no experience with research before joining the program. She worked with Associate Professor Joshua San Miguel, researching unique computer architectures. "I knew nothing about research before going into this, but it gave me confidence in doing work on my own outside class," she says. "And I figured out I really do want to go to grad school to study computer architecture and get a master's and hopefully a PhD. I loved working in the lab so much that when I was given the opportunity to continue in the lab, I took it right away. It's incredibly fun, challenging, and worth every minute."

In the last few years, ECE has worked to increase research opportunities and visibility for students, hosting undergraduate and graduate student research symposiums. The department hopes to continue SPARK next year as part of that effort.

Gwenyth Severson (right) discusses the research project on computer architecture she undertook in the lab of Associate Professor Joshua San Miguel.

FOCUS ON NEW FACULTY

Omar Chehab brings an interdisciplinary research agenda to AI algorithms

Artificial intelligence models are a marvel of engineering, and, says Omar Chehab, reflect an engineer's mindset.

"While building AI, people have experimented with many things. They have some intuition for why it works," says Chehab, who started as an assistant professor in fall 2026. "In the end, you get this very big machine that works well, but is a patchwork of tricks that we don't fully understand."

In his new lab, Chehab aims to tackle AI problems with a mathematician's or computer scientist's perspective before rebuilding it like a well-informed engineer. "The idea is that we will pretend we don't know at all why AI works," he says. "Then we will break it down into LEGO pieces, understand the different pieces and how they fit together. Finally, we can reassemble them in different ways to build new AI algorithms."



These new algorithms, he hopes, will be more understandable, powerful and use far fewer resources than the current generations of AI.

Chehab received his PhD from Inria, the French national research institute for digital science and technology at the University of Paris-Saclay. There he studied the statistical foundations of machine learning algorithms and their applications to brain imaging. He continued this line of work in his postdoctoral positions at ENSAE Paris and at Carnegie Mellon University.

With the launch of his own lab, Chehab aims to push this interdisciplinary line of research which ranges from the theoretical foundations of generative AI algorithms, to learning causal networks in the brain and, more recently, generating plausible molecular configurations.

"I want to run an interdisciplinary lab that asks mathematical questions," he says, "but also wants to make things work at scale for real-world data. That's a very good place to be."

Daniel Costinett brings high energy to low-power electronics

Daniel Costinett, the new Grainger Professor in Power Electronics points out that over the last half century, electrical engineers have made huge strides in generating, transporting, converting and storing electricity—from massive continent-spanning electricity grids to the tiny converters on integrated circuits.

But that doesn't mean the work is done. Even minor improvements in efficiency and performance can add up to major energy and cost savings and improve miniaturization.



That's why Costinett focuses on designing energy converters tiny enough to fit on computer chips to increase their speed and power. Over his career, however, he's also worked on grid-scale projects, electric vehicles, generators and everything electrical in between. "No matter the size, these all use converters," he says. "I look at how to make them perform better, control them faster and design them more efficiently."

Costinett earned his PhD at the University of Colorado at Boulder, studying power supplies for data centers. After a year as an instructor at Utah State University, he joined the faculty of the University of Tennessee, Knoxville, where he remained for 13 years.

There, his research received numerous accolades, including a National Science Foundation-funded CAREER Award, the 2022 IEEE Richard M. Bass Outstanding Young Power Electronics Engineer Award, and the 2015 IEEE IAS William M. Portnoy Award. UT Knoxville recognized him with the 2022 Moses E. and Mayme Brooks Distinguished Professor Award, 2015 ECE Faculty of the Year Award, 2020 Chancellor's Award for Professional Promise in Research, and 2023 Gonzalez Family Outstanding Researcher Award. He also served as associate department head and co-director of education for CURENT, a major National Science Foundation-funded power electronics research center.

Costinett's primary work focuses on the small stuff, including power supplies, microelectronics, low-power applications and detailed circuit design. His most recent projects incorporate better analysis into the circuit design process, including a framework and open-source tools that aid in the development of next-generation GPUs—the processing units most critical in AI, which demand unprecedented levels of power and require more robust converters.

