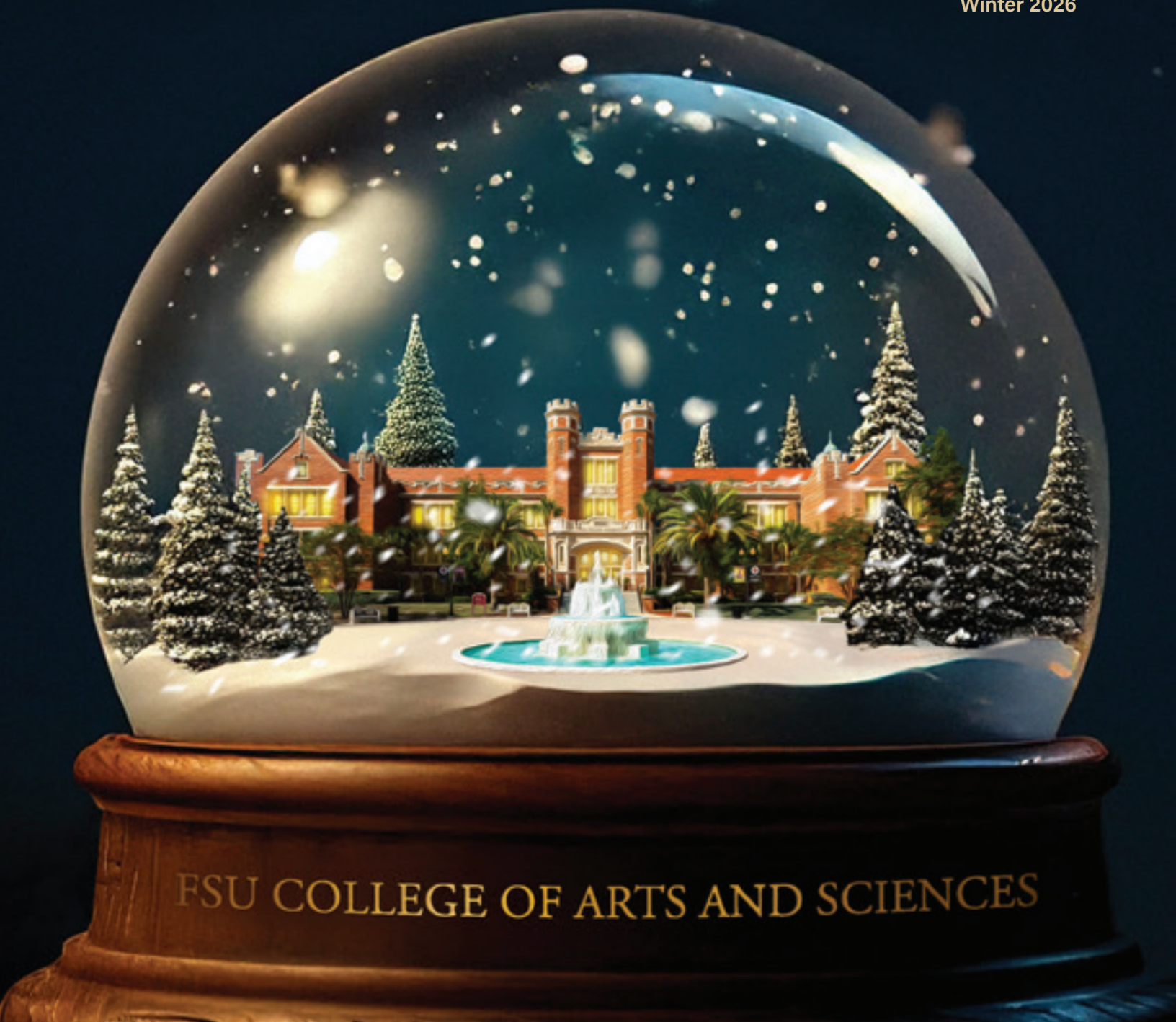
SPECTRUM

FLORIDA STATE UNIVERSITY COLLEGE OF ARTS & SCIENCES

Winter 2026



From the Dean

Welcome to the Winter 2026 edition of Spectrum magazine, the official alumni publication of the Florida State University College of Arts and Sciences. The past year brought sustained productivity across the college with accolades for students and faculty.

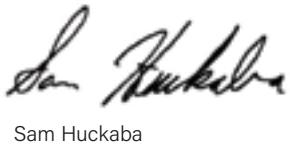
On the heels of a 2024-2025 graduating class exceeding 14,000, FSU welcomed a large incoming cohort. Members of the Class of 2029, the last graduates of the decade, were selected from a pool of 86,000 applications, and the class includes students from all 50 states, all 67 Florida counties, and 50 countries. Last fall, FSU enrolled more than 44,000 students of all levels, and approximately 10,500 of them now call Arts and Sciences their collegiate academic home.

Faculty across the college hosted dozens of conferences, workshops, and symposia that brought academic energy to campus in addition to the hundreds of seminars and colloquia that routinely take place within our many departments, centers and institutes. Some events are supported by endowments and occur annually, such as the James C. Smith Lecture, hosted by the Department of Psychology, and the Myles Hollander Distinguished Lecture, hosted by the Department of Statistics, both of which honor former Robert O. Lawton Distinguished Professors.

Other events are part of weekly research-related activities that serve to communicate results and inspire audiences. Undergraduates have access to all of these events, and many end up pursuing research projects as a result. Dozens of Arts and Sciences undergraduate students participated in laboratory and field research through the Center for Undergraduate Research and Academic Engagement's Undergraduate Research Opportunity Program, and in October, 17 presented posters at the President's Showcase of Undergraduate Research Excellence.

In this issue, I hope you enjoy stories of relationships forged at FSU that have turned into career-long collaborations, of alumni breaking fresh ground in the fields of photochemistry and physics, and of initiatives and facilities that have put FSU on the map for outstanding career preparation and cutting-edge research.

As we launch into the new calendar year, I invite you to stay connected with the college through our social media channels, website and our monthly newsletter, and I send my very best wishes for a healthy and productive 2026.



Sam Huckaba
Dean, College of Arts and Sciences

SPECTRUM

FLORIDA STATE UNIVERSITY COLLEGE OF ARTS & SCIENCES

FEATURES

6
Alumni Alight
From innovative science to open-hearted philanthropy, Arts and Sciences alumni are making a difference in the world.

16
Student Success
Undergraduate and graduate students bring fresh perspectives to address historical, medical and technological challenges.

22
Institutional Innovation
Across disciplines, Arts and Sciences faculty and researchers represent the past, present and future of knowledge.

On the cover
This winter we celebrate the one-year anniversary of the storm that turned Tallahassee and Florida State University into a snowy wonderland, complete with sledding on College Avenue and snowman-building on Landis Green. Photo illustration by Marc Thomas.

A Bold New Era for the College of Arts and Sciences

Florida State University has launched a new comprehensive campaign. As the largest college on campus, Arts and Sciences has embraced an ambitious $80 million goal that will focus on four key priorities: empowering exceptional faculty and staff, advancing groundbreaking research and creative innovation, elevating student success through interdisciplinary learning, and enhancing the facilities that make discovery and creativity possible.

As one of our 100,000 proud alumni, you are part of a vibrant community that continues to shape the future of science, scholarship and the humanities. Through this campaign, we invite you to join us in supporting the next generation of thinkers, creators and leaders. We honor the academic tradition of our founding institution, the Florida State College for Women, by continuing to support internationally known faculty, as well as curious and ambitious undergraduate and graduate students. FSU's College of Arts and Sciences represents the foundation of an education that transforms lives and fuels progress across the world.

For more information about making a gift or for general questions about giving to FSU, contact Nancy Smilowitz, the college's assistant dean for development and alumni affairs, at 850.294.1034 or nsmilowitz@fsu.edu.

Nole Notes

The top news from around the college

Year of Quantum: FSU poised to lead in quantum science and engineering

The Quantum Initiative at Florida State University aims to further quantum science and engineering and to realize its potential for transforming technology and our understanding of how to apply these new technologies to improve our world.

FSU has made major investments in expanding its existing research in this rapidly growing field. At the university's 2023 quantum symposium, FSU President Richard McCullough announced an initial investment of more than $20 million into the initiative. Two years later, the university has hired seven new faculty members and 11 postdoctoral fellows and has opened a new $126 million cutting-edge laboratory space where faculty and researchers can develop the next generation of quantum science and engineering technologies.

"Florida State University is a national leader in quantum research," McCullough said. "Quantum science and engineering will change the world and transform lives, and FSU plans to lead the way."

For the latest news on FSU's Quantum Initiative, including involvement by College of Arts and Sciences physics and chemistry researchers, visit quantum.fsu.edu.

Yushun Dong

Researchers receive $2.3M NSF grant to strengthen wildfire management in hurricane-prone areas

The four-year project will be led by Yushun Dong, an assistant professor of computer science, and is the largest research award ever for FSU's Department of Computer Science. Dong and his interdisciplinary team will focus on wildfires in the wildland-urban interface, where forests such as the Apalachicola National Forest meet homes, roads and other infrastructure.

Dong's project, "FIRE: An Integrated AI System Tackling the Full Lifecycle of Wildfires in Hurricane-Prone Regions," will bring together computer scientists, fire researchers, engineers, and educators to study how hurricanes change wildfire behavior and to build AI systems that can forecast, predict and assess potential damage.

"The modern practice of prescribed burns began over 60 years ago, which was a huge leap in working with nature to help manage an ecosystem," said Dong, who joined FSU's faculty in 2024 and established the Responsible AI Lab at FSU after earning his doctorate from the University of Virginia. "Now, we're positioned to make another leap: We're able to use powerful AI technology to transform wildfire risk management with tools such as ignition forecasting, roadway disruption prediction, condition estimations, damage assessments and more."

The project is funded as part of a National Science Foundation program, Fire Science Innovations through Research and Education, or FIRE, which was established last year and funds research and education enabling large-scale, interdisciplinary breakthroughs that realign our relationship with wildland fire and its connected variables.

Kathleen Powers Conti

Public historian earns prestigious Florida Trust for Historic Preservation education award

Kathleen Powers Conti, an assistant professor in FSU's Department of History, earned the Florida Trust for Historic Preservation Roy E. Graham Award for Excellence in Historic Preservation Education, a statewide teaching award for her impact as an educator in the field of historic preservation from a nonprofit that promotes the protection of Florida's historic sites and heritage.

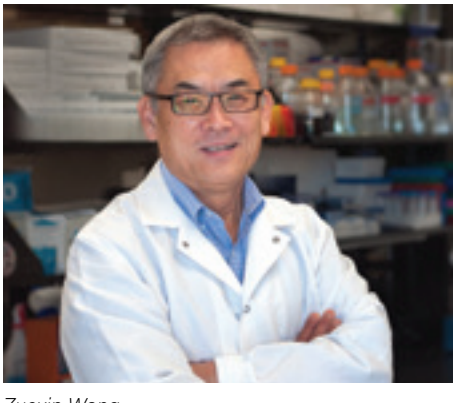
"I'm honored that my colleagues nominated me for this award, and I'm so grateful I get to work with such amazing faculty and students here at FSU," Conti said. "I love getting to show students how they can take what they've learned in a history classroom and apply it in a wide variety of careers including with the National Park Service, museums, and local, state and federal governments."

The Florida Trust for Historic Preservation,

founded in 1978, is a nonprofit organization dedicated to protecting Florida's history and heritage. The Roy E. Graham Award is named in memory of historic preservation architect and educator Roy Eugene Graham and recognizes professional educators who have made long-term contributions to historic conservation education, ensuring future generations will continue to preserve Florida's history and most endangered places.

Researchers awarded $3.7M grant to investigate neural interactions influencing drug- and social-reward interaction

FSU researchers have been awarded a $3.7 million grant from the National Institute on Drug Abuse, a division of the National Institutes of Health, to investigate the effect of peer partners on facilitating drug avoidance and reducing the desire to seek out drugs. Leading the five-year project are Mohamed Kabbaj, professor of biomedical sciences in the College of Medicine, and Zuoxin Wang, professor of psychology in the College of Arts and Sciences. They will investigate the foundational neural interactions influencing drug- and social-reward interaction.



Zuoxin Wang

"It's well known that drug abuse is a serious worldwide public health problem and that social affiliation and context can have profound effects on preventing and reducing drug use and dependence," Wang said. "Unfortunately, the underlying neurochemical mechanism is still largely unknown."

Our brains have evolved to reinforce and encourage life-sustaining behaviors through the brain's reward pathway known as the mesolimbic system. When we experience things that give us pleasure, our brains release dopamine, an important hormone that helps us associate pleasurable activities with positive feelings. In someone who abuses substances like drugs, the brain reward pathway is hijacked — the neural circuitry that has evolved to enhance associative learning instead produces pleasurable feelings related to drug use, reinforcing the individual's desire to continue using the substance.

"On the other hand, positive social interaction, such as maintaining strong social bonds, is critical and beneficial as it can have profound effects on our brain and behaviors to prevent and reduce the negative impacts of drug use from a person's social environment," Wang said.