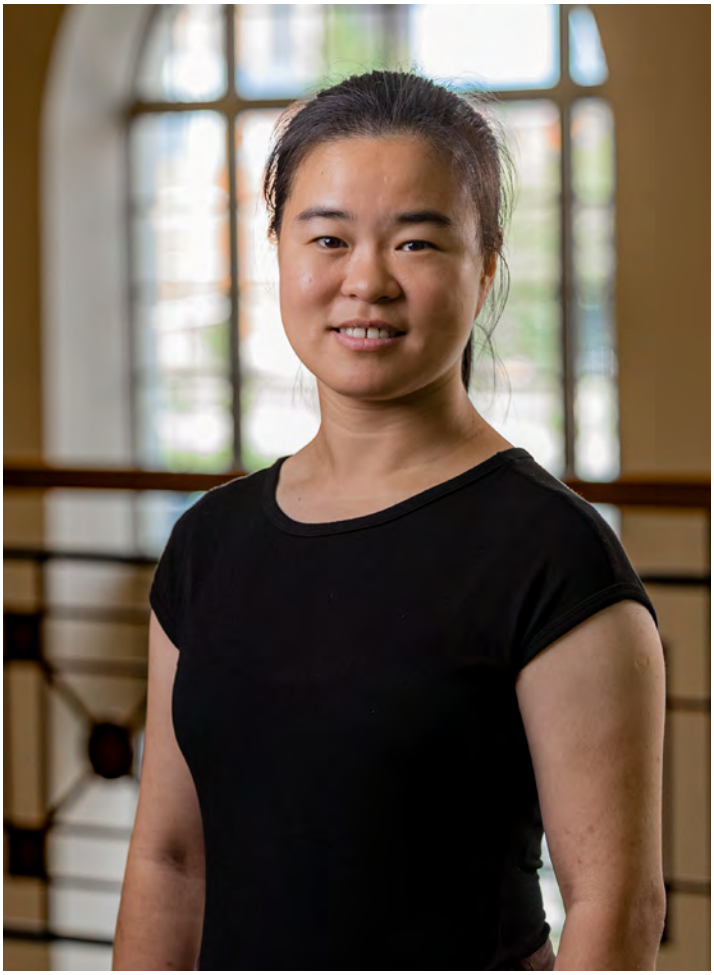
At UW-Madison, Costinett will continue that work as a member WEMPEC. He hopes to collaborate with his colleagues on large-scale projects, bringing his expertise to the group. "I'm kind of the guy who fills out the microelectronics and circuit design end of things," he says. "I'm really hoping to continue the legacy of WEMPEC and that close collaboration with industry, seeing what its needs are and seeing how we can help them address those needs. And I'd like to make sure we're still generating strong students who serve the needs of industry and serve the needs of the state."

Hezi Zhang is building a bridge between quantum computing hardware and software

As quantum computing matures, it will take an entirely new computing stack to turn the powerful qubits, the "quantum bits" that process data at the heart of quantum computers, into practical, useable devices. Hezi Zhang, who started in fall 2026 as an assistant professor, is working to develop new computer architecture paradigms to harness qubit capabilities and lower demands on hardware to accelerate the pathway to practical quantum computing.

Zhang earned a master's degree in computer science from the Georgia Institute of Technology and a PhD from the University of California, San Diego, with a focus on the interplay between physics and computer architecture.

At UW-Madison, Zhang hopes to bridge the gap between quantum hardware and upper-level software. Currently, there are many different types of qubits that each process information in different ways, including superconducting qubits, atomic qubits, photonic qubits and others. Each of these qubits has unique strengths and features that can be exploited by computer software.



However, current quantum programs and algorithms are written abstractly and are "qubit-neutral," ignoring hardware features and constraints at the bottom of the computing stack. "Our role is to bridge this gap between application and hardware," says Zhang. "We ask how you map the upper-level programs down to the hardware to make them more efficient and robust."