Bryce Anderson, Riley Galpin and Tom Juzek

On-screen and now IRL: FSU researchers find evidence of ChatGPT buzzwords turning up in everyday speech

New research from FSU's Department of Modern Languages and Linguistics, Department of Computer Science, and Department of Mathematics is revealing notable evidence that AI buzzwords overused by chat-based large language models aren't just suggested on screens anymore — they're frequently showing up in how people actually speak.

"This research focuses on a central issue in the discourse surrounding AI and language: Are these language changes happening because we're using a tool and repeating what it suggested, or is language changing because AI is influencing the human language system?" said assistant professor of computational linguistics and principal investigator Tom Juzek. "By analyzing lexical trends before and after ChatGPT was released in 2022, we found a convergence between human word choices and LLM-associated patterns with AI buzzwords."

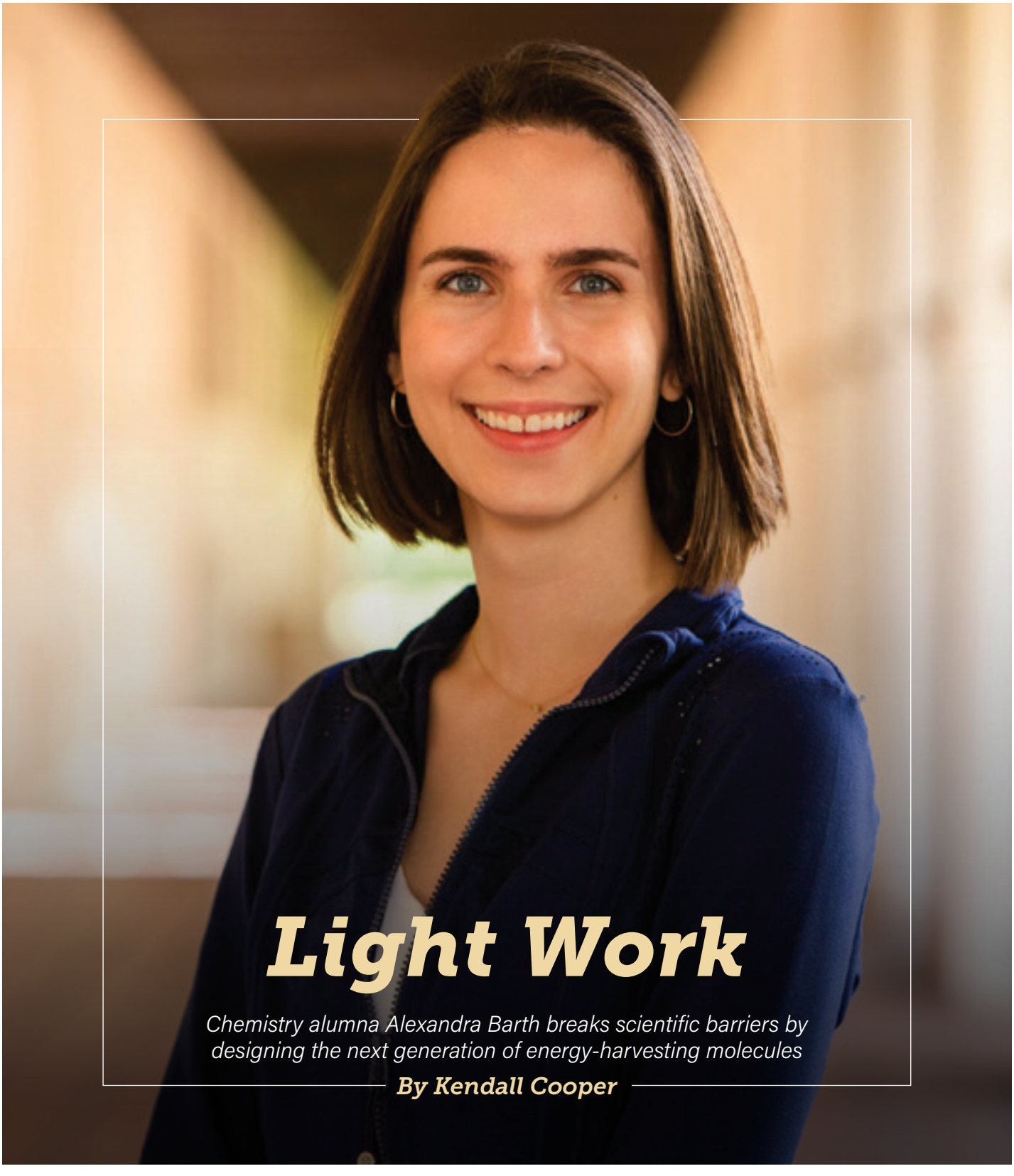
While rapid increases in the use of certain words do occur, these increases are typically due to real-world events. Recent large-scale upticks in the use of words like "delve" and "intricate" in certain fields are attributed to the widespread introduction of LLMs with a chat function, like ChatGPT, that overuse those buzzwords.

The team, including rising computer science senior Bryce Anderson and Riley Galpin, a junior double-majoring in computer science and pure mathematics, analyzed 22.1 million words from unscripted and spontaneous spoken language including conversational podcasts on science and technology.

"The changes we're seeing in spoken language are pretty remarkable, especially when compared to historical trends," Juzek said. "What stands out is the breadth of change; so many words are showing notable increases over a relatively short period."

"Model Misalignment and Language Change: Traces of AI-Associated Language in Unscripted Spoken English" is the first peer-reviewed research to analyze whether the conversational human language system is changing in the wake of the widespread adoption of chat-based large language models like ChatGPT. It was accepted into the eighth Conference on AI, Ethics, and Society, hosted by the Association for the Advancement of AI and Association for Computing Machinery, and was published in AIES Proceedings as part of the conference.

For full details on these stories and more, visit artsandsciences.fsu.edu/news.



Light Work

Chemistry alumna Alexandra Barth breaks scientific barriers by designing the next generation of energy-harvesting molecules

By Kendall Cooper

Alexandra Barth. Photo courtesy California Institute of Technology.

The solar energy hitting Earth's surface in one hour is powerful enough to fuel the global energy grid for an entire year. The problem, however, lies in our limited ability to capture and harvest this energy.

Photochemists like Alexandra Barth, a Florida State University Department of Chemistry and Biochemistry alumna, push past such scientific barriers by designing brand-new molecules that can efficiently harness light energy, leading to enhancements in fuels, industrial feedstocks and even medicine.

"When I mention my job, people often reminisce about how difficult they found chemistry courses," Barth said. "Even without a technical background, people can understand that laser-based instruments are captivating and powerful. These tools, which allow me to understand chemical events occurring faster than I can blink, unlock new means of energy harvesting."

As a postdoctoral researcher at North Carolina State University, Barth combines ultrafast spectroscopy — a technique that leverages lasers to measure and characterize molecules — with molecular design, or the intentional creation of new molecules. This approach seeks to identify ways scientists may have synthetic control over molecular properties, such as light-reactive charge localization, that are critical for discovering the next generation of energy materials.

"Chemists have recently recognized the power and potential of harnessing light energy for selective, unprecedented transformations," Barth said. "Examples of these advancements include carbon dioxide reduction by turning greenhouse gas emissions into small-molecule fuels and creating more effective medicines through targeting bond construction to access complex molecules."

Barth's research also has applications in spintronics, or spin electronics — an emerging physics field that can increase processing capabilities while keeping the size of electronic devices small. Her graduate research explored ways to keep electrons in a polarized state for extended periods of time to create spin memory, a key component for efficient data storage in computers.

From left: Alexandra Barth uses laser-based instruments to measure and characterize molecules. Photo by Sarah Arteta. Barth at graduation. Photo by Scotty Pham. Barth at the National MagLab. Courtesy photo.

"Alex has made significant contributions toward understanding the electronic structures of inorganic complexes," said Felix Castellano, NCSU professor of chemistry and Barth's postdoctoral mentor. "She brings significant energy to the Castellano Research Group in addition to being a capable and strong leader, which will serve her well in an independent faculty career."

Barth began her NCSU postdoctoral appointment in 2023 shortly after earning her doctorate in chemistry from the California Institute of Technology. According to Barth, who graduated from FSU in 2017 with a bachelor's in chemistry, her time in Tallahassee as a University Honors Program student set her up for success as an early career academic.

"At FSU, Alex demonstrated an amazing curiosity that manifested itself in substantive research, establishing herself as a phenomenal young scholar poised to have an impactful research career," said Craig Filar, associate dean of FSU's Honors, Scholars and Fellows, director of FSU's Office of National Fellowships, and faculty director of the university's Presidential Scholars Program. "The national recognition of Alex's work and her continued efforts to mentor young women in chemistry illustrate her intelligence and depth of character. She's a phenomenal representation of what an undergraduate can accomplish at FSU."

In Summer 2025, Barth was among 35 early career scientists worldwide selected for the CAS Future Leaders Program, a leadership program hosted by the Chemical Abstracts Service division of the American Chemical Society. This initiative equips doctoral students and postdoctoral scholars with leadership training and networking opportunities.

As part of the program's 15th cohort, Barth traveled to CAS headquarters in Columbus, Ohio. She also delivered a research presentation on molecular design strategies to enhance visible light absorption in long-lived, earth-abundant emitters at the ACS Fall 2025 conference in Washington, D.C., continuing a decade-long relationship with ACS that first began during her role as founding president of the ACS Student Chapter at FSU in 2015.

"Research is built for collaboration, and the CAS Future Leaders Program has easily been a career highlight thus far," Barth said. "This program featured education in mentoring, problem-solving, storytelling and personal branding. After a decade of conducting research, it's easy to get caught up in the details and forget the bigger picture; science only works if we can find ways to work together, discover new properties and materials, and share our findings with the public."

Dianna Bell. Photo by Stephanie Jones.

Forward Bound

Religion alumna Dianna Bell preserves and provides platforms for untold histories, research

By Christine Watson

Dianna Bell always wanted to live a rich, fulfilling life. The first graduate of the Florida State University Department of Religion's history and ethnography of religion doctoral program has made her home in Cape Town, South Africa, nearly 4,000 miles down the coast from the region that first captivated her during her studies. Today, Bell travels the continent, roughly three times the size of the U.S., using her passion to amplify native African studies, bringing crucial research to the forefront.

As the assistant to legendary human rights activist Albie Sachs, who was appointed to the new Constitutional Court of South Africa by Nelson Mandela in 1994 and played a key role in establishing the country's new government, Bell conducted preliminary research for The Albie Collection, a Ford Foundation-funded biographical project documenting Sachs' life's work, and the two have remained good friends.

But that's not all. Bell presently works as an acquisitions and publishing manager at Brill Academic Publishing and as an editor of African studies for Pluto Press, a London-based independent publisher. These additional roles reflect her conviction that many of the best African studies scholars reside on the continent as members of the communities they research.

"There are thousands of academic journals published in Africa without publishing houses behind them, creating challenges in dissemination, visibility, and attracting high-quality manuscripts," Bell said. "They have great editorial teams with high ambitions and low access to resources. The African Journals Initiative through Pluto Journals supports impressive journals throughout the continent to promote native scholars' research."

Before moving to Africa, Bell, a Utah native, earned a bachelor's degree from Brigham-Young University in 2003 and master's from the University of Idaho in 2008, both in sociocultural anthropology.

In the final year of her master's, Bell met FSU associate professor of religion Joseph Hellweg at the American Anthropological Association conference in Washington, D.C. The connection was instant — she was accepted to FSU's new doctoral track in history and ethnography of religion the following year with Hellweg as her adviser and later, her dissertation committee chair.

"Dianna is a joy to work with and one of the kindest, most thoughtful and perceptive people I've ever met," Hellweg said. "She's a superb researcher, as I saw firsthand when I had the opportunity to visit her at her research site, and she writes in a clear, accessible style. She moves easily between the fields of African studies and Islamic studies, on which she had the good fortune to work with my colleague in the religion department, professor Adam Gaiser."

At FSU, Bell taught herself Bambara, a language spoken by the Mande people in Mali and other West African nations. While conducting research, she lived in Ouélessébougou, Mali, learning about its varied cultural and religious perspectives.

The subject of Bell's dissertation, now her current book project, is Amadou Diallo, a Malian ropemaker from Ouélessébougou. Their friendship began when she shared bananas with him. In turn, he taught her to make rope, revealing his life story over the course of their daily weaving sessions.

"In learning rope-making from Amadou, Dianna was able to record his autobiography," Hellweg said. "Her work has given scholars new insights into Islam in relation to the life cycle in West Africa with particular emphasis on the concept of baraji, a West African notion of Islamic merit, about which little else has been written."

Bell's book, "The Rope Maker's Faith: Baraji in Everyday Islam," is slated to publish in 2026 and covers West African and Islamic perspectives on religious life and community in Mali, documenting the lives of Ouélessébougou residents and baraji's influence on their daily practices.

"I was struck by Amadou's story as he struggled for survival — he was a cattle driver who lived through one of the most devastating famines, and he was in Monrovia when the civil war in Liberia broke out," Bell said. "He was involved in major historical events in such intimate ways, yet his stories would have been lost to history."

This sparked her desire to focus on understudied areas of African scholarship. After earning her doctorate from FSU in 2013, Bell accepted a position at Vanderbilt University in Nashville, Tennessee, as a Mellon Assistant Professor of Religion and taught courses on Indigenous religious traditions of Sub-Saharan Africa. After realizing she wanted to feel more connected to her studies, she and her husband moved to Cape Town in 2017.

"Africa is massive — you can't go a hundred miles without encountering a different history, culture, language group, or a completely distinct group of people," Bell said. "What I love most about my work is that I'm giving Africans and their stories the visibility they deserve."

Clockwise from top left: Human rights activist Albie Sachs with Dianna Bell. Amadou Diallo making rope in Ouélessébougou, Mali. Bell with Diallo (left) and Koniba Doumbia (right), a welder who works next door to Diallo. Photos courtesy Dianna Bell.

Leading with Purpose

Tim Stutz. Photo courtesy Insight Global.

English alumnus Tim Stutz shares personal inspiration while helping students discover their own

By Amy Walden

You could say that Tim Stutz's lifelong passion for philanthropy began on the dance floor... at Tully Gymnasium, to be exact.

It was 1999, music was booming, and the freshman English major had signed up through his fraternity to participate in Dance Marathon at Florida State University, an annual event that has raised over $22 million since 1995.

"We stayed on our feet for 32 hours straight, which was nothing compared to what kids battling pediatric cancer or other terminal diseases face," Stutz said.

He took part in Dance Marathon year after year, even staying at FSU for an extra semester to serve as the event's executive director.

"It was a philanthropic event where you see your efforts — in fundraising and in time — go to work immediately," said Stutz, who set his sights on making a positive impact post-graduation.

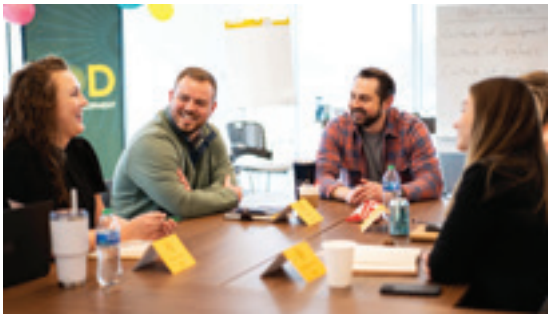
After earning a bachelor's in English language and literature from the Department of English in 2003, Stutz secured a job as a recruiter at Insight Global, an Atlanta, Georgia-based entrepreneurial startup co-founded by FSU business alumnus Scott Madden that provides staffing and professional services. At the time, the organization included two offices — Atlanta and Raleigh, North Carolina — and a dozen employees. Stutz quickly fell in love with helping jobseekers harness their potential and land dream careers, all while working his own way up through roles including sales manager, regional manager and president.

Today, with Stutz at the helm as chief operating officer, Insight Global has grown to more than 80 field offices in North America, Europe and Asia, providing talent and technical solutions for Fortune 500 companies across industries including information technology, health care and engineering.

In addition to managing operations and systems supporting 5,500 employees and more than 30,000 consultants worldwide, Stutz has another role even closer to his heart — serving as the company's executive sponsor of corporate philanthropy and facilitating courses for its leadership academy and training and development program.

"I love the people I work with," said Stutz, who recently celebrated his 22nd year on the team and more than four years as COO. "I consider myself extremely blessed to be surrounded by people who embody our shared values. They're heart-forward, kind, ambitious and hardworking."

These qualities were top of mind after Stutz took a service trip to Africa in 2019 with One-



From top: Tim Stutz with his wife and three children during a visit to Jackson Hole, Wyoming. Courtesy photo. Stutz speaks with colleagues and conducts volunteer work with OneWorld Health. Photos courtesy Insight Global.

World Health, a nonprofit organization that brings sustainable health care to communities around the globe. There, he met a young girl who underwent a life-saving amputation after a cut on her arm became infected due to a lack of access to clean water and medical care.

This experience inspired Stutz to put a new philanthropic goal on Insight Global's agenda, one the company welcomed.

In January 2020, Insight Global formed a partnership with OneWorld Health, which has so far resulted in more than $5.6 million raised to provide critical medical care, the construction of 10 medical clinics across three countries, more than 200,000 patients served, and 2,000 jobs created. Stutz joined OneWorld Health's Board of Directors in 2023 and traveled to Uganda, Nicaragua, and Honduras to assist with medical clinic openings and community outreach.

"I knew our company culture could be a major force for good here," Stutz said. "Whether domestically or globally, we're passionate about filling roles for others who don't have a lot."

In September 2025, Stutz was invited back to his alma mater to present as part of FSU Career Center's Seminole Futures event series, "Power Players: Real Talk." He took center stage at the Student Union to speak to students about forging their own paths in the professional world and leading with purpose along the way.

Christy Mantzanas, the Career Center's director of employer relations, said Stutz exemplifies the professional success and personal integrity students value and aspire to achieve.

"Tim's ability to connect with students and share actionable advice made him a standout addition to this year's expanded programming," Mantzanas said. "Events like Power Players provide students with real-world perspective, helping them navigate challenges and grow through constructive feedback as they carry forward the lessons they learned into their careers."

The visit wasn't just about getting back to his roots — it was also a chance for Stutz to meet the changemakers of tomorrow.

"I was blown away by how confident and ambitious the students were," Stutz said. "As someone whose organization goes to universities to hire good talent, it's exciting that this is the next wave of professionals and leaders entering the workforce."

A photo composite featuring Mona Behl and Allison Miller. Behl photo courtesy University of Georgia Marine Extension and Georgia Sea Grant. Miller photo courtesy Schmidt Ocean Institute.

Classmates to Collaborators

FSU alumnae and oceanographers join forces to advance ocean science across the nation

By Carly Nelson

Almost 20 years ago, Florida State University students Mona Behl and Allison Miller bonded over their shared interest in physical oceanography and being the only women in their department.

The year was 2006, and each had begun graduate study in what was then known as Florida State University's Department of Oceanography, now part of the Department of Earth, Ocean and Atmospheric Science.

Behl, who had grown up in landlocked Panjab, India, earned her bachelor's in 2002 and master's in 2004 in physics from Panjab University, but had never seen the ocean before coming to the U.S. to pursue her doctorate. Miller completed a bachelor's in marine science with a minor in environmental science in 2005 at Coastal Carolina University in Conway, South Carolina prior to her arrival in Tallahassee.

Their friendship, forged in after-class discussions and fieldwork, has withstood time and geographic distance to evolve into a fruitful scientific collaboration that is advancing knowledge about the Earth's oceans.

"Our shared history at FSU laid the groundwork for a relationship that has been continually reinforced through professional circles," Behl said. "Our recent committee work has been the catalyst that solidified our strong professional bond and friendship."

Following their graduations — Miller in 2008 and Behl in 2012 — the pair first worked together at The Oceanography Society, a nonprofit supporting the oceanography community through publications, conferences and other resources. Miller has served as the nonprofit's secretary since 2018, and Behl served on the rotating council from 2022 to 2024.

"Working with Mona is really rewarding; we lift each other up and help each other in our own work," Miller said.

Currently, Behl and Miller serve on the External Advisory Committee for community programs for the University Corporation for Atmospheric Research, a nonprofit consortium of more than 130 North American colleges and universities focused on research, training, and applications in Earth system science. They are the only oceanographers on their committee, for which Behl also serves as vice chair.

"UCAR administers community programs supported by agencies like NASA and the U.S. Department of Energy," Behl said. "We collaborate closely with the UCAR Community Programs' director on initiatives across earth, atmospheric, and ocean sciences to ensure UCAR's research delivers tangible societal benefits."

The two also worked together as committee members on a National Academies 2025-2035 Decadal Survey of Ocean Sciences, published in March 2025, that provides advice on research investments, infrastructure, and workforce development to understand how changes in the Earth's oceans, such as their ability to absorb heat and carbon, will affect the planet's systems and economies over the next decade.

"Distilling 18 months of research on the directions and research priorities proposed in oceanography research and by coastal communities was difficult, but our committee worked hard to assure both community members' and scientists' viewpoints and expertise were reflected in our recommendations," Miller said.

Aside from this collaborative work, Behl has worked for the National Oceanic and Atmospheric Administration's National Sea Grant College Program since 2014, most recently as a senior public service associate and associate director at the University of Georgia Marine Extension and Georgia Sea Grant. In 2026, Behl will take a new position as director of Virginia Sea Grant at the Virginia Institute of Marine Sciences in Gloucester Point, Virginia.

"Sea Grant's mission is to translate community needs into actionable science that serves the public and protects our coastal ecosystems' health," said Behl, who was recently elected a fellow of the American Meteorological Society. "My work here has always felt less like a chosen profession and more like a profound duty to serve a greater good."

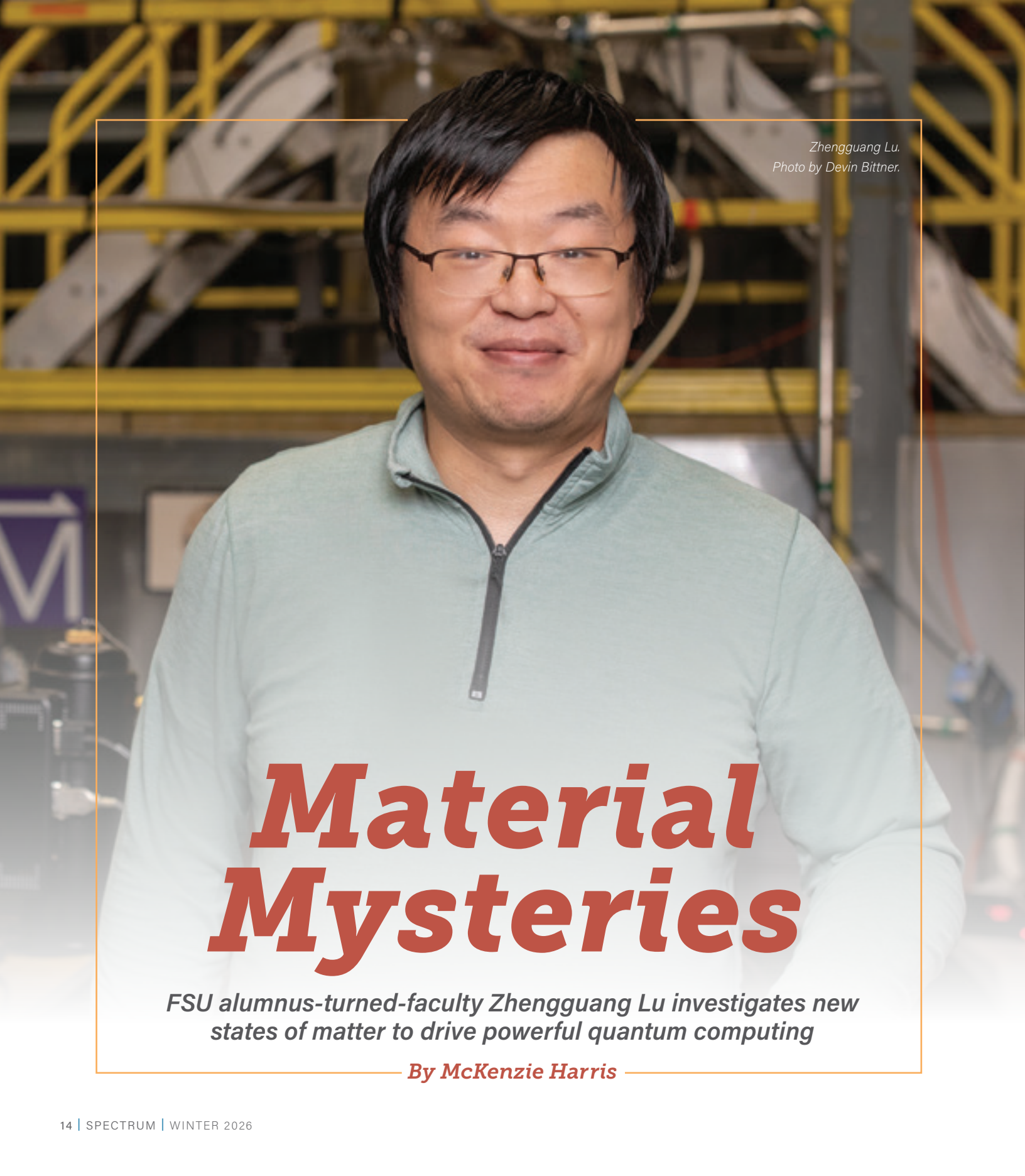
Miller currently works as a research portfolio senior manager at Schmidt Ocean Institute, a nonprofit advancing the frontiers of global marine research. She previously worked for the Consortium for Ocean Leadership, which became part of UCAR in 2022, as a program specialist and educational coordinator from 2008 to 2013.

"Schmidt Ocean Institute owns and operates a state-of-the-art oceanographic research vessel," Miller said. "Through a competitive process, we award scientists from all around the world with ship time so they can conduct their research. We also catalyze ocean discovery by requiring open sharing of scientific data and knowledge."