Zhang hopes to add new research areas to her work as well, including heterogenous quantum computing and quantum error correction, an important element in the quantum computing stack that is a single discrete layer in current architectures. She also plans to investigate hybrid quantum and classical computing strategies for AI, hoping to create new paradigms that allow the systems to work together, managed by AI to solve difficult problems.

Advances in microwave ablation targeted cancer close to home

Eric Hoffman is grateful for the opportunity to work with ECE students over 20 years as a member of the teaching faculty. He's especially thankful for cancer treatment technology developed by UW-Madison researchers, including ECE colleagues just a few doors down from his office in Engineering Hall.

Beginning in 2022, after he was diagnosed with stage IV colon cancer, which had metastasized to his liver and lungs, Hoffman underwent an array of therapies to treat 24 tumor sites. That included surgery, radiation and a type of chemotherapy called 5-FU, which was developed at UW-Madison. But the most frequent therapy was microwave ablation, in which an antenna uses microwave radiation to destroy tumors.

"I'd heard a couple of little stories about ECE's work on ablation," he says. "But my oncologist pointed out the connection, telling me how ECE had contributed significantly to the field."

Ablation therapy is now a routine part of cancer treatment, but it took decades of innovation to mature the technique, which is still advancing.

In the early 2000s, Fred Lee, a professor of radiology at UW-Madison, approached Daniel van der Weide, the Grainger Institute for Engineering Professor, for help developing a new, more powerful type of ablation. Along with Chris Brace (MSEE'03 and PhDEE'05), now a professor of radiology and biomedical engineering, van der Weide drew on his background in ultrafast microwave measurement and near-field sensing to explore ways to precisely deliver controlled doses of microwave energy.

Brace, van der Weide, and other UW-Madison medical researchers developed new probe designs and control and imaging systems that could deliver microwaves directly to tumors without damaging the surrounding tissue. This work led to a Madison-based spinoff company called NeuWave which commercialized a next-generation microwave ablation platform quickly adopted by the oncology community.



Nader Behdad, the Harvey D. Spangler Professor, and Susan Hagness, Philip Dunham Reed Professor Emerit and Maria Stuchly Professor Emerit, have also made major advances in the field. Early on, researchers believed ablation could only be conducted with low-frequency microwaves using thicker-diameter antennas equipped with a device called a balun that prevents microwaves from damaging healthy tissue along the probe's length. Through modeling and experimentation, however, Hagness and Behdad showed that high-frequency microwaves were effective for ablation and that innovations in antenna design could eliminate the need for the balun, leading to a new, ultrathin, flexible, balun-free probe that can be threaded through a blood vessel.

Van der Weide thinks the cross-disciplinary work on ablation showcases applied research at its best. "Microwave ablation is a powerful example of how engineering at UW-Madison can move from fundamental theory to global clinical impact," he says. "The pathway from lab to market was made possible by a culture of collaboration across engineering and medicine—and by a strong institutional commitment to real-world translation."

If he had been diagnosed just five years earlier, Hoffman's oncologist told him, he likely wouldn't have survived. Now—due in part to UW-Madison advances in microwave ablation—Hoffman is not only cancer-free, but also newly retired and ready to head into the next chapter of his life.

Ablation probes developed by NeuWave Medical Inc. Submitted photo.

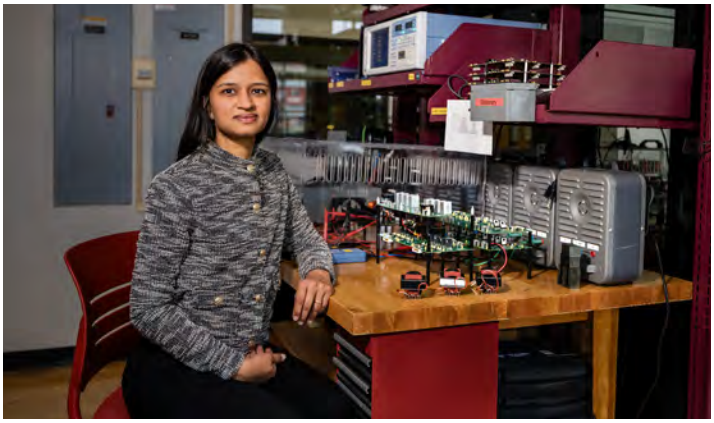


Photo: Joel Hallberg

Supercharging the energy highway

Renewable, distributed energy sources like solar, wind, battery storage and small nuclear reactors are changing how energy enters the grid, and electrification is spiking energy demand. As society mobilizes to face these changes, there is one literally gigantic bottleneck: our aging electricity grid

"You hear from scientists and engineers that our grid infrastructure is old. If we want to put in more power sources for data centers or support new populations or do whatever we want to do, we need energy—and that energy will be transmitted through the grid and grid technologies," says Mahima Gupta, the Thomas A. Lipo Assistant Professor. "We need to catch up to the current century. We have all these new energy technologies we're working on—but what's the point if you can't transmit energy efficiently?"

Gupta, who studies power electronics and energy conversion technologies, is principal investigator on a new U.S. Department of Energy Advanced Research Projects Agency-Energy (ARPA-E)-sponsored project aimed at more than doubling grid capacity.

A big part of that is converting parts of the grid to direct current (DC) power, which travels farther and better absorbs energy of different frequencies, like renewable energy sources.

In her project, Gupta will create a top-to-bottom design of a compact, super-efficient DC converter substation, including contributions from engineering colleagues Dominic Gross, an ECE associate professor; Giri Venkataramanan, the Keith and Jane Morgan Nosbusch Professor in ECE; Gregory Nellis, the William A. and Irene Ouweneel-Bascom Professor in mechanical engineering; and Allison Mahvi, the Duane and Dorothy Bluemke Assistant Professor in mechanical engineering, along with industry and academic partners.

At the conclusion of the project, in about three years, Gupta says she hopes to have an open-source, lab-validated design that could be used to produce a full-scale high-voltage DC conversion station prototype at a much lower cost.

Making AI less of an energy hog

Even a decade ago, researchers were worried about AI energy use. That's why they proposed something new: optical neural networks.

Instead of relying on traditional computer chips, optical systems use extremely tiny, fast lasers and photodetectors to process information, which could be orders of magnitude faster and more efficient than current systems. But optical systems lack a key attribute needed for neural networks called nonlinearity.

But PhD students Qingyi Zhou and Jungmin Kim, computer science PhD student Yutian Tao, and Grainger Professor Zongfu Yu, have found a new way to add nonlinearity to optical systems, recently published in the journal *Nature Communications*.

While a few nonlinear optical materials do exist, the amount of laser energy needed to activate their nonlinear functions is so great that it negates the energy savings of the system. Zhou, Yu and their colleagues decided to take a fresh look at optical nonlinearity to see if there was another way to approach the problem.

"We asked, 'What if we used some not-so-conventional materials, like quantum emitters, which already show very, very strong optical nonlinearity?'" says Zhou. "If you construct a neural network including these materials, hopefully it would produce nonlinearity."

Using a suite of simulation and computational tools, the team designed a nanostructure surrounding a quantum emitter, optimized to produce as much nonlinearity as possible. The detailed simulations showed that incorporating the devices into a full neural network would indeed lead to strong nonlinearity—creating a faster, more powerful system.

Additionally, the model showed the team's design would reduce power consumption seven orders of magnitude below conventional optical materials. Zhou emphasizes that while the results are a theoretical estimation, the analysis shows that nonlinearity itself should no longer be the bottleneck for optical computing.

PhD student Qingyi Zhou. Photo: Joel Hallberg.



TRIO OF FACULTY EARN NSF CAREER AWARDS

Jeremy Coulson is reinventing how machines learn to control

Next-generation technologies—including self-driving vehicles, intelligent robots, personalized healthcare devices, and smart infrastructure—are already reshaping industries and becoming increasingly woven into daily life. But to be successful, these advances, and many others, need safe, reliable and flexible control systems.