Behl's and Miller's individual experiences enable their efficacy as a team, a strength that Kelly Oskvig, senior program officer of the National Academies Ocean Studies Board, observed while overseeing the decadal committee.

"Mona and Allison consistently brought fresh, thoughtful perspectives and weren't afraid to respectfully challenge ideas to encourage deeper thinking," Oskvig said. "Their confidence, humility, and steadying presence fostered a sense of trust and collegiality."

Mona Behl and Allison Miller in 2007 on a day-long research cruise to take ocean measurements. Courtesy photo.



Zhengguang Lu.
Photo by Devin Bittner.

Material Mysteries

FSU alumnus-turned-faculty Zhengguang Lu investigates new states of matter to drive powerful quantum computing

By McKenzie Harris

Take a look at the tip of your pencil. That humble lead is composed of thousands of layers of graphene — a material that holds incredible potential for creating stronger, more efficient electronics within laptops and in quantum applications including medicine, environmental science, national security and more.

As an assistant professor of physics at his alma mater, Florida State University, Zhengguang Lu pushes the limits of this common material by probing and transforming the naturally occurring sheets of carbon atoms to power innovative electronic and quantum technologies.

"I'm also affiliated with the FSU-headquartered National High Magnetic Field Laboratory, and my research demonstrates that there's much more to learn about the simplest of materials," Lu said. "Fundamental research is essential because while some of the applications aren't immediately recognized, these discoveries have long-lasting effects on the field and in their applications, just like when the field-effect transistor was invented 80 years ago. It was a great discovery then, but no one could have imagined its applications today."

Condensed-matter physics, the foundation of Lu's research, investigates how new properties and phases of matter arise from interactions among elementary particles like electrons. When molecules interact under certain circumstances, like extremely high pressures or low temperatures, they can exhibit emergent behaviors and properties that create entirely new forms of matter.

For example, understanding how electrons behave in semiconductors enabled the development of the transistor, essential to the microprocessors that power modern electronic devices from smartphones to supercomputers.

"Zhengguang has a really creative physics mind, and what makes him a top experimental researcher of his generation in condensed-matter physics is his ability to translate brilliant physics ideas into practical experiments in the laboratory," said Peng Xiong, professor of physics and an expert in the field of mesoscopic electronic phenomena in quantum materials. "His ability to make the impossible happen in the lab sets him apart."

Lu earned his bachelor's in physics from Nankai University in Tianjin, China, in 2012. His school wasn't far from Beijing, home to the Institute of Physics of the Chinese Academies of Sciences. There, Lu learned about modern condensed-matter physics at the Quantum Transport Lab, run by FSU alumnus Yongqing Li at the time, and became fascinated by experiments during the facility's open houses.

"The scientific demonstrations were so cool, and I wanted to understand why they were so cool," Lu said. "The principal investigator of the lab was one of Peng Xiong's early students, which is how I met Peng. They both encouraged me to pursue my doctorate at FSU, and it was one of the only places I applied — this is where I wanted to be."

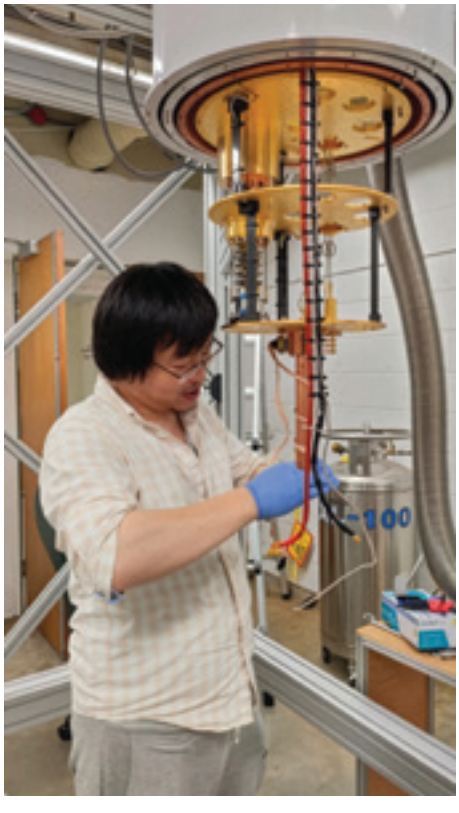
During Lu's graduate study at FSU and the National MagLab under research professor Dmitry Smirnov, he focused on magneto-optics in low-dimensional quantum materials. He received his doctorate in 2020 before taking a postdoctoral position at the Massachusetts Institute of Technology, where he participated in the first discovery of unusual electrical properties in graphene in 2023. After returning to FSU in 2024, he won the First Year Assistant Professor Award. For Lu, the choice to return to Tallahassee to continue cutting-edge quantum research after completing his postdoctoral appointment was obvious.

"It felt like coming home again," he said. "I love the friendly, collaborative environment in my department, and the support I've received from the dean, the college, and FSU has been constant. Physics is a process of finding and discovering beautiful things, and I'm lucky to continue this work here."

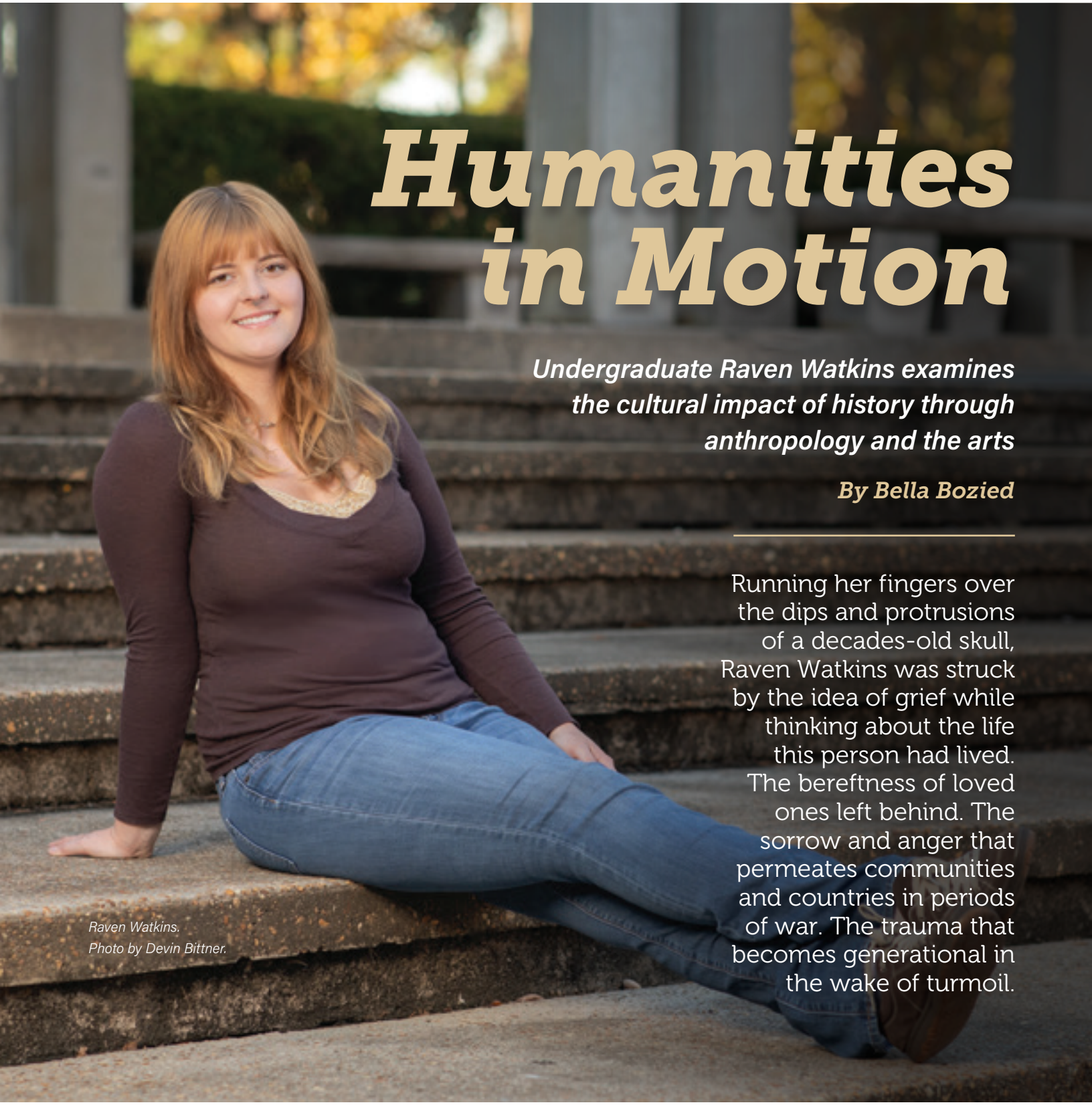
One year after joining FSU's faculty, Lu was awarded the 2025 William L. McMillan Award from the University of Illinois, one of the most prestigious honors for early career researchers in the field. The award recognized Lu's joint discovery of the fractional anomalous quantum Hall effect in multilayer graphene materials, a breakthrough demonstrating that electrons appear to split into fractions of themselves under certain conditions that can lead to future electronic and quantum applications.

His groundbreaking research, which is also aligned with the FSU Initiative in Quantum Science and Engineering, is only part of the legacy Lu has started at the university.

"He's made an impressive impact through the inspiration and self-confidence he's given to our graduate students," Xiong said. "I've witnessed firsthand the changes in the students' expectations and the confidence he's given them. The forefront research he's conducting at FSU and his everyday presence in laboratories brings excitement to both his students and other groups, including my own."



Zhengguang Lu sets up an experiment at the National MagLab during his doctoral study. Courtesy photo.



Humanities in Motion

Undergraduate Raven Watkins examines the cultural impact of history through anthropology and the arts

By Bella Bozied

Running her fingers over the dips and protrusions of a decades-old skull, Raven Watkins was struck by the idea of grief while thinking about the life this person had lived. The bereftness of loved ones left behind. The sorrow and anger that permeates communities and countries in periods of war. The trauma that becomes generational in the wake of turmoil.

Raven Watkins.
Photo by Devin Bittner.

At the time, Watkins, a Florida State University undergraduate studying anthropology through the College of Arts and Sciences and studio art through the College of Fine Arts, was abroad in Chelva, Spain for the summer, excavating and studying bone structures at historical battlefields. The month-long experience included classes and fieldwork providing hands-on opportunities to work with and catalog archaeological remains from the Spanish Civil War, which lasted from 1936 to 1939.

"I research grief and loss in Spanish culture, and this experience was monumental," Watkins said. "I was inspired to learn more about historical and cultural elements of the Spanish Civil War while studying remains through the Center for Field Sciences School in Chelva — I'm inspired by the human resilience that came from this repression."

After studying in Valencia, Spain with FSU International Programs in 2024, Watkins wanted to further explore Spanish culture and leverage her dual areas of study through a research project, leading her to the Center for Undergraduate Research and Academic Engagement IDEA Grant program. IDEA Grants help FSU undergrads advance their academic careers by funding research and the development of new or existing ideas or creative projects like the one Watkins had in mind.

Following her successful proposal submission, Watkins was awarded the IDEA Grant program's Tyler Center for Global Studies Fellowship to support her work and fund her Summer 2025 studies, and was also supported by the Lisa Scott Undergraduate Research Award for first-generation students. This allowed her to learn bioarchaeology techniques including osteological analysis that lets her ascertain age, sex, and the lifestyle of the individuals recovered from the civil war's battlegrounds.

"Researching anthropology gives me a feeling of purpose and feels like my calling," Watkins said. "Learning holistically about humans, culture, and biology makes me want to create. My art is symbolic, but I focus on depictions of real subjects. It's important for me to intimately understand all aspects of the human — biological aspects like the body as well as expression of emotions and the history of grief."

Watkins worked under the guidance of assistant professor of art Katie Kehoe to create "A Tattoo of Spain: Using Anthropology to Inform Stop-Motion Animation," which combined anthropological research into Spanish post-war culture, sculptural figure-making, and animation techniques to depict a woman grieving after war.

She presented her project during the President's Showcase of Undergraduate Research Excellence in October 2025, explaining to attendees how she intertwines her research interests and artistic passions to understand culture throughout historic events using 2D and 3D art.

"I'm so inspired by all the culture I've experienced in Spain, like the Concha Piquer song 'Tatuaje' that was released at the end of the war," said Watkins, who plans to graduate in 2026. "It was an expression of grief. This artistic execution set the creative stage for my research, which looks at the forensic and emotional aspects of loss."