Jeremy Coulson, the Mark and Jenny Brandemuehl Assistant Professor, will use a five-year National Science Foundation-funded CAREER award to develop novel data-driven control systems that can handle these new, complex systems safely and efficiently.

Control systems are everywhere. These software systems control relatively simple processes, like a thermostat that turns on a heater when it's cold, to more advanced systems, like an insulin pump that needs to constantly regulate blood glucose.

Traditionally, these control systems are based on mathematical models and physics that guide each of their decisions. That's fine when the underlying system is easy to model. But when it comes to really complex systems—such as an autonomous taxi navigating a dark, slick road through unpredictable traffic—traditional methods hit a wall.

"These systems we are dealing with are becoming more and more complex. It is becoming nearly impossible to do the modeling step by hand," says Coulson. "In my project, we skip that modeling step entirely and use historical data from sensor measurements to design controllers directly, without ever needing to write down equations for how these systems behave."

To accomplish this, Coulson will first use mathematical tools to develop principled uncertainty modelling and robust control methods directly from data sets, with a focus



Photo: Joel Hallberg

on ensuring safety and performance. The next step will be incorporating streaming data, like information coming from an autonomous vehicle's various sensors, into this framework. The goal is to create an algorithm capable of continuous learning and adaptation in complex, changing environments. Once this algorithm is complete, Coulson plans to validate the algorithm through high-fidelity simulations. He'll partner with colleagues at UW-Madison to test the algorithms in robotics experiments.

At the end of the project, Coulson aims to have a powerful, adaptable, data-driven control system that can be implemented in all sorts of automated technologies. "It's a general-purpose system; that's the beauty of the theory, it can be applied so widely that it's really just up to individuals to decide if it's applicable in their specific cases," he says.

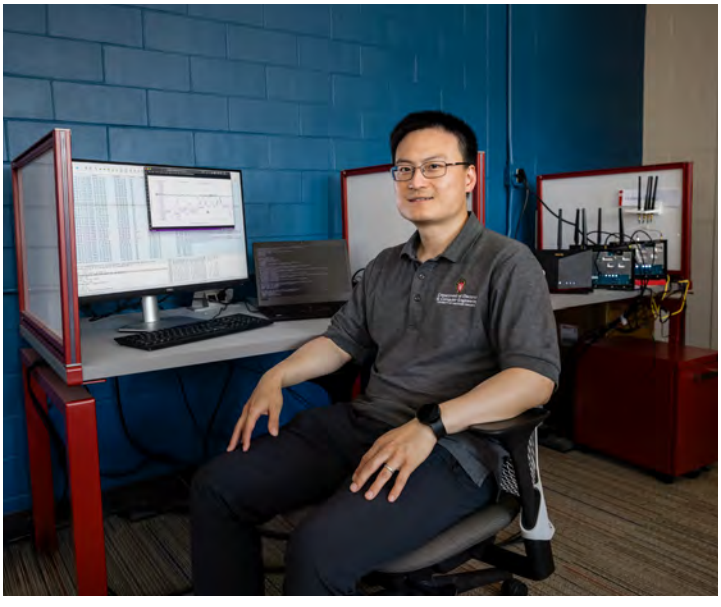


Photo: Joel Hallberg

Feng Ye is modernizing networking's rules of the road

The near future promises all sorts of exciting technologies, like autonomous vehicles, robot-powered remote surgery and AI-driven manufacturing—yet these futuristic applications will rely on something stuck firmly in the past: network management.

By the end of his five-year National Science Foundation-funded CAREER Award project, Assistant Professor Feng Ye hopes to deploy network management tools that will make these and other network-dependent applications more responsive and more reliable.

Ye says that he believes there are more than enough network resources—mainly the capacity of a network to transfer data—available to meet current needs, as well as emerging AI-powered and advanced technologies. The problem is the way the resources are managed, which has not changed for a long

time. This is especially true when it comes to edge networks, like those run by universities, large companies or institutions, in which data primarily flows between end users and the network via Wi-Fi routers or cell towers.

"It's like building a road as wide as possible," explains Ye, "while keeping the original traffic lights in place."

Current network protocols are essentially reactive—they mete out bandwidth to devices based on a first-come, first-served basis, though they sometimes prioritize certain services if a signal is marked urgent. Today's networks also have a bias toward optimizing download speeds versus uploading. That download bias is a major bottleneck for emerging intelligent applications where computers and devices need to communicate back and forth with each other in near real-time.

To tweak this system, Ye plans to develop network management algorithms that look at network traffic proactively instead of reactively. That means AI-enabled management tools will simultaneously monitor data traffic, looking for recognizable patterns while also controlling the flow of data to eliminate delays as much as possible for all users, both those uploading and downloading data.

The tool will forecast network traffic over a short but critical time window, and decide which must be transmitted first—like driving or surgery instructions—and make sure the critical data reaches its destination before it expires.

"Technically, we're not trying to improve network capacity; I personally believe the infrastructure we have today is good enough for many use cases," says Ye. "We're just trying to better utilize the infrastructure that we already have."

Haihan Sun is advancing AI-powered ground penetrating radar

Over the past century, ground penetrating radar (GPR) has evolved into a powerful non-invasive sensing tool used for infrastructure inspection, agriculture, land mine detection, geology, archaeology and countless other specialized applications.

Now, advances in machine learning and artificial intelligence are creating new opportunities to vastly improve the imaging resolution, accuracy and processing speed of GPR. But there is one major obstacle: There are no large-scale, high-quality GPR datasets for AI models to learn from, mainly because GPR data from different systems is incompatible and difficult to compare.

That's why assistant professor Haihan Sun is embarking on a National Science Foundation-funded CAREER Award project to standardize GPR data and create new sensing algorithms to power the next generation of ground-penetrating radar technology.

Sun's motivation grew out of her postdoctoral research in Singapore. In her early efforts to explore how machine learning can improve GPR, Sun had to spend long hours in the humid 90-degree heat building outdoor test sites, digging soil, burying targets and collecting data—a hot and strenuous job.

"Every time I was out in the field, I kept thinking: what if we had algorithms that could standardize GPR data across systems?" she says. That would open up all sorts of previously collected data for training.

Now, Sun is putting that idea into action. Her team will first develop domain-transfer frameworks that convert incompatible GPR data from different systems into a standardized format. They will then use those standardized

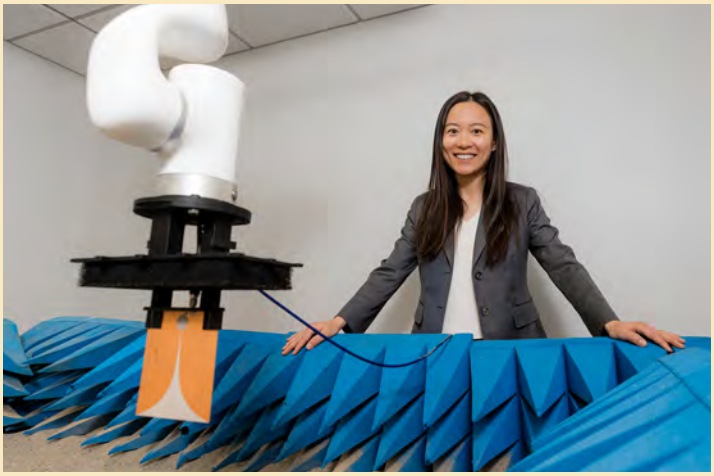


Photo: Joel Hallberg

datasets to create a physics-informed AI framework that can process GPR signals and generate clearer, higher-resolution and more informative subsurface images in real time. This framework will be integrated with GPR hardware so users can "see" underground conditions on site, instead of waiting for slow off-site processing.