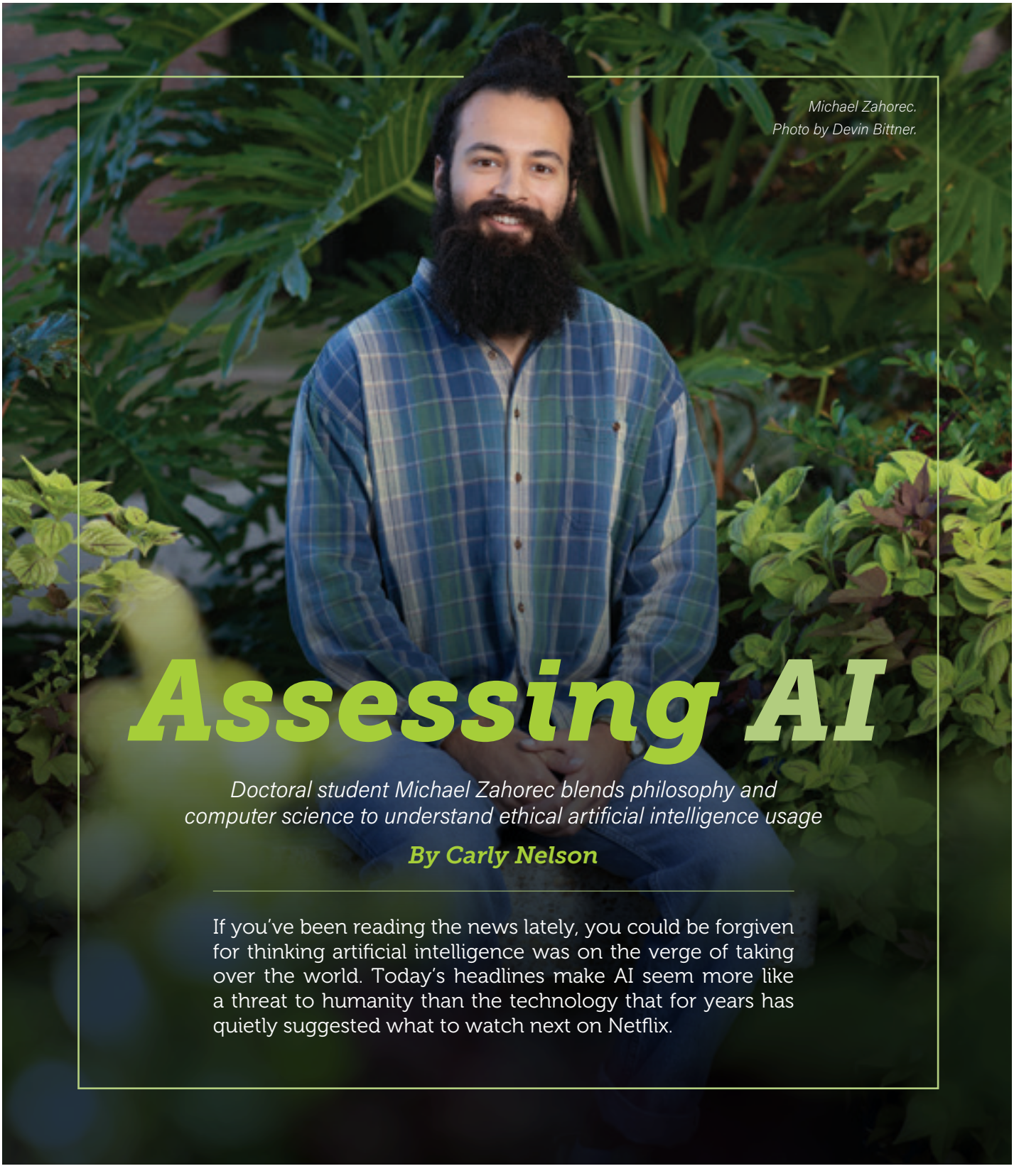
Geoffrey Thomas, specialized anthropology teaching faculty, took note of Watkins' ability to connect scientific insights and cultural empathy during his Human Osteology course. The science requires a deep understanding of human skeletal remains, studying indicators of diseases and injuries, and making confident judgments in the face of fragmentary evidence — skills that Watkins excels in.

"By combining the study of bones with art, she highlights the humanity behind skeletal remains, turning abstract biological specimens into stories about lived experiences," Thomas said. "Her work challenges us to see scientific analysis not as detached but as deeply connected to creativity and culture. Raven's dedication to anthropology is reflected in her ability to make connections between osteological findings and broader cultural contexts."

Following graduation, Watkins will continue the pursuit of her joint passions in research and art by working at the FSU Ceramics Lab while she explores master's degree programs in anthropology.

"There's creative expression in anthropology through humanity," Watkins said. "You're discovering who these people are through their physical features to describe their overall story. I'll create in response to things I experience with the goal of sharing their stories for the rest of my life."

Raven Watkins presents her project at the 2025 President's Showcase of Undergraduate Research Excellence. Photo by Carly Nelson.



Michael Zahorec. Photo by Devin Bittner.

Assessing AI

Doctoral student Michael Zahorec blends philosophy and computer science to understand ethical artificial intelligence usage

By Carly Nelson

If you've been reading the news lately, you could be forgiven for thinking artificial intelligence was on the verge of taking over the world. Today's headlines make AI seem more like a threat to humanity than the technology that for years has quietly suggested what to watch next on Netflix.

From virtual assistants like Apple's Siri to large language models like ChatGPT, AI is in use across industries for wide-ranging tasks from enabling automation and generating digital content to engaging in customer service, but big questions loom.

How do we know when to trust AI? How can we best evaluate AI's ability to perform the tasks promised? What guardrails exist to ensure AI is used ethically? And when is human interaction a better choice than using AI?

Michael Zahorec, who earned his master's from Florida State University's Department of Computer Science in Spring 2025, is currently pursuing a doctorate through the Department of Philosophy and is focused on AI evaluation, AI explanation and responsible AI use.

At its core, AI is a predictive model that uses complex mathematical operations to generate responses to queries. In his research, Zahorec integrates philosophy and computer science perspectives to emphasize the importance of understanding the internal processes of AI models, not just a model's behavior, to fully comprehend how a particular model functions. He also pushes for ethical guidance and responsible AI use.

"I research the philosophy behind different techniques used to understand complex generative AI models like ChatGPT," said Zahorec, who earned a bachelor's in philosophy and mechanical engineering in 2019 from the University of Dayton in Ohio before coming to FSU. "Exclusively analyzing a model's output, or the behavior, doesn't really tell us how the model works. We have to understand the model's internal components, or how it arrived at that behavior."

Many researchers currently disagree on the best AI evaluation practices, and Zahorec's argument has the potential to widely shape future AI evaluation standards.

"People need to understand AI as imperfect mathematical models that aren't always trustworthy," Zahorec said. "I hope to help the public engage with AI's benefits without falling prey to the potential harms, such as when AI generates incorrect or biased information."

> *"Michael's work has an essential public dimension. He's proposing innovative, nuanced suggestions about understanding key concepts in AI. His work has lasting impacts on the standards researchers use to comprehend and evaluate AI models and responsible AI use guidelines."*
>
> *— Courtney Fugate, professor of philosophy*

In 2024, Zahorec interned on the responsible AI team for health insurance company Humana and researched ways to evaluate large language models used in customer-facing tasks. Among the ways to evaluate AI is adversarial testing, in which a researcher like Zahorec intentionally tries to trick and confuse the model to behave contrary to its design in order to uncover vulnerabilities and later, strengthen them.

"This internship gave me a practical understanding of AI-related research literature," he said. "I saw applications of AI evaluation in a real-world context, like how data scientists apply research to use AI more safely and create better products."

In forthcoming research, Zahorec charts various uses of buzzwords, such as "transparency," typically used by humans to describe AI design and function. His work categorizes the words by different meanings, showcasing vast disagreements in AI definitions. He's also writing a book chapter for "The Philosophy of Artificial Intelligence," which argues that understanding AI's internal components is essential and explores why that is so difficult to understand in generative AI models.

"I believe we should use language models as idea generators as opposed to other paradigms, like an expert or information processor, in order to use AI responsibly," Zahorec said. "Just because an idea is AI-generated doesn't automatically mean it's a good idea; verification is needed. Relying solely on AI creates potential for biased or incorrect information."

Zahorec's dissertation, which he's slated to defend in March 2026, focuses on "scientific kinds" — the question of what defines groupings, like biological species or chemical elements — in society and if scientists create or discover these kinds. He argues that "kinds" are created by scientists but are grouped depending on their context in nature, meaning kinds of AI models and species are grouped in different manners.

In addition to his research, Zahorec serves as a teaching assistant in philosophy and has taught his own classes including Environmental Ethics and Logic, Reasoning and Critical Thinking. He has also lectured on AI explanation and interpretability, and he moderated the FSU-hosted "AI and its Impact on Higher Education" panel discussion in September 2025. Following graduation, Zahorec plans to pursue a career in academia to continue teaching and conducting research.

"Michael's work has an essential public dimension," said Courtney Fugate, professor of philosophy and Zahorec's adviser. "He's proposing innovative, nuanced suggestions about understanding key concepts in AI. His work has lasting impacts on the standards researchers use to comprehend and evaluate AI models and responsible AI use guidelines."

Deeper than Data

Statistics undergrad Joyce Lin researches neurological disorders through the lens of biostatistics and lived experience

By Jack LaBruno

Every second, the human brain sends billions of signals throughout the body, a perfect synchronization of data that neuroscientists have been working for decades to understand. Transforming that complexity into knowledge requires both technical computational skills and a natural curiosity of the human mind.

Joyce Lin. Photo by Devin Bittner.

At Florida State University, undergraduate statistics student Joyce Lin embodies this intersection, uniting statistics and neuroscience through biostatistics and applying quantitative analyses and techniques to the study of neurological conditions including dementia, ALS and epilepsy, to understand how these disorders progress and discover ways to improve the lives of those affected.

"Every number in my research represents a single life — someone navigating a diagnosis, undergoing treatment, or facing a moment of uncertainty," Lin said. "We often view neurological disorders as medical conditions that need to be cured without recognizing they're also disabilities that affect a person's daily life. My research focuses on improving the quality of life for those living with these disorders."

For Lin, studying biostatistics isn't just about curiosity — it's a personal matter. After being diagnosed with epilepsy at age 18, she responded well to treatment and has been seizure-free for two years. Now, Lin advocates for those with neurological disorders through her research.

"After my diagnosis, I realized how many neurological disorders are still under-researched and misunderstood," she said. "I chose to study biostatistics because it connects my interest in neuroscience with the ability to analyze data that can ultimately improve care for people living with these conditions."

Lin conducts her research under the mentorship of Farnaz Solatikia, a biostatistics research faculty member in the Department of Statistics who also holds a role in the Office of the Vice President for Research. Their current project through FSU's Directed Individual Study Program, which allows students to design independent research under faculty guidance, explores how epilepsy affects long-term employment outcomes in adults.

As a graduate teaching faculty member in the statistics department, Solatikia also taught Lin in Biostatistics and Introduction to Applied Statistics.

"Joyce is one of the most dedicated and capable undergraduate students, demonstrating both intellectual curiosity and a disciplined, analytical approach," Solatikia said. "Under my mentorship, she's learned to perform data cleaning, exploratory data analysis, and statistical modeling, all of which are essential in understanding how statistics reflect real-world neurological challenges and daily life."

In their project, Lin and Solatikia record data from individuals with epilepsy on points like seizure type, frequency, and duration, as well as employment factors including job status, income and career disruptions. Lin will analyze this information using Statistical Analysis System, a software suite used for advanced data management, statistical analysis, and predictive modeling, to better understand the challenges adults with epilepsy face in maintaining employment and everyday independence.

"As someone with epilepsy, one of the biggest struggles I've encountered is not being able to drive," she said. "This made me think about how difficult it is to maintain a job with epilepsy since so many jobs require you to commute to work."

Since August, Lin has worked to improve statewide health outcomes as an intern with Florida Professionals in Infection Control by analyzing data and recognizing trends in hospital-acquired infections. In a separate collaborative research project for an advanced statistics course, she explored what health factors were most significant in the survival of heart failure patients using SAS and public data from the University of California Irvine Machine Learning Repository.

Lin credits FSU's supportive faculty in the Department of Statistics, the Office of Accessibility Services, and her care team for her undergraduate success, while her own experience with epilepsy has motivated her to continue using her statistical strengths to find health care solutions that have the potential to improve the lives of millions.

"I hope my work bridges the gap between medical research and the lived experiences of people affected by neurological disorders," said Lin, who plans to pursue a master's degree and career in biostatistics following her graduation in Spring 2026. "I want to use my statistical background to conduct studies that are inclusive and diverse. Research needs to acknowledge the social and disability-related aspects of neurological disorders, not just their medical symptoms."

"I hope my work bridges the gap between medical research and the lived experiences of people affected by neurological disorders. I want to use my statistical background to conduct studies that are inclusive and diverse. Research needs to acknowledge the social and disability-related aspects of neurological disorders, not just their medical symptoms."
— Joyce Lin

Cyber Service

National scholarship program supports tomorrow's experts studying today at FSU

By Amy Walden

While warfighters in the United States armed forces complete basic training to prepare for real-world combat, a different kind of training is preparing another group of warriors to defend the country. But their battlefields aren't abroad; they're all around us, in cyberspace, and some of them are training right here at Florida State University.

Nearly 30 years ago, in 1998, then-President Bill Clinton signed Presidential Directive 63, requiring the Executive Branch to assess the cyber vulnerabilities of the nation's critical infrastructures including information and communication, banking and finance, energy, transportation, water supply, emergency services and public health. The directive also called for the creation of the National Plan for Information Systems Protection, NPISP, designed to shield America from cyber disruptions.

Today, despite some highly publicized tech-sector layoffs, the field of cybersecurity continues to flourish. According to Bureau of Labor Statistics estimates, employment for information security analysts is projected to grow 29 percent from 2024 to 2034, and computer occupations overall by 9 percent, both far outpacing the projected national job growth rate of 3 percent.

"We have a severe shortage in the cybersecurity workforce, especially in the government sector," explained An-I Andy Wang, Mainline Information Systems Endowed Professor in the FSU Department of Computer Science. "We need these cyber warriors to defend our national cyber infrastructure."

As a result of NPISP, the CyberCorps Scholarship for Service program, or SFS, was established in 2000. The program, cosponsored by the National Science Foundation and Department of Homeland Security, addresses the continued and growing demand for highly qualified cybersecurity experts by providing scholarships to outstanding computer science students with an interest in cybersecurity. In exchange for scholarships, students work in federal government after graduation for a period equivalent to the length of their study.

In 2002, the National Security Agency designated FSU as a Center of Academic Excellence in Information Assurance Education in Cyber Defense and Research, an honor granted to institutions that meet rigorous cybersecurity education standards. The following year, FSU was awarded its first SFS grant.

"Since it began at FSU, the SFS program has been renewed many times and has supported 119 graduate and undergraduate students studying cybersecurity with a 92 percent placement rate in federal government agencies," said Wang, the principal investigator for the grant. "Our graduates are highly sought after."

In 2022, FSU received renewed NSF funding to support 32 SFS Scholars through 2028. The scholarships are merit-based, and recipients pursue degrees in computer science, cybersecurity, cyber criminology, and computer and network administration.

Computer science professors Mike Burmester, Xiuwen Liu, and David Whalley are co-investigators for the SFS grant, overseeing student recruitment, retention, professional development and evaluation.

"The program provides a very financially lucrative scholarship," said Whalley, Distinguished Research Professor and E.P. Miles Professor of Computer Science. "Students receive a nine-month scholarship that spans the fall and spring semesters. The stipend is $27,000 for undergraduates, $37,000 for graduate students, and covers tuition and all other education-related fees."

Scholarship recipients also take a trip to Washington, D.C. each January to attend the national SFS job fair, an opportunity to meet face-to-face with federal agencies and test-drive different career avenues that align with their specific areas of interest.

"As part of the grant, we have the funds to fly the students there and take care of their expenses," Whalley said. "They attend the job fair at least twice — the first time to arrange for online interviews for a required summer internship and the second to arrange for on-site interviews for their employment after graduation."

Elijah Lieu, a graduate student and SFS Scholar majoring in cybersecurity, first learned about the scholarship in 2024 while earning his bachelor's in computer science at FSU and applied after attending an information session hosted by Wang.

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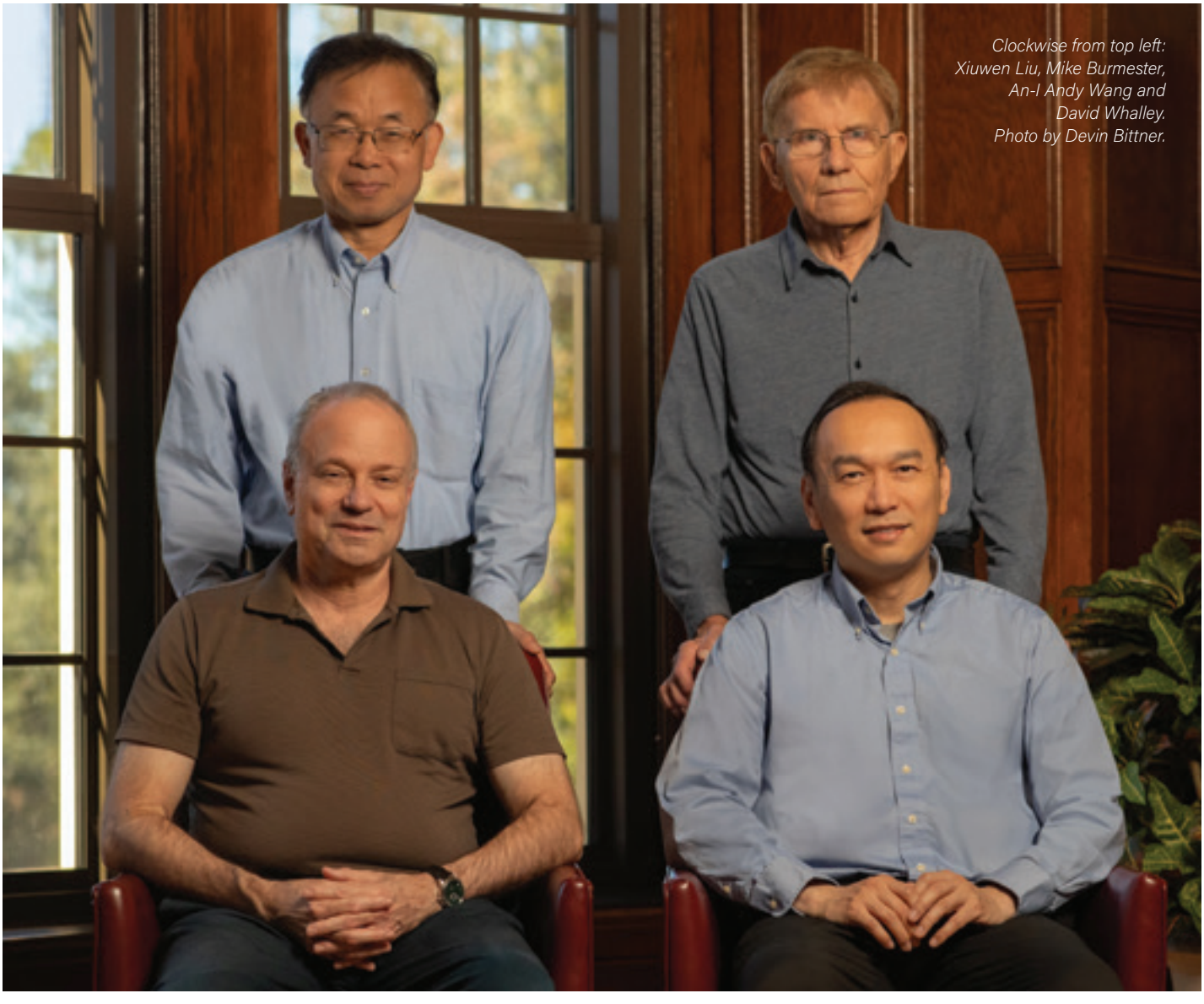
— An-I Andy Wang, Mainline Information Systems Endowed Professor, FSU Department of Computer Science



Clockwise from top left: Xiuwen Liu, Mike Burmester, An-I Andy Wang and David Whalley. Photo by Devin Bittner.

"SFS enabled me to start a master's program, which I previously hadn't considered for financial reasons," Lieu said. "When I met more of the cohort, there was an incredible amount of talent there, and everybody was so driven, hardworking and smart. I knew I wanted to be a part of this group."

The scholarship, Lieu added, has provided him the flexibility to focus solely on school and earning the best grades possible. For his required internship, he accepted an opportunity to work in security analysis for Oak Ridge National Laboratory in Tennessee.

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— Elijah Lieu, SFS Scholar

"'Required' is a funny word for the internship because you end up doing exactly what you want to do," said Lieu, who hopes to work at a national lab following graduation. "I've learned so much through that internship. What I've seen with some of the alumni is that they're able to leverage that SFS recognition after graduation — even at my internship, half of the team was from SFS, and the other half had worked there before SFS's inception. It's a national recognition, and it's wonderful to have."

Graduates of the SFS program are able to fulfill their post-graduation service requirement with any federal cybersecurity job.

"Our graduates go on to become cybersecurity investigators for federal agencies such as the FBI, CIA, NSA, Department of Defense, Department of Energy, and more, to defend the cyber infrastructure of this nation," Wang said.

Program alumna Emma Baudo was referred for the scholarship by a professor in a computer security fundamentals course while she was an undergraduate studying cyber criminology.

"I was always interested in working for the federal government," said Baudo, who graduated in 2024 with a master's in cybersecurity. "One of the biggest reasons I applied for the SFS program was because it allowed me to continue my education, and the financial assistance allowed me to graduate with no student debt."

Baudo now works full-time in cybersecurity for the federal government, but like many of her fellow alumni, specific details of her role are classified. As she takes on her next challenge, she's thankful for her SFS experience.

"The SFS program allowed me not only to work for the federal government post-graduation, which is what I was planning on doing anyway, but it assisted in tuition aid as well as stipend aid," Baudo said. "Working for the government post-graduation is a great start to any career, whether you're in computer science, cybersecurity, engineering, math, or any other field because it provides so many resources — the sky is the limit."

FSU is on track to apply for a renewal of the SFS grant program and continue supporting the next generation of cybersecurity specialists. To learn more about the Scholarship for Service Program at FSU, visit sait.fsu.edu.

Courtesy photo.

"I was always interested in working for the federal government. One of the biggest reasons I applied for the SFS program was because it allowed me to continue my education, and the financial assistance allowed me to graduate with no student debt."

— Emma Baudo, SFS program alumna

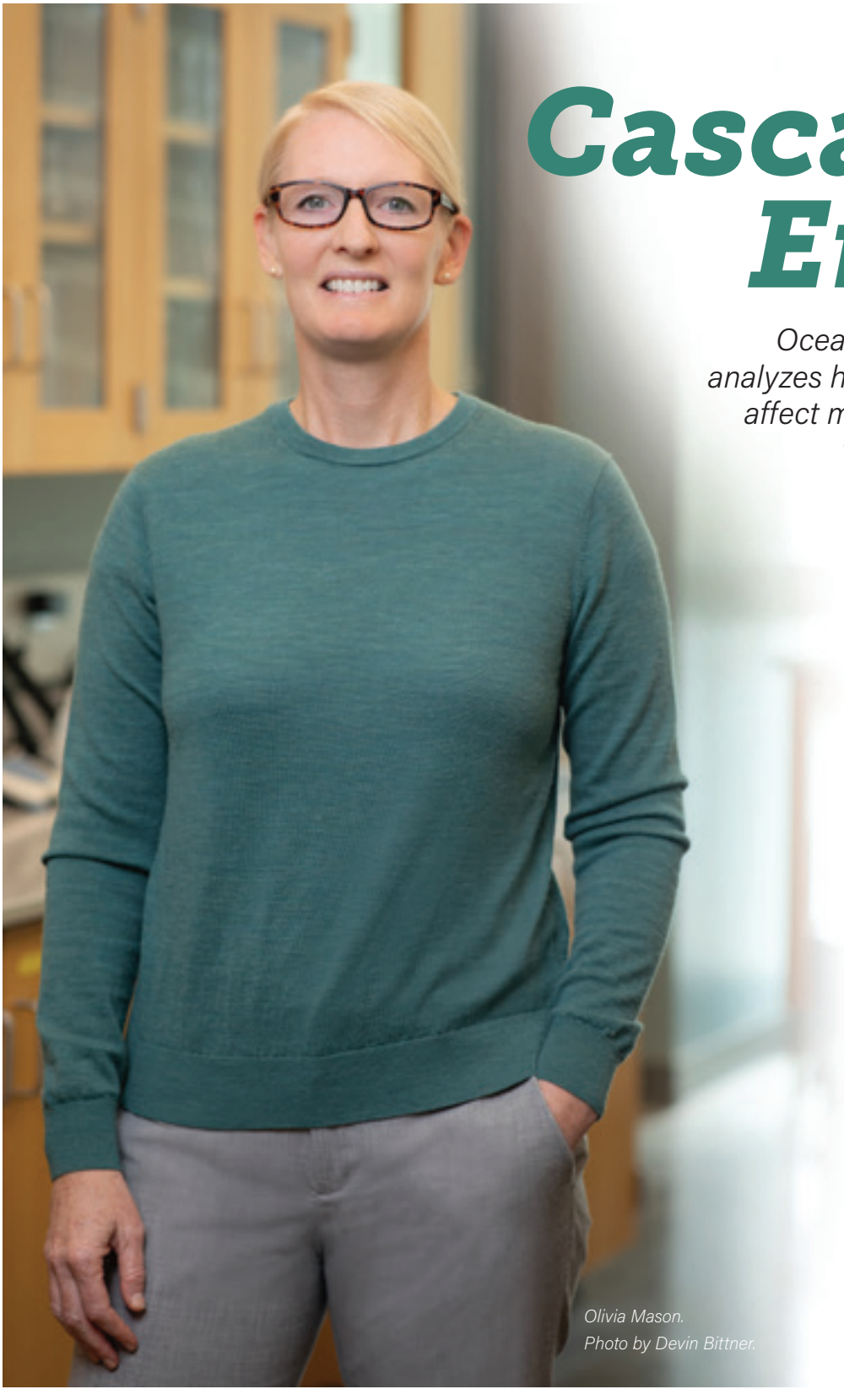
Capture the Flag

FSU has been a pioneer in educating capable cybersecurity scholars for more than 20 years, but technical coursework alone cannot keep pace with the speed of change in cybersecurity. Recognizing this reality and to better meet the nation's needs for national security in the digital realm, FSU faculty in 2018 launched a competitive "Capture the Flag" program designed to provide students with real-world offensive and defensive cyber experience.

"Through these competitions — where teams solve reverse engineering, cryptography, binary exploitation, web security, and other advanced challenges under time pressure — students gain the skills and instincts that cybersecurity careers demand," Xiuwen Liu said. "A unique component of our program is we have developed a dedicated CTF course to maintain a pipeline of talent and allow our team to build on the accumulated experience and knowledge over the years."

A number of FSU's SFS Scholars are also members of the FSU Cybersecurity Club, a student organization formed in 2013. The club, which is among the top 10 for CTF in the U.S., participates regularly in international competitions, teaming up against other universities, clubs, and professionals to crack codes and score points by solving real-world cyber challenges that include locating vulnerabilities in computer systems. Competitors range from high school students to experts 30 years into their cybersecurity careers.

"It's really wonderful because a lot of the challenges that we see are quite useful, either for the type of cybersecurity infrastructure that I'm researching or some of the information technology infrastructure that other students are focusing on in the major," Elijah Lieu said.



Cascading Effects

Oceanographer Olivia Mason analyzes how marine disturbances affect microscopic organisms in waters around the world

By Devin Bittner

An underwater wellhead pipe leaks. Millions of gallons of oil gush onto the ocean floor. While the full consequences of this large spill won't be seen for years, beneath the water's surface, an important part of the area's marine ecosystem is already changing because of microbes. These tiny living organisms, ranging in size from invisible to the naked eye to the width of a nickel, possess the ability to consume contaminants produced by the leak, meaning they literally eat oil.

Aboard a research vessel on the surface, Olivia Mason, then a postdoctoral researcher, collects samples from the water column to study the microbial response to the spill. Her research on these samples will go on to provide critical insights about the event that broaden our understanding of long-term impacts to ocean health and productivity.

Olivia Mason. Photo by Devin Bittner.

"Discovering new information about microbes, which are difficult to grow in the lab due to their physiology, is thrilling," Mason said. "My efforts increased our understanding of changes in microbial communities during major events like the 2010 Deepwater Horizon oil spill, allowing us to better predict the microbial response during subsequent ecosystem disturbances."

Today, as a professor in Florida State University's Department of Earth, Ocean and Atmospheric Science, Mason researches how microbes react to disruptions in the marine environment, including oil spills and areas with decreasing oxygen concentrations known as oxygen minimum zones, or OMZs.

Marine microbes — such as bacteria and archaea — are known as ecosystem engineers because they're involved in nearly all marine biogeochemical cycles, making them crucial to ecosystem function. As microbes change due to disturbances in their environment, their role in the ecosystem is affected, which can produce cascading effects on marine health and the food chain.

"With factors like rising ocean temperatures, OMZs are expanding exponentially," said Mason, who holds a bachelor's in natural resource conservation from the University of Massachusetts Amherst and a master's in environmental science from Portland State University, Oregon. "My research allows us to understand how microbes respond to ecosystem perturbations like OMZs so we can understand the full effects these changes have on the ecosystem."

As part of her doctoral study at Oregon State University, Mason spent two months on the International Ocean Drilling Program research vessel sourcing microbes from the deepest crust sampled at that point — 4,564 feet down in the Atlantic Ocean.

After earning her doctorate in biological oceanography in 2008, Mason took a role as a postdoctoral researcher at the Lawrence-Berkeley National Laboratory in California, which allowed her to travel to the Gulf to sample water from the Deepwater Horizon spill.

Using a combination of state-of-the-art sequencing technologies, Mason and the team found that microbes called *Oceanospirillales* were consuming hydrocarbons produced by the oil spill, reflected by changes in their gene expression. Her research marked an advancement in complementary methodologies previously unused simultaneously in this field.

"Our work culminated in a seminal paper," Mason said. "It was the first time microbial ecology research combined multiple sequencing techniques to answer how microbes respond to an ecosystem perturbation, and utilizing these methodologies in microbial oceanography has been my biggest contribution to the field to date."

Mason joined FSU's faculty two years later and, since then, has led the Mason Laboratory in its worldwide investigation of microbes. Recently, she and her graduate students traveled to the eastern Tropical Atlantic, off Africa's west coast, to study the northern Benguela Upwelling System where high nitrous oxide fluxes have been observed. The team has also collected OMZ samples in Saanich Inlet, British Columbia and off the coast of Louisiana.

Beyond her work in the classroom and lab, Mason has since 2023 directed FSU's Women in Math, Science and Engineering academic living-learning community, which is committed to the academic and career development of women in the sciences and growing the STEM workforce. WIMSE students live in the same residence hall, attend weekly colloquia that teach foundational academic and career knowledge, and participate in laboratory research experiences.

"Undergraduate research is key to success in STEM disciplines," Mason said. "WIMSE students are among the best and brightest, and it's rewarding to advise them as they build their STEM careers."

Mason is known to the scientific community as a stalwart in her field, and at FSU, she's regarded as a leader whose scientific contributions and academic involvement enrich the experiences of those around her.

"I knew Olivia from her reputation as a researcher, but upon meeting, I was struck by her confidence and leadership abilities," said Mike Stukel, EOAS department chair and professor. "Her clear scientific vision, pioneering efforts in microbial omics methodology, and influence in the department make her a valuable part of FSU."

Far left: Mason Lab graduate students Emily Guidry and Alexa Crossen on the R/V Rachel Carson in Tofino Inlet, British Columbia. Above: Graduate student Paige Payne, Olivia Mason, and graduate student Kaitlin Dombroski on the R/V Marcus G. Langseth off the coast of Namibia, Africa. Left: Mason on the R/V Marcus G. Langseth off the coast of Namibia, Africa. Courtesy photos.

Top row, from left: Zachary Catanzariti, Cassandra Dilks, Stephen Paris, Caitlin Collier and Kannon Gailey. Bottom row, from left: Justin Marcano and Elizabeth George. Photo by Devin Bittner.

Uncertainty Experts

FSU's actuarial science major prepares students for professional risk-assessment careers across industries

By Rahaf Alshinhab

To a layperson, the exact meaning of actuarial science might seem ambiguous, but that's exactly the point. Actuarial science is the science of uncertainty, and it's a way to prepare and protect communities large and small from unpredictable conditions.

Actuaries thrive on data, which they use to analyze the financial impact of hurricanes and other natural disasters, manage catastrophe risk in business, forecast population growth or shrinkage, help individuals plan for retirement and more. They can be found in roles spanning industries from insurance companies and consultancies to technology and health care sectors, as well as local, state and federal governments. For almost three decades, Florida State University has prepared graduates to step into these crucial roles.

FSU is home to one of the nation's leading actuarial science programs, which is known for its tight-knit community, rigor and professional preparation. This interdisciplinary undergraduate degree program, led by Stephen Paris, Department of Mathematics teaching faculty member, became the first to award actuarial science degrees at a state university in Florida in the 1990s and has graduated more than 1,000 undergraduate students since then. In addition to mathematics, the program is also supported by the Department of Statistics and Department of Computer Science, both in the College of Arts and Sciences, and the College of Business.

"Actuaries are in the business of managing risk, and that's becoming increasingly important in today's world," said Paris, who has led the program for more than 20 years. "The program's two faculty members, mathematics teaching faculty Brian Ewald and I, prepare outstanding students for the profession through coursework and actuarial exam preparation. Each semester, we get to see the hard work and commitment of our students rewarded by great jobs that make them excited about the next stage of their lives."

Actuarial models combine mathematics, data science, and problem-solving skills to help decision-makers plan for the unexpected, and the science plays a vital role in shaping systems that keep economies and communities stable. Actuaries design sustainable health care models, assess cybersecurity risks, and advise governments on public policy and the financial impacts of extreme weather events.

FSU's program stands out for initiatives like the actuarial exam reimbursement program, which covers exam costs for students who pass — or come close — to encourage persistence. It also operates a dedicated study hall staffed by students who have already passed the exams newer students are preparing to take. These resources, combined with a strong sense of community, foster an environment where students thrive.

"It's hard to put words to the gratitude I have for Dr. Paris and the program. Coming to FSU was the best decision I could've made, and I've felt the utmost support here. The encouragement, opportunities, and sense of community have strengthened my skills and solidified my confidence in pursuing an actuarial career. It's a community that genuinely wants you to succeed."
— Caitlin Collier

"Our program feels like its own small school inside a big university," said junior Caitlin Collier. "Everyone knows each other, and Dr. Paris makes sure we're not just numbers. When I visited FSU as a prospective student, he personally gave me a tour of the math department. I could tell he really cared about his students, and that stood out."

In the late 1980s, FSU math students petitioned for a degree reflecting their interdisciplinary studies in mathematics, statistics, economics and risk management. Through the efforts of Professor Emerita Bettye Anne Case, and with other faculty support, the actuarial science program took shape in the mid-1990s and welcomed its first students in 1998.

Today, FSU's actuarial science community extends beyond academics through the Future Seminole Actuaries Club, which meets weekly for presentations, networking and social events. Collier, the club's president, said it helps students bridge the gap between coursework and professional experience.

"We host résumé workshops, LinkedIn sessions and company presentations," Collier said. "We also have fun with bowling, pizza socials and tailgates. It's a balance of professional development and friendship."

Each fall, the Actuarial Science Career Fair hosts more than 30 employers, many of whom are FSU alumni returning to recruit new Seminoles into early career opportunities. Collier, who passed one preliminary exam and is preparing for her second, interned with Liberty Mutual last summer, the world's sixth-largest property and casualty insurer, and has already accepted a return offer for this summer.

Paris takes pride in seeing his students succeed, both in their studies and after graduation. Among his first students from 2003 is Kelsey Stevens, now a Fellow of the Society of Actuaries and CEO of Wakely Consulting Group, a top health care consulting firm.

Thanks to new courses and growing alumni engagement, Paris said the program is on an upward trajectory to continue its mission of developing professional actuaries. For Collier, that mission has already made a lasting impact.

"It's hard to put words to the gratitude I have for Dr. Paris and the program," she said. "Coming to FSU was the best decision I could've made, and I've felt the utmost support here. The encouragement, opportunities, and sense of community have strengthened my skills and solidified my confidence in pursuing an actuarial career. It's a community that genuinely wants you to succeed."

Transatlantic Ties

Scholar Christopher Okonkwo bridges historical, cultural, and literary connections through teaching and award-winning research

By Carolina Ortega-Martinez

Christopher Okonkwo.
Photo by Devin Bittner.

For Christopher Okonkwo, storytelling, the arts, and music are timelessly inseparable. The relations and interconnections between the disciplines of literature and music — writers incorporating music into their stories and culture and history being shared and spread through music and storytelling — yield 'a sense of fusion he finds fascinating.

Okonkwo, a professor of English at Florida State University, is a literary scholar whose work reveals how African culture travels across the Atlantic and how literature helps us reconstruct the past to better understand not only the present, but also stories that were erased, fragmented, or distorted by slavery and colonization.

"Much of my work connects to history because in order to write and teach literature effectively, we must first understand history," said Okonkwo, who grew up in Nigeria. "We cannot undo the pasts that separated Africans and their descendants. However, we can preserve shared experiences as an act of remembrance and healing."

Okonkwo earned a bachelor's degree in English from the University of Nigeria, Nsukka, in 1989 and was named the department's best graduating student that same year. He then completed Nigeria's National Youth Service Corps program, which requires graduates to serve their country for one year through community work and education. While in that program, Okonkwo taught high school English for the first time, which inspired in him a lifelong commitment to teaching.

Soon after, he moved to Tallahassee, earning a master's in applied social science from Florida A&M University in 1993. Okonkwo worked in corporate America for some years, but his continued interest in becoming a professor led him to pursue a doctorate in English at FSU. He completed it in 2001, winning the department's Bertram and Ruth Davis Award for Outstanding Career as a Graduate Student and the Phi Kappa Phi Daisy Parker Flory Graduate Scholar Award. After graduating, Okonkwo joined the University of Missouri-Columbia English department, where he taught for the next two decades.

"I had great, supportive teachers, so I know the impact solid mentorship can have," he said.

Okonkwo's second book, "Kindred Spirits: Chinua Achebe and Toni Morrison," published in 2022 by University of Virginia Press, explores the connections between Achebe and Morrison, two of the 20th century's most influential writers. The work, which earned the 2022 College Language Association Book Prize and went on to be named a finalist for the 2024 African Literature Association's Best Scholarly Book Award, led to a post-publication lecture that turned his thoughts back to Tallahassee.

> *"Students rave about Dr. Okonkwo's courses, which they find engaging, fun and intellectually challenging. His genuine enthusiasm and willingness to engage with them as fellow scholars makes his courses personally enriching."*
>
> *— Andrew Epstein, Department of English chair and professor*

"When I came back to give an invited lecture at FSU after 'Kindred Spirits' was published, the reception I received made me feel as if I had never left," Okonkwo said.

Twenty-one years after his graduation, Okonkwo was recruited back to the FSU Department of English, this time as a professor. Since 2022, he's introduced new courses exploring African and African American literature, postcolonial literary and cultural studies, the diaspora and more.

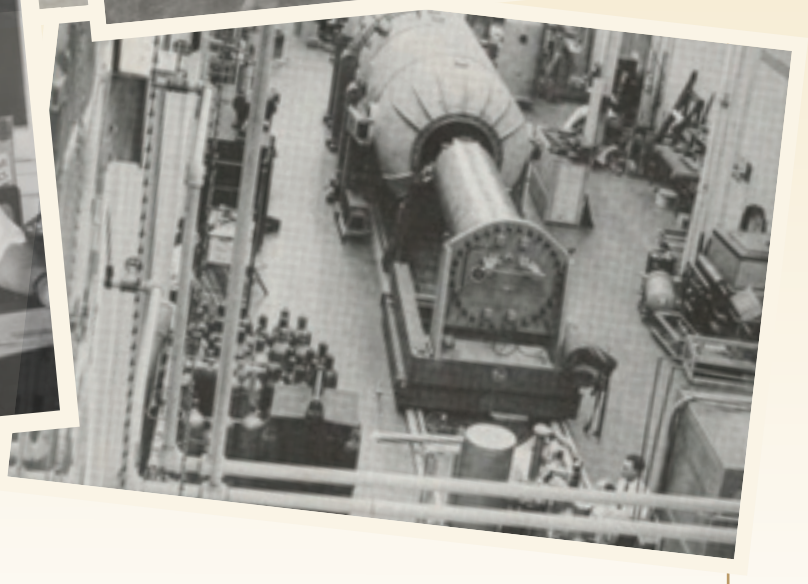
"Students rave about Dr. Okonkwo's courses, which they find engaging, fun and intellectually challenging," said Andrew Epstein, Department of English chair and professor. "His genuine enthusiasm and willingness to engage with them as fellow scholars makes his courses personally enriching."

Okonkwo has earned widespread recognition via his published research, awards, grants and invited lectures. In Summer 2024, he joined the editorial board of Research in African Literatures, the most prestigious journal in African literature, and in 2025, he was invited to join the editorial board of Global South Literary Studies. At FSU, Okonkwo was nominated for the university's Honors Thesis Mentor Award and the Outstanding Graduate Teaching Award in the 2024-2025 academic year.

"His presence has impacted our department tremendously," Epstein said. "His expertise has introduced students to new literatures and cultures, strengthened our research profile, and attracted international students to study here."

Last summer, Okonkwo published a seminal article on music in award-winning writer Chimamanda Ngozi Adichie's works, using the Igbo linguistic and musical concept "akụkọ na egwu," which translates to "story and music." He's also working on his next book, "African Literature and Music: Akuko na Egwu, 1891-2025," and has a commissioned essay, "Toni Morrison and Contemporary African Writers," in Stephani Li's forthcoming "Toni Morrison in Context." In January 2025, at the invitation of the African Literature Association, he gave the talk "Tracking Fela's Un(der)studied Cameos in African Fiction" as part of the association's livestreamed 2025 lecture series.

"The more you research, the more you realize how deeply connected we are by history," Okonkwo said. "Even within the painful chapters of Black history, African music connects us across generations."



Clockwise from top left: The FSU Nuclear Research Building in 1960. The installation of the first EN tandem Van de Graaff accelerator in 1959. The EN tandem Van de Graaff accelerator being assembled at the lab in 1959. Nuclear physics student Kuick Lee and nuclear theorist Alex Green. Photos courtesy Florida Memory and FSU's Digital Research Repository.

Accelerating Excellence

FSU nuclear physics laboratory celebrates 65 years of leading science through innovation

By McKenzie Harris

The 1960s were a time of revolution. The U.S. and Soviet Union were locked in competition in the Space Race. The Civil Rights Movement was sweeping the country. In popular culture, the Beatles and Woodstock were transforming music, while a James Bond-fueled spy craze and Mod fashion swept the globe. And in north Florida, science was leaping forward with the construction of a nuclear physics laboratory.

At the Florida State University John D. Fox Superconducting Linear Accelerator Laboratory, physicists study the building blocks of our universe, from stars millions of miles away to the atoms that make up the human body. Since 1960, the Fox Lab's nuclear structure and nuclear astrophysics scholars have made critical advances in nuclear science by studying the quantum mechanics of atomic nuclei and their reactions, which also supports applications like medical treatments, energy production and storage, national security, and more while preparing tomorrow's talented scientists for a wide range of work opportunities across varied industries.

"We study the properties and reactions of nuclei that make up the universe, including our bodies and pretty much everything around us, which is essential in understanding how the world came about," said associate professor of physics Vandana Tripathi, an experimentalist who first joined the lab in 2003 as a postdoctoral fellow. "In the process, we also develop tools and techniques that have a variety of applications like in medicine or security, and we're training the next generation to tackle future problems."

Fox Lab researchers use a combination of experimental and theoretical physics to study the abundance of various elements in the universe and investigate unstable nuclei and radioisotopes in naturally occurring elements such as radium and uranium. Research into exotic nuclei can improve technologies in fields including medical imaging, nuclear forensics, nuclear energy, radiotherapy-based cancer treatment, and high-precision industrial measurement.

"As a theorist, my goal is to understand my object of study, and the only way to know if I'm making progress is to make predictions that experimentalists can test in the laboratory," said assistant professor of physics Kevin Fossez, who also holds the U.S. Department of Energy Facility for Rare Isotope Beams Theory Alliance bridge position. "Sometimes, it goes the other way around when experimentalists observe something surprising and ask theorists for interpretations. We spend a significant amount of time discussing and questioning each others' work, and our nuclear group makes a great team."

In the Fox Lab, students call their professors by first name, and on any given day, you can find a group of nuclear physicists — students or faculty — enjoying lunch together outside the Keen Building on FSU's Tallahassee campus. This open, collegial environment, combined with advanced preparation through research and training, produces sought-after graduates who go on to succeed in nuclear physics roles in industries and laboratories around the globe.

"The most important outcome of our work is by far our students — nearly 200 doctoral graduates since the lab's inception is a tremendous contribution to the nation, and our students are in high demand due to their technical training and expertise," said Department of Physics chair Paul Cottle. "We're one of the few labs that allows graduate students to get hands-on experience in building, maintaining and using these technologies."

In past the 15 years alone, the lab has secured nearly $25 million in external grant funding, continuing the support the lab has received from the National Science Foundation, DOE, State of Florida, and FSU over the decades.

"This lab has produced, and still hosts, some of the major titans of nuclear physics," said doctoral candidate Jake Davis. "It's an incredible tool to do the science I want, which focuses on developing a better understanding of fission through gamma ray spectroscopy. Everyone here is so welcoming, and we're all figuring

Photo by Devin Bittner.

"Celebrating a 65-year anniversary shows that we've been part of the U.S. scientific tradition and culture for a long time. We're so proud to continue to propel the U.S. forward through science ..."

— Ingo Wiedenhöever, Fox Lab director

"We spend a significant amount of time discussing and questioning each others' work, and our nuclear group makes a great team."

– Kevin Fossez, assistant professor of physics

out these complex and sometimes frustrating systems with smiles on our faces."

FSU's nuclear physics program was established in 1958 by Alex Green, a nuclear theorist who proposed a collaboration among the university, the state, and the federal government to make Florida a key player in nuclear science research. With the support of then-Governor LeRoy Collins, what became the Fox Lab opened in 1960 as the FSU Accelerator Laboratory after the installation of an EN tandem Van de Graaff accelerator, only the second in the world.

John Fox, the lab's eventual namesake, joined not long after its doors opened.

"John was a research physicist through and through," said Georgianna Vines, Fox's widow. "He was very close to FSU lab faculty who were there at the time of his retirement around 1994, and he often spoke about how proud he was that former Governor Collins was responsible for the lab. The lab was named after John just before he passed in 2007."

Today, more than six decades after the lab's founding, students and faculty utilize advanced detector systems, a radioactive beam facility, the Van de Graaff and superconducting Linac accelerators, nuclear spectroscopy setups, and more instruments that the lab has accumulated through continuous funding.

And while it's home to nuclear physicists, the lab can't function with scientists alone — it also requires a skilled staff of designers, engineers, technicians, and others to keep it humming along, especially since graduate students often work overnights and into the wee morning hours recording data, requiring instrument maintenance and new testing materials.

"I produce target materials for experiments, and I design, maintain, and oversee the construction of vacuum systems," said technical research designer Powell Barber, who joined the Fox Lab after earning his bachelor's in physics from FSU in 1991. "As I approach retirement, I'm incredibly grateful to John for playing a key role in

Photo by Devin Bittner.

"This lab has produced, and still hosts, some of the major titans of nuclear physics. Everyone here is so welcoming, and we're all figuring out these complex and sometimes frustrating systems with smiles on our faces."

– Jake Davis

developing this special place that has given me such a wonderful career. The lab and culture he helped create produces world-class research, is respected by many around the world, and under its current leadership is ardently expanding its research capabilities."

Fox Lab is part of the Center for Excellence in Nuclear Training and University-Based Research, or CENTAUR, a multi-institutional effort supported by DOE's National Nuclear Security Administration that fosters basic research in low-energy nuclear physics and workforce development.

"One of our most impressive accomplishments is that we've had six successful generations of faculty come through this lab, all producing incredible scholars that become leaders around the world," said emeritus professor of physics Kirby Kemper, who joined the lab in 1968 as a postdoctoral fellow and later served as Fox Lab director and FSU's Vice President for Research. "My children say I've failed retirement because I still come into the lab every day — my hobbies include watching data come in with students and watching them figure out what's happening in their experiments."

The lab is also a founding member of the Association for Research with University Nuclear Accelerators, a consortium organized by current lab director and physics professor Ingo Wiedenhöever. ARUNA supports and represents more than a dozen university nuclear accelerator labs across the country to amplify contributions as these entities compete and collaborate with federally funded national labs like Argonne National Laboratory in Illinois and the Facility for Rare Isotope Beams in Michigan.

"Celebrating a 65-year anniversary shows that we've been part of the U.S. scientific tradition and culture for a long time," Wiedenhöever said. "We're so proud to continue to propel the U.S. forward through science, and we're very happy to prepare our graduate students to go out and advance nuclear physics everywhere they go — that's the greatest joy of being at the lab and at FSU."

Clockwise from top: The Fox Lab hosts a workshop on scientific opportunities with the super-enge-split-pole spectrograph in 2019. Courtesy photo. Fox Lab instruments that have been continuously upgraded throughout the past six decades. Photos by Devin Bittner.

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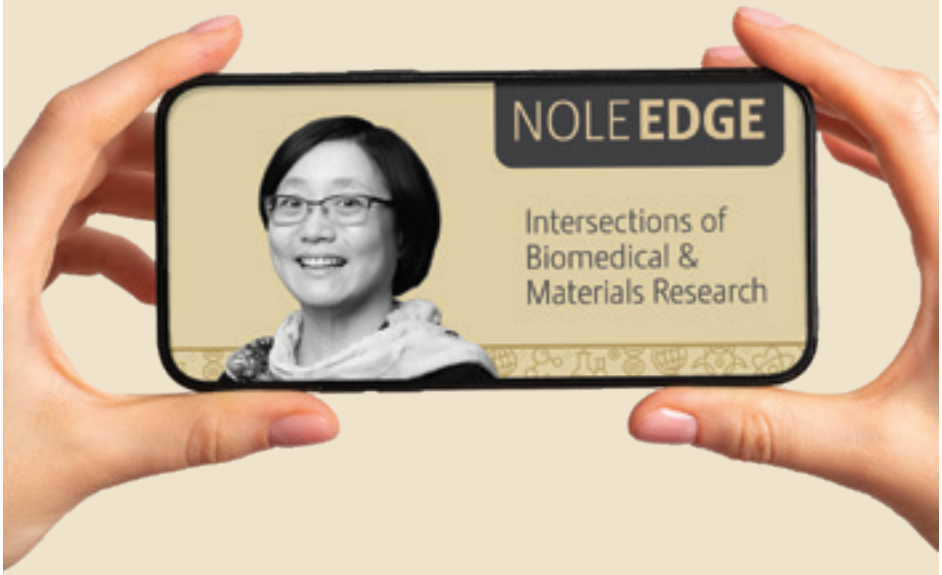

Nole Edge Season 4 streaming now

If you're not subscribed to Nole Edge, the official podcast of the Florida State University College of Arts and Sciences, you're missing out. On the latest episode, Yan-Yan Hu, a professor in the FSU Department of Chemistry and Biochemistry who holds a joint appointment at the FSU-headquartered National High Magnetic Field Laboratory, discusses her lab's pursuits at the intersections of biomedical and materials research. Learn about her work that spans from analyzing protein complexes that drive cell division in deadly *Mycobacterium tuberculosis* to advancing technology for more reliable battery and energy storage solutions.

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SPECTRUM

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