Sun plans to validate this technology in three real-world applications, including soil moisture mapping, underground crop imaging and aerial drone-based detection of buried explosive ordnance. She will also launch an open-source, community-driven platform for sharing GPR datasets, pretrained AI models, system designs and educational resources developed throughout the project.

"This project has the potential to transform how human and autonomous systems perceive and interact with the hidden subsurface world," says Sun. "It will create exciting opportunities far beyond today's GPR applications."



STUDENT AWARDS

ECE students win major awards at annual conferences

• PhD students Alish Kanani, advised by Gene Amdahl Professor Umit Ogras, and Lukas Pfromm, advised by Ogras and Dugald C. Jackson Assistant Professor Eric Tervo, won the Best Paper Award at DAC 2026, The Chips to System Conference, considered the oldest and most prestigious conference in electronic design automation and semiconductor-system design. Kanani also took first place in the DAC PhD Forum, a highly competitive international competition, hosted by the Association for Computing Machinery (ACM) Special Interest Group on Design Automation (SIGDA) and the IEEE Council on Electronic Design Automation (CEDA)

• PhD student Halil Topozlu, advised by Harvey D. Spangler Professor and Vilas Distinguished Achievement Professor Nader Behdad and Keith and Jane Morgan Nosbusch Professor Emerit John Booske, won the best student paper award at the 2026 IEEE International Vacuum Electronics Conference.

• Hyeongmeen Baik, a PhD student advised by Thomas A. Lipo Assistant Professor Jinia Roy, won the best poster presentation award at the 2026 IEEE Applied Power Electronics Conference.

• PhD student Shenwei (Erick) Yin and postdoc Jin-Woo Cho, who work in the lab of Antoine-Bascom and Jack St. Clair Kilby Professor Mikhail Kats, won the Optical Materials Express Emerging Researcher Best Paper Prize.

• Yoganand Biradavolu, a PhD student working with Associate Professor Bhuvana Krishnaswamy, was the winner of the Low Power Design Contest at The International Symposium on Low Power Electronics and Design 2026.

• Undergraduate Chengling Xu and PhD student Huiwen Zhang, advised by Assistant Professor Feng Ye, won the Best Student Paper Award at the 2nd International Conference on Intelligent Multimedia, Networking, and Security.

Featured image: From left to right, UW-Madison DAC 2026 attendees Miao Sun, Zhengxiong Li, Jiahao Lin, Alish Kanani, and Umit Ogras. Submitted photo.

FACULTY NOTES

The London-based Royal Aeronautical Society named Philip D. Reed Professor Bulent Sarlioglu fellow, an honor awarded to those who have made outstanding contributions to aerospace and related professions.

Joe Krachey earned Distinguished Teaching Faculty status, the highest designation for teaching faculty at UW-Madison.

Grainger Institute for Engineering Associate Professor Line Roald received a 2026 UW–Madison Distinguished Faculty and Staff Postdoc Mentoring Award.

Thomas A. Lipo Assistant Professor Jinia Roy was selected for an IEEE Power Electronics Society Young Professional Service Award.

Assistant Professor Feng Ye is part of a Genesis Mission project protecting AI from cyberthreats. The projects are a national effort aimed at leveraging AI to address some of the nation's most pressing energy, scientific and engineering challenges.

A project led by ECE faculty has received State Economic Engagement & Development (SEED) funding, which supports faculty and staff who are co-founders in a Wisconsin company. Antoine-Bascom Professor and Jack St. Clair Kilby Professor Mikhail Kats is principal investigator with Dugald C. Jackson Assistant Professor Eric Tervo and Associate Professor Jennifer Choy serving as co-PIs on a project to develop an alternative to satellite-based GPS based using quantum magnetometers.

Eight faculty have received named professorships: Joseph Andrews is the Mead Witter Associate Professor; Jennifer Choy is the Jay and Cynthia Ihlenfeld Associate Professor; Chirag Gupta is a Dugald C. Jackson Assistant Professor; Robert Jacobberger is the Charles Ringrose Assistant Professor; Shubhra Pasayat is a Dugald C. Jackson Assistant Professor; Bulent Sarlioglu is the Philip D. Reed Professor; Eric Tervo is a Dugald C. Jackson Assistant Professor; and Lei Zhou is the Charles Ringrose Assistant Professor.

Chu Ma has been promoted to associate professor and Eduardo Arvelo has been promoted to associate teaching professor.

STUDENT NOTES

Ashwin K. Avula, an MS research student advised by Associate Professor Joshua San Miguel, was recently named to the #DesignCon 40 Under 40 for his work and growing impact in high-speed design. Over the past three summers, he has interned with Texas Instruments, where he worked on IC design for high-speed data transmission.

A paper by Zhewen Pan, PhD student advised by Associate Professor Joshua San Miguel has been selected for "Top Picks from the Computer Architecture Conferences," to be published in an issue of IEEE Micro. Her paper was also independently chosen for Communications of the ACM Research Highlights, a distinction that represents top papers across all ACM computing fields.

Four ECE undergraduates have earned research fellowships. Ahmed Ibrahim and Jake Yun were selected for Hilldale Undergraduate Research Fellowships and Heng (Dariush) Lasiang and Carrie (Yuhan) Xing were chosen for Sophomore Research Fellowships. These competitive awards provide funding and research opportunities that allow students to explore their interests, work closely with faculty mentors and gain valuable experience as researchers.

PhD student Minjeong Kim is one of three engineering students selected for a 2026-2027 Grainger Wisconsin Distinguished Graduate Fellowship, which honors outstanding doctoral students. She is a member of Antoine-Bascom and Jack St. Clair Kilby Professor Mikhail Kats' lab, where she focuses on silicon-photonic interfaces for quantum systems.

ALUMNI NEWS

ECE alumnus and founder of Dirac Labs Sanket Deshpande, was featured in the *EE Times* an electrical engineering news publication. His company is working on quantum sensors that could reduce the dependence on satellite-based GPS systems.


Submitted photo

Navrina Singh (MSECE '03) was selected by the Wisconsin Alumni Association for a 2026 Luminary Award. Singh founded Credo AI in 2020, a platform that provides organizations with a centralized way to govern, measure, and monitor AI systems while keeping pace with emerging global regulations and standards.

Rahul Parhi (MSECE'19, PhDECE'22) received the 2026 Vasil A. Popov Prize, an early-career honor in approximation theory and applied mathematics at the Foundations of Computational Mathematics (FoCM) conference. An assistant professor at the University of California, San Diego, Parhi's research explores the mathematical foundations of neural networks.

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Photo: UW Athletics

From the locker room to the dragon's lair

Fans of Travis Frederick, the Wisconsin Badgers hall of famer and former Dallas Cowboys center affectionately known as "Fredbeard," know of his many accomplishments on the field. But even his biggest fans probably don't know about his other major achievements: conquering dragons, surviving on the ice planet Hoth, and defeating dozens of brutal final bosses.

Frederick has been an avid tabletop gamer—think role-playing games like Dungeons & Dragons —for more than two decades. After retiring from the NFL in 2020, Frederick combined his passion for gaming with his University of Wisconsin-Madison computer engineering degree as co-founder of Demiplane. The popular digital platform facilitates online tabletop game matchmaking and also produces the popular Nexus line of digital toolsets that enable more efficient and in-depth game play.

So how did a pro-football luminary go from the locker room to the dark and dingy dungeon? By his own admission, Frederick has always been a gaming nerd who dabbled in football, not the other way around. Even during his NFL career, he continued to work on computer coding and played tabletop games with friends, some of whom he'd played with since middle school. "Once we graduated and my friends were out working in the real world and I was playing ball, we still continued to play weekly, or almost weekly, just to stay connected," he says. "It was a great way to just set aside your worries for a minute and pretend to be somewhere else."

After retirement, Frederick and his business partner Peter Romenesko went full steam ahead on their idea for a digital platform to improve the tabletop gaming experience.

Learn more about Frederick's success on the gridiron and the tabletop: