



PennState
College of Information
Sciences and Technology

iconnect

Winter 2024



“Vincent Van Gosling” was created by a student using generative AI

Students examined the emerging challenges and opportunities of AI-created art



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Making an Impact

Everywhere we look, information and digital technologies are evolving at an astounding rate, becoming increasingly embedded in all aspects of the human experience. As your interim dean, I want to ensure that we continue to play a significant role in this evolution. I want the Penn State College of Information Sciences and Technology to make an impact.

I want our expert faculty to continue teaching and doing interdisciplinary research that changes the world: **developing tech startups in Rwanda, improving mental health in Kenya, and informing policymaking for the United Nations.**

I want our students to celebrate their diversity and focus on making the world safer, smarter, kinder, and more beautiful. I want them to go after the best internships and jobs they can find, confident that IST has prepared them well for careers at NASA, Disney, and all the places in between.

I want you, our alumni, to celebrate IST as much as we celebrate you. Last year marked the 20th anniversary of our first graduating class, and the impact our alumni make is evident. You are innovating, teaching, and researching. You are defining the Information Age. You're paving the road for our future generations of technology experts.

You're giving back, and we are grateful.

Andrea Tapia, interim dean
College of Information Sciences and Technology

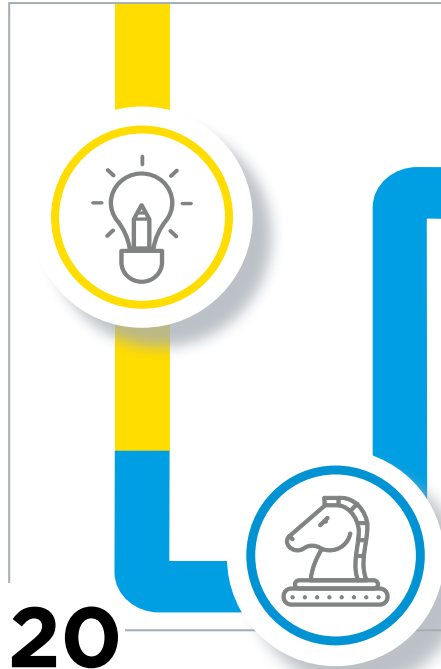
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THE BIG PICTURE

Bright Futures

The beautifully illuminated bridge of the Westgate Building is symbolic of an IST student's academic journey. And every year, during Parents & Families Weekend, students can give their loved ones a glimpse of what it's like to cross that bridge toward a brighter future.





Enrollment, Engagement, and Belonging

New collaborative office is growing and strengthening the IST community

Last summer, the College of IST launched a collaborative unit that aims to create a welcoming and inclusive community for recruiting, retaining, and engaging students.

The newly created **Office of Enrollment, Engagement, and Belonging (OEEB)** now serves as an umbrella for three distinct but connected offices in the college: undergraduate recruiting, student engagement, and inclusion and diversity engagement.

"The new name reflects the strong relationship among our units and promotes a stronger message of belonging and support for all current and prospective students," said **Jocelyn Bennett Garraway**, assistant dean of diversity, equity, and inclusion for IST, who leads OEEB.

The work done across these units is highly connected, and the new structure ensures that diversity, equity, and inclusion are more intentionally built into recruiting and engagement activities.

OEEB provides centralized support for these three complementary units, strengthening the college's ability to recruit, connect, and provide enriching opportunities to students from all walks of life.

"The college is enhanced by the uniqueness of each and every student," Bennett Garraway said. "We want students to feel free to be themselves. In return, we will do our part to help them become the next generation of successful IST professionals."

Office of Undergraduate Recruiting

Helps students navigate the University and college admissions process and coordinates on-campus and virtual visit opportunities.

Office of Student Engagement

Helps students take advantage of co-curricular opportunities that can enhance their academic, professional, and social experiences in the college.

Office of Inclusion and Diversity Engagement

Helps maintain a diverse and equitable climate within the IST community through recruitment, engagement, and retention initiatives.

IST Brings STEM—and Binary Beads—to thousands of Girl Scouts

IST made a big impact in outreach last summer, hosting a STEM activity booth at the 56th triennial National Girl Scout Convention in Lake Buena Vista, Florida. Packed with Penn State promotional materials and a stand-up Nittany Lion, the IST booth featured a coding-based activity to help attendees earn a Girl Scouts STEM badge.

"IST participated in the #PhenomByGirlScouts event as an outreach effort," said **Angela Miller**, director of undergraduate recruiting for the college. "Outreach is an important part of recruitment, and this single convention engaged more than 9,000 girls, ages 5 to 17, and nearly 2,000 adults."

Miller was accompanied by IST colleagues **Lauren DiPerna**, undergraduate recruiting coordinator; **Tyler Estright**, student engagement coordinator; **Chris Gamrat**, assistant teaching professor;

and **Madhavi Kari**, assistant director of diversity, equity, and inclusion.

"The College of IST strives to create an environment of inclusion and belonging and attending this event demonstrated the passion we have to do just that," Kari said. "We were able to connect with young women and talk to them about belonging in STEM and being able to make an impact as a female in technology."

Reaching out to young women from all backgrounds is an important part of IST's recruitment strategy, according to Miller, and the convention was a powerful way to connect with girls of all ages who are interested in technology.

"It's encouraging to see so many young women passionate about technology and to share all of the opportunities Penn State and the College of IST have to offer to these future innovators," Estright said.

The booth also served as a gathering

The scouts created birthday bracelets using binary beads. The activity provided a tangible way to envision the abstract 1-0 binary pattern computers use to talk to each other.

spot for Penn State friends and alumni, who stopped by to take photos with the stand-up Nittany Lion.

"We truly saw the power of the Penn State network," Estright said. "So many people from all over the country stopped at our booth to talk about their Penn State connection. It was an honor to represent Penn State and IST at such a large-scale event for an organization with a rich history. We Are...!"



20 Years

Faculty, friends, and alumni gathered at the Graduate State College to celebrate the 20th anniversary of IST's first graduating class. **Congratulations Class of 2003!**

An Engaging Space

Berardi Family Student Engagement Center will be a hub of innovation and interaction for IST students

Last October, the college opened a new engagement space for student organizations to boost campus involvement and promote new connections. Now, thanks to a gift from Nick and Melinda Berardi, the space will be converted to a versatile meeting and event center where students can unite, exchange ideas, learn collaboratively, and participate in activities that enrich their educational journey.

"The inspiration for naming the student engagement center stems from my profound appreciation for the dynamic and collaborative spirit fostered within IST students," said **Nick Berardi '03**, a member of IST's first graduating class who now serves as the head of engineering for Alexa Mobile Foundations and Release at Amazon. "The ultimate goal is to create an environment that supports not just academic growth but also personal development, leadership skills, and social responsibility."

The center's location in a high-traffic area on the Westgate Building's second floor is ideal for making student

engagement more visible and providing organizations with a dedicated space for meetings, receptions, office hours, and recruiting activities. The Berardi family's gift will help transform the space into a vibrant and fully equipped activity hub that inspires greater student involvement.

"I envision a flexible space equipped with cutting-edge technology that promotes openness and accessibility and provides areas suitable for both formal and informal gatherings—a center that caters to a diverse range of activities, such as group study sessions and workshops, and perhaps even serves as a restful haven between classes," Berardi said.

Engaged students have been found to be more academically prepared and have higher retention and graduation rates than disengaged students. Last summer, **Chris Gamrat**, assistant teaching professor and faculty liaison to the college's Office of Enrollment, Engagement, and Belonging, hosted a workshop that sparked creative



ideas from students about what they needed from a student engagement center. **Tyler Estright**, IST's student engagement coordinator, made it his mission to find the perfect place to make it happen. Their efforts, along with the Berardi family's generosity, will ensure that student organizations have the resources and space they need to meet their co-curricular goals.

"This is an important addition to the college," said **Hope Stylios**, who holds leadership positions on the IST Undergraduate Student Council and the Order of the Sword & Shield National Honor Society. "I'm excited to explore how the center can help student organizations advance our goals and showcase our work to the college."

Thank you, Nick and Melinda!

Newly Inducted

Last November, the **Penn State Chapter of the Order of the Sword & Shield (OSS) National Honor Society—Omicron Sigma Sigma**—welcomed twenty inaugural members from the College of IST. Established in 2010, the OSS was the first academic and professional honor society to recognize excellence in cybersecurity, information security, and intelligence fields. The society's motto is *ex scientia pax*, which means "out of knowledge comes peace."



How Students Find the Major That's Right for Them



Some Penn State students know exactly what they want when they enroll and select their major. But many do not, according to **Kristy Romaine**, assistant director of Undergraduate Academic Advising in the College of IST.

"Students come to our college in different ways," Romaine said. "A computer science student in the College of Engineering, for example, figures out they want to focus less on computer architecture and more on the interdisciplinary applications of technology. They may discover IST through the courses they take or in meeting with their academic adviser."

But even the students who start out in the College of IST may not know which major is best suited to their skills and career goals. They may have an idea of what they want to do—thanks to programs like Undergraduate Recruiting's Spend a Summer Day—but remain unsure until they begin taking classes.

Through their coursework, a student may discover that they are less-than-enthusiastic about programming but have a knack for assessing and managing risk. Academic advisers can build on this discovery to help the student find the major that best fits this newfound skill.

"Foundational courses across IST's six bachelor's degree programs are similar and can be very telling of a student's path forward," Romaine said. "But, as advisers, we do encourage students to look ahead at higher-level courses and ask, 'What will I be learning?'"

The Office of Undergraduate Academic Advising also hosts Majors Night. This annual event occurs at the end of October, shortly before students register for spring classes.

"Majors Nights is geared toward first- and second-year students, but all students are encouraged to attend, especially if they are trying to find their major," Romaine said. "Faculty coordinators and student diplomats representing each major present information and answer questions about their degree programs."

Faculty coordinators are a great source of information for students trying to zero in on the right major. They help students to select a focus area within their degree program that further supports and enhances the student's skillset and goals.

"It's also important for students to connect with a career adviser as part of their major and focus exploration," Romaine said. "We tell them to look at the job they want and figure out what degree goes with it."

The Career Solutions team helps students meet the college's internship requirements. According to Romaine, many transfers occurring within IST—to different majors or different application focuses within majors—result from the real-world internship experiences that help students better define what they want to do in the future. It is common for students to complete multiple internships as part of that exploration.

Students typically declare a major at the end of sophomore year, after they have completed at least 40 credits. At that point in their academic journey, and with the help of IST's academic services units, they're beginning to get a clear picture of where they want to go and how to get there. But they have until 70 credits before the final major decision must be made, which gives them plenty of time and opportunities to explore their options.



"I've always looked at things from an analytical perspective and chose data sciences because I loved the idea of being able to interpret information to solve problems."

Shania King, Class of 2026



"I switched from human-centered design and development to cybersecurity after taking cyber courses that revealed a strong interest in computer infrastructure."

Winston White, Class of 2025

IST Alumni Society Sponsors Students' UX Excursion

Two second-year students from the College of IST engaged with hundreds of user experience (UX) professionals from around the world last summer, thanks to the generosity of the Penn State IST Alumni Society.

Human-centered design and development students **Nicole Leon** and **Katelyn Diehl** attended the User Experience Professionals Association (UXPA) International 2023 in Austin, Texas. With nearly 2,400 members from more than 60 countries, UXPA International promotes professional development and education within the UX field. Diehl and Leon serve as president and vice president, respectively, of the Penn State Chapter of the UXPA.

The chapter was among the first recipients of the College of Information Sciences and Technology Alumni Society Endowment. The endowment, which debuted in January 2023, was established through fundraising to support activities that enhance the educational and research missions of the college. These may include outreach, continuing education, and community programs and activities.

Tyler Estright, director of student engagement for the College of IST, emphasized the importance of sending students to professional conferences like UXPA.

"It exposes students to industry trends, connects them with



experts, and ignites their passion for their field," he said. "It's an investment in their future success that pays dividends in knowledge and inspiration. Attending national and international conferences benefits our students but also contributes to the reputation and excellence of our college."

For Leon, representing Penn State at the conference was an opportunity to showcase IST's majors.

"The UXPA International Conference provided so much perspective on all the opportunities the College of IST has to offer students," she said. "The educational and networking sessions were extraordinary."

Diehl learned that there is more to UX than design.

"UXPA provided such an eye-opening experience," she said. "We learned so many new research techniques that we can use to create a new, more accurate process in the Penn State Chapter."

Other awardees of the first College of Information Sciences and Technology Alumni Society Endowment included the Red Cell Analytics Lab, the National Security Laboratory, and the IST Student Government.

STANDOUT STUDENTS



Tessa Beauchat

Tessa, who majored in human-centered design and development, was IST's summer 2023 student marshal.



Hardik Jain

Hardik, who majored in enterprise technology integration with a focus on application development, was IST's fall 2023 student marshal.



Tomi Oluwaseun-Apo

Tomi, a human-centered design and development student, was selected to Penn State's 2023 Student and Graduate Homecoming Court.

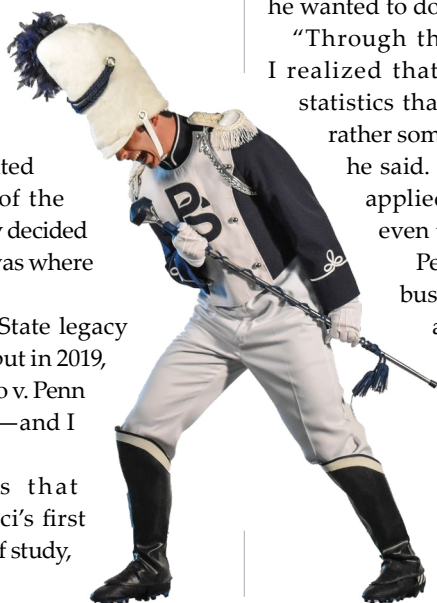
IST data sciences student is the Penn State Blue Band's new drum major

Third-year IST student **Carson Pedaci** is the new drum major for the Penn State Blue Band. As a high school senior in Hershey, Pennsylvania, Pedaci had narrowed his

college choices to the University of Pittsburgh and Penn State. While he said he appreciated the urban setting of the former, he ultimately decided that Happy Valley was where he wanted to be.

"I'm not a Penn State legacy student," he said, "but in 2019, I attended the Buffalo v. Penn State football game—and I saw the flip."

As exciting as that moment was, Pedaci's first flip was in his field of study, he said.



When he arrived at Penn State, Pedaci enrolled in the Eberly College of Science with the intent to study statistics but said he quickly determined that wasn't what he wanted to do.

"Through the orientation process, I realized that it wasn't math-based statistics that I wanted to study but rather something more analytical," he said. "I transferred to IST for applied data sciences before I even took my first class."

Pedaci has made time in his busy academic life to become a veteran member of the

Penn State Blue Band. A French horn player since the fourth grade and a drum major in high school, Pedaci secured a spot in the mellophone section of the Blue Band before he arrived



at University Park for his first semester.

Last spring, to prepare for his audition to lead the Blue Band, Pedaci worked with former drum majors and their trainers. He also connected with Penn State's Club Gymnastics to perfect his flip and prepare to take the field.

"I received a lot of support from Club Gymnastics," he said. "They were so welcoming and really showed me the ropes. They provided tips and tricks in the gym and on the field."

When asked if he had any personal goals as drum major, he said, "I want to inject energy and exuberance into this role and facilitate among my bandmates the love that I have for the organization. I want every member to feel as welcomed, included, and embraced as I did when I entered as a first-year."



Daniel Manolesco

Daniel, who majored in security and risk analysis, was IST's spring 2023 student marshal representing the ROTC program.



Elissa McNeil

Elissa, who majored in human-centered design and development and minored in psychology, was IST's spring 2023 student marshal.



Britney Wang

Britney, a human-centered design and development student, served as the conference director for the Society of Asian Scientists and Engineers Penn State Chapter.



Livestreaming Hate Raids: Can They Be Stopped?

Hate raids are a form of cyberbullying found on livestreaming platforms like Twitch. **Jie Cai**, assistant research professor in the College of IST, led a team of researchers to examine coordinated hate raids and identify the challenges of combatting them.

Defining Hate Raids

Raid mechanisms are designed to be a positive way for streamers to send their viewers and followers to other streamer chatrooms in support of one another's communities. Hate raids occur when people use these mechanisms to abuse a streamer—oftentimes from a marginalized or underrepresented group—by flooding their chat with followers and hateful messages from bot accounts and making the stream difficult to execute.

Twitch, which had 140 million monthly active users as of August 2023, has deployed artificial intelligence, staff, and community members to moderate harassment, but the problem persists. As new platforms emerge, new forms of violations surface to disrupt the interaction experience of users.

"Hate raids focus on abusing platform features without violating moderation rules," Cai said. "This creates an algorithmic confrontation between the streaming service's moderation tools and follow bots. The attackers become increasingly creative and there seems to be no end in sight."

How Streamers See Hate Raids

Cai's team analyzed thousands of user comments that discussed hate raids on Twitch. Users understood hate raids to include large numbers of bot followers that clogged up streamers' accounts. The very thing that the streamer hoped to achieve—gaining new followers—became suspicious and unwelcome.

Users described being inundated by mass hate messages

that could flood a live chat in a short time and overwhelm both the stream and its sense of community. Comments indicated that streamers encountered hate from both follow bots and humans.

Further, users experienced entrapment. Hate raiders induced the users to violate Twitch's terms of service and collected evidence to get them banned from the platform. The users indicated that this entrapment occurred despite their following all of the moderation tools to prevent it.

"The repercussions are significant for users who stream for a living or as an essential source of happiness," Cai said. "Streamers, particularly marginalized streamers, endure financial, emotional, relational, and potential physical harm."

Designing to Provide Support

"This work has helped us gain an understanding of how livestream users view and respond to hate raids" Cai said. "In response, we propose the moderation-by-design concept as a next step in mitigating the effects of hate raids."

This concept suggests that system design should always consider the potential abuse of such design and prioritize possible proactive and reactive responses to it. The researchers further propose stakeholder collaborative content moderation to mitigate hate raids. Specifically, the platform should be designed to better communicate with streamers and general users; Twitch designers and developers should have a closer collaboration with third-party developers; and the platform should provide tools to facilitate streamer-moderator and streamer-viewer collaborations, such as tools to stimulate and amplify positivity to counteract hate raids.

Enabling AI Emotion Recognition

People often move using specific motor patterns to convey emotions, and those body movements carry important information about a person's emotions or mental state. A multi-institution research team led by Distinguished Professor **James Wang** developed an annotated human movement dataset that may improve the ability of artificial intelligence to recognize the emotions expressed through body language.

The work—which was featured on the cover of *Patterns* last October—was carried out primarily by **Chenyan Wu**, a student in Wang's lab who has since graduated from IST's doctoral program.

The researchers created a dataset of the way body movements indicate emotion—body motor elements—using 1,600 human video clips. Each clip was annotated using Laban Movement Analysis (LMA), a method and language for describing, visualizing, interpreting, and documenting human movement.

Wu then designed a dual-branch, dual-task movement analysis network capable of using the labeled dataset to produce predictions for both bodily expressed emotion and LMA labels for new images or videos.

Emotion and LMA element labels are related, and the LMA labels are easier for deep neural networks to learn. LMA can study motor elements and emotions while simultaneously creating a high-precision dataset that demonstrates the effective learning of human movement and emotional expression.

Augmenting machines' understanding of bodily expressed emotion may help enhance communication between assistive robots and children or elderly users; provide psychiatric professionals with quantitative diagnostic and prognostic assistance; and bolster safety by preventing mishaps in human-machine interactions.



MEDIA MENTIONS

WHO, WHAT, WHERE



Dongwon Lee, professor; **Aiping Xiong**, assistant professor; and **Sian Lee** and **Harsueng Seo**, doctoral students



"Who Checks the Fact-Checkers? Penn State researchers"

Poynter.



Prasenjit Mitra, professor

"AI and oncology"

Oncology Compass Digest



Priya Kumar, assistant professor

"Can You Hide a Child's Face from A.I.?"

The New York Times



Peng Liu, Raymond G. Tronzo, MD Professor of Cybersecurity, and **Zhilong Wang** and **Lan Zhang**, doctoral students

"ChatGPT for Software Security: How it Assists Attackers & Security Analysts"

Cybersecurity News



Shomir Wilson, assistant professor

"Deepfake concerns growing along with AI technology"

Y! News



Learning About Art in the **Generative AI World**

Penn State students used AI to create art in a contest to be featured on the cover of iConnect.

By
Mary Fetzer

The College of Information Sciences and Technology debuted a new special topics course in fall 2023. **“Emerging Technologies in Popular Culture” (IST 130)** welcomed undergraduate students from any major to examine the opportunities, challenges, and concerns surrounding generative artificial intelligence (AI).

The introductory class, which meets Penn State requirements for a general education course in art, equips students to create and critique AI-generated artistic expressions in art, writing, music, and games. It also examines the ethical questions—such as those involving plagiarism, ownership, copyright, and the definition of art itself—arising in response to evolving AI technology.

“This survey course explores the generative AI used to produce and consume popular cultural artifacts,” said **Erica Fleming**, assistant director of teaching and learning for the College of IST, who taught the course. “The content and assignments are directed at helping students to both create and critique digital media in ways that demonstrate their understanding of, engagement with, and reflections upon what it means to be an artist.”

The iConnect editorial team proposed a cover contest to celebrate the new course. Under Fleming’s direction, IST 130 students would create images using generative AI tools. The students would then select their favorites from among the images to be featured on the iConnect cover.



Homage to Nihei
by Austin Yao



The White Winter City
by Carson Vella

The Assignment

"The objective of this assignment is to use a generative AI tool to create a piece of art that reflects your personal style, preferences, and/or life goals. You will use an iterative approach, starting with one prompt and continuing to add and refine using additional prompts until you get to a final product that you are happy with."

There were 330 students in the class. The assignment was required, but students could opt out of the iConnect cover contest. Working individually, the students generated a total of 298 submissions.

The students used generative AI text-to-image tools, such as **Adobe Firefly**, **Bing Image Creator**, **Craiyon**, **DALL-E2**, and **Midjourney**. Adobe Firefly, which is available through Penn State, was used most often.

"The students had to include a minimum of ten iterations of their artwork," Fleming said. "I didn't make anything off-limits because all of the tools we used for class have restrictions on them to avoid mature content . . . The students were free to be creative."



The Koi Forest
by Virak Nhim

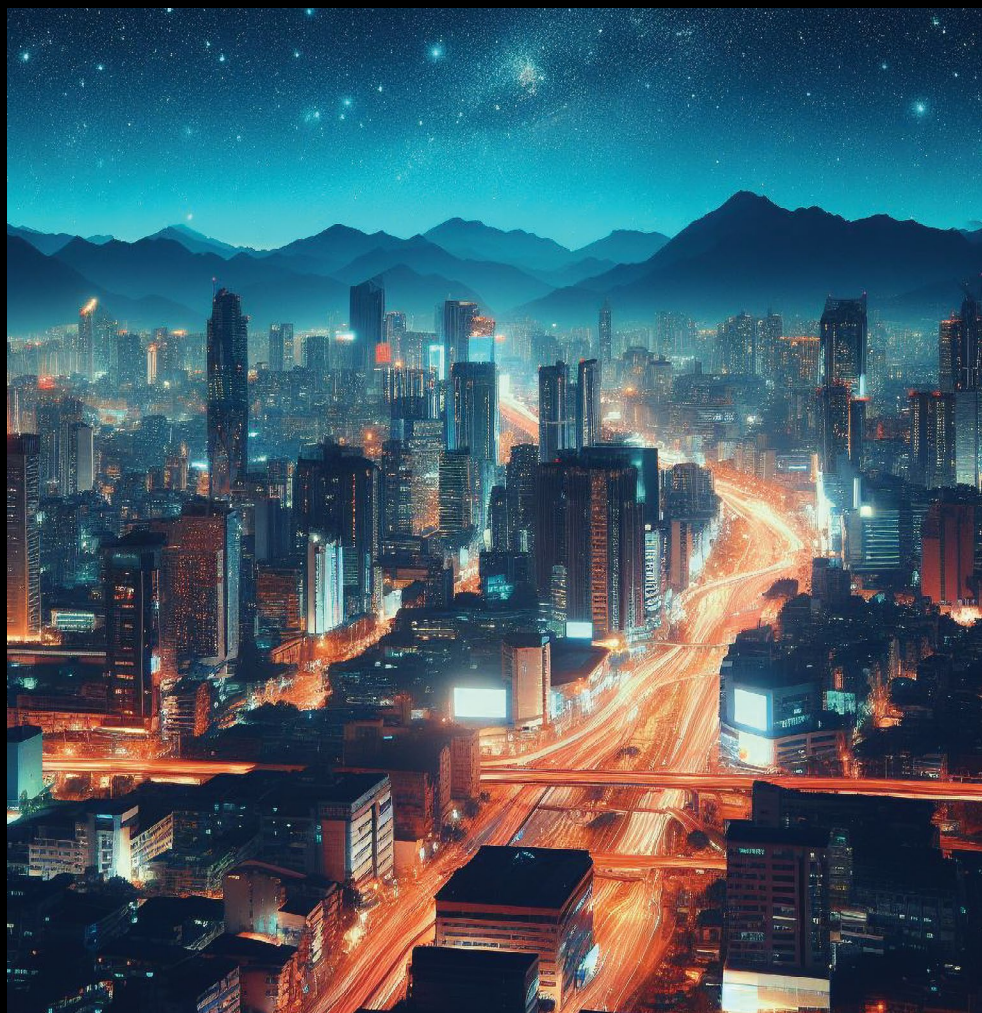
Learning While Doing

The AI and Art unit of the class presented the students with the opportunity to use AI art tools to create something each time they met for class. As they learned more about AI, the students became increasingly creative with their prompts and learned more about the output of the AI tools, according to Fleming. She added that the unit leading up to the project shined a light on important topics:

- » Prompt chaining
- » History of AI art
- » Ethics of using AI-generated art
- » Current art copyright cases involving AI
- » How generative art is impacting the creative economy
- » How AI is helping art historians
- » How to critique artwork, whether created solely by humans or co-created with AI

“

Quite a few of the students are majoring in cybersecurity analytics and operations,” Fleming said, “so another big topic was the privacy and security of these tools.”



Busy City at Night
by Robert Lotus

“Quite a few of the students are majoring in cybersecurity analytics and operations,” Fleming said, “so another big topic was the privacy and security of these tools.”

The unit also included “more practical” discussions, according to Fleming, such as how AI tools could be used in the students’ own lives to create visuals for presentations, reference images for a proposal, or just as a fun and creative outlet.

The unit culminated with the assignment, when students turned in a digital file of their work along with a short, written reflection detailing their creative process, their use of AI tools, and the meaning of their artwork.

Choosing a Winner

With three rounds of bracket-style voting, the contenders were narrowed from 298 to 30 and then to the final six: *Busy City at Night*, *Homage to Nihei*, *The Koi Forest*, *Time Is All It Takes*, *Vincent Van Gosling*, and *The White Winter*.

The winning image was *Vincent Van Gosling*—an artistic mashup of Van Gogh’s *Starry Night* and actor Ryan Gosling. The student who submitted this work requested to remain anonymous.

“I was very morally conflicted about this being a work that I myself created and got published,” they said. “AI did basically all the work.”

The student’s concerns are at the very heart of the course itself, which asks: *Who owns the art co-created with a machine? When does AI become the artist?*



Time Is All It Takes
by Sam Greenberg

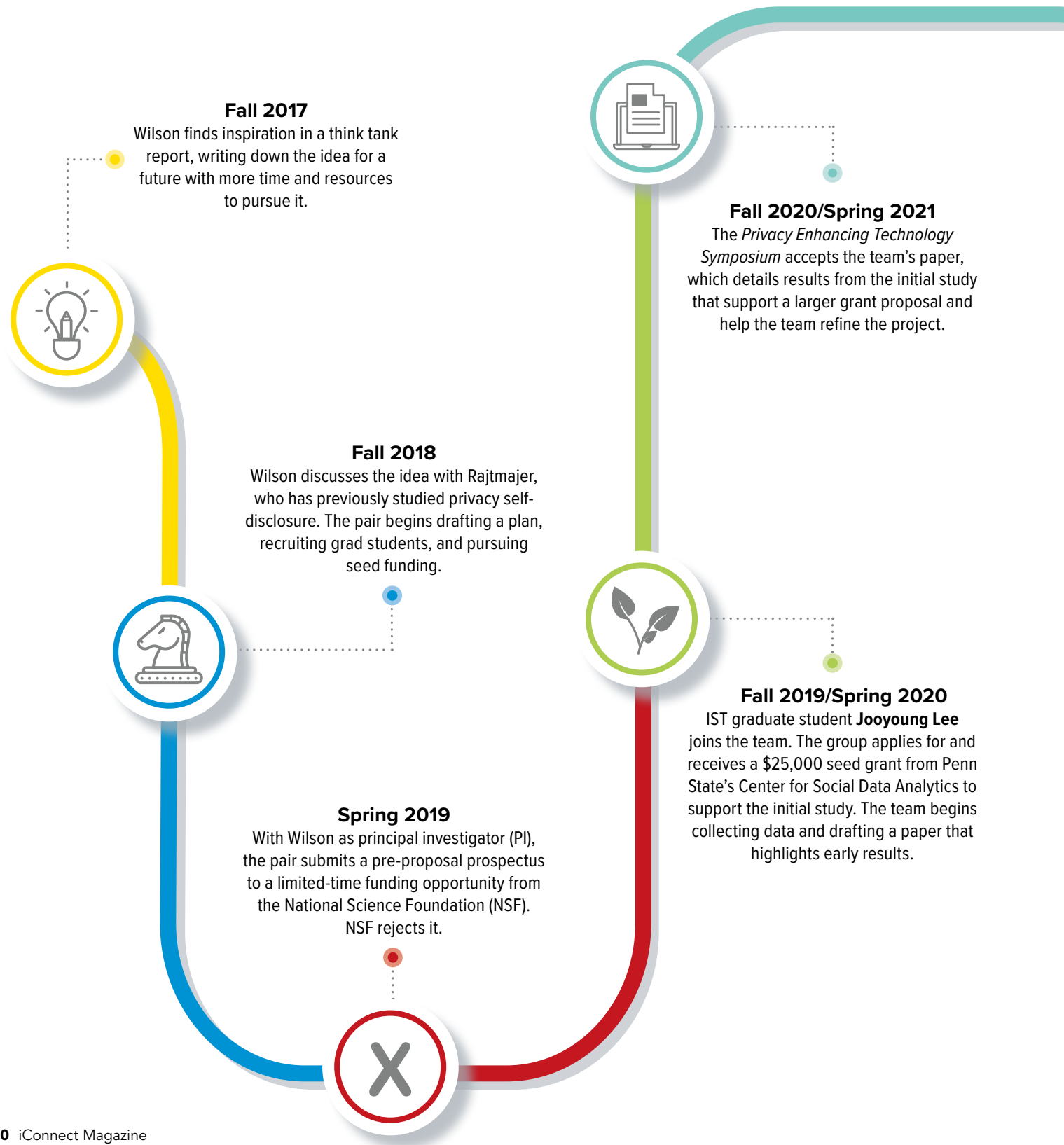
Best of the Rest



PATH TO A GRANT

A journey of a thousand miles begins with a single step. For researchers, securing grant funding is one of the biggest steps in their journey to advance a project—and getting there often requires traveling down a winding path of unexpected twists and turns, ups and downs, successes and setbacks. IST assistant professors **Sarah Rajtmajer** and **Shomir Wilson** walked us through the steps they took to secure a major grant from the National Science Foundation to support their work involving the privacy risks of personal information sharing in social media.

By Jordan Ford



Fall 2021

Rajtmajer takes over as PI, with **Anna Squicciarini**, Frymoyer Chair in IST, joining Wilson as co-PI. The study expands with three aims: combine small-scale, survey-based data with large-scale observational data; understand the privacy norms of people from different socioeconomic backgrounds; and build privacy-enhancing technology to support these norms.



Spring/Summer 2022

The team submits the proposal to NSF. It's rejected but receives supportive reviews. Squicciarini is named director of NSF's Secure and Trustworthy Cyberspace program and steps away from the project to avoid conflicts of interest.



Fall 2022

The team revises its proposal—"Toward Privacy Equity Through Contextual Understanding of Self-Disclosure"—and resubmits it to NSF.



Summer 2023

The group publishes a second paper—"Online Self-Disclosure, Social Support, and User Engagement During the COVID-19 Pandemic"—in *ACM Transactions on Social Computing*, which highlights the level of emotional and informational support online users receive based on the amount of personal details they share.

Spring 2023

NSF accepts the proposal and awards the team a \$600,000 grant through May 2026 to advance the research.



Looking Ahead

Recognizing that what people do and what they say they do are often different, Rajtmajer and Wilson are investigating how socioeconomic status and group identity affect online privacy self-management, specifically among low-socioeconomic and underrepresented populations, who often express heightened worries about digital privacy. Their aim is to create new machine learning techniques that can detect self-disclosed personal information, examine social network and peer influences on privacy-related behaviors, and develop new privacy-enhancing technologies that enhance digital privacy equity.

25 YEARS OF **ONLINE** **LEARNING**

**The College of Information Sciences and Technology reflects on
its partnership with Penn State World Campus**

By Mary Fetzer



When shutdowns resulted from the COVID-19 pandemic, schools at all levels experienced a shift to online education. But online learning was nothing new to Penn State World Campus. For more than 25 years, World Campus has provided students with the opportunity to earn a Penn State degree at their own pace from wherever they are.

Universities across the nation began offering online courses in the early 1990s, as internet technology and the World Wide Web exploded. Penn State was a leader among them, becoming the first major institution in the nation to adopt online learning as a university-wide policy.

The first World Campus course—introduction to turfgrass—launched with 17 enrolled students in January 1998. Since then, more than 37,000 alumni have earned a degree at least partially through World Campus.

Unlike some universities that use online management program companies, Penn State keeps its programs and instructors in-house. Many World Campus instructors also teach residential courses at Penn State . . . delivering the same excellent education in a different format.

A Campus for Everyone

World Campus students can be found in all 50 states and across the globe, and they look like anybody and everybody—from new high school graduates to senior citizens. They're adult learners who want to complete their degrees while immersed in their careers. They're active military personnel stationed around the world. They're undergraduate students who

opt to finish online after moving for a job or an internship. They're Olympians who want to attend college while training or competing.

World Campus students look like U.S. Army veteran **Joshua D'Ottavio**, a lead engineer for the technology consulting firm Booz Allen Hamilton. D'Ottavio earned his bachelor's degree in security and risk analysis in cybersecurity as a residential student in the Penn State College of Information Sciences and Technology (IST). Following his graduation in 2021, he was encouraged by his IST advisers and research professors to continue his education through World Campus.

He did so and, in 2023, earned his master of professional studies in homeland security–information security and forensics, along with graduate certificates in information systems cybersecurity, cyber threat analytics and prevention, and enterprise information and security technology architecture, all through World Campus. He is now pursuing a doctor of engineering in artificial intelligence, also through World Campus.

IST and World Campus

A Penn State degree, regardless of where it's earned, carries the same world-renowned value. Non-traditional students who want to complete their undergraduate studies or earn an advanced degree in the field of information sciences and technology can do so through World Campus. Together, the College of IST and World Campus offer a portfolio of programs that are industry-focused and practitioner-informed, enabling distance learners to hone their skills with the convenience and flexibility of an academic curriculum that fits their unique schedules.



Jodi Fleming '13, '16g WC

Jodi Fleming earned her bachelor's degree in information sciences and technology (IST) in 2013 and a master of professional studies in information sciences—cybersecurity and information assurance in 2016. She is pursuing a doctoral degree in space cybersecurity from Capital Technology University and currently serves as a space and satellite systems cyber defense engineer at Allyon, Inc. in Colorado Springs.

After graduating from high school, Fleming enlisted in the U.S. Air Force. Six years later, in 2006, she began her college career at Penn State Fayette, The Eberly Campus.

"In my family, both my mother and uncle graduated from Penn State Fayette," she said. "I also grew up very close to the campus and knew that Penn State provided a quality education."

Fleming moved from Dunbar, Pennsylvania, to Kennesaw, Georgia, after her first year at Penn State Fayette and had to take a break from her studies. She resumed her coursework in 2011 via Penn State World Campus.

"At the time, distance learners were

unable to be active in Penn State organizations or extracurricular activities," Fleming said. "It is good to see that as World Campus grew, so did the opportunities for remote students to get involved."

After graduating from Penn State, Fleming accepted a position at Georgia Tech Research Institute, where she performed cybersecurity and information assurance activities. She worked as a cybersecurity engineer for multiple federal defense contractors in Nevada and Colorado before moving into her current role at Allyon. She has served in the U.S. Air Force Reserve since June 2006.

"Penn State provided me with a comprehensive education and opportunities to learn many new subjects," Fleming said when asked how the University prepared her for her career. "Attending Penn State has greatly contributed to my success, and I am proud to be a graduate of World Campus."

Fleming also recalled being selected as one of the first RSA Security Scholars, an experience she said opened her eyes to the breadth of the cybersecurity field and helped her to start building her network.

"Attending Penn State has greatly contributed to my success, and I am proud to be a graduate of World Campus."

When she's not working, Fleming enjoys being outdoors—hiking, four-wheeling, and snowboarding. She had these words of wisdom for prospective students:

"I think prospective students should know that the College of IST and especially World Campus provide the opportunity for a challenging but rewarding education," she said. "The IST community is supportive and wants to see students succeed. And World Campus enables students from all over the world to obtain an amazing education from a respected university without having to be local to a campus in Pennsylvania."

Mark Poblete '07, '20g WC



Mark Poblete earned his bachelor's degree in information sciences and technology (IST) in 2007 and a master of professional studies in information sciences—cybersecurity and information assurance in 2020. He received a graduate certificate in enterprise architecture in 2022, and currently serves as a senior risk manager and technology risk adviser at Capital One in Mclean, Virginia.

Poblete talked about why the College of IST and, later, Penn State World Campus were right for him.

"Back when I was about to start college, the concept of a degree program that blended technical concepts with the skills necessary to translate those concepts to something accessible and actionable for business leaders was still quite innovative," Poblete said. "My initial visit to Penn State included an introduction by Jim Thomas, founding dean of what was then the School of IST. Dean Thomas's focus on providing students with practical experi-

"I knew that continuing my education through World Campus would provide me with the flexibility I needed to pursue my degree on my terms and at my pace."

ence using problem-based learning and guided by industry leaders and advisers was all I needed to hear. I was hooked."

Poblete entered the workforce with his bachelor's degree and eventually found

himself working for an employer who advocated for ongoing development through its educational assistance program. He was inspired and motivated to pursue a graduate degree and opted to do so via Penn State World Campus.

"I had already experienced the Penn State difference as an undergraduate student and served in a number of leadership roles as an alumnus since then," Poblete said. "I knew that continuing my education through World Campus would provide me with the flexibility I needed to pursue my degree on my terms and at my pace, while offering the rigor and excellence that Penn State is known for irrespective of campus or location."

While working full-time at Capital One, Poblete attended World Campus classes from his home in Northern Virginia. He said his career and graduate education enhanced each other.

"I had the opportunity not only to learn from tenured subject matter experts and fellow professionals but also to contribute to the dialogue with my own experiences and perspectives on coursework—ranging from network security to risk management," he said. "Through Penn State and the World Campus, I learned more about emerging risk concepts, technology trends, and the methodologies that leading-edge organizations are using to manage them, all of which continue to benefit me."

And distance did not prevent Poblete from being active in the Penn State community.

"When I enrolled at World Campus, I was already serving on the Alumni Council—the governing body of the Alumni Association," he said. "I joined the World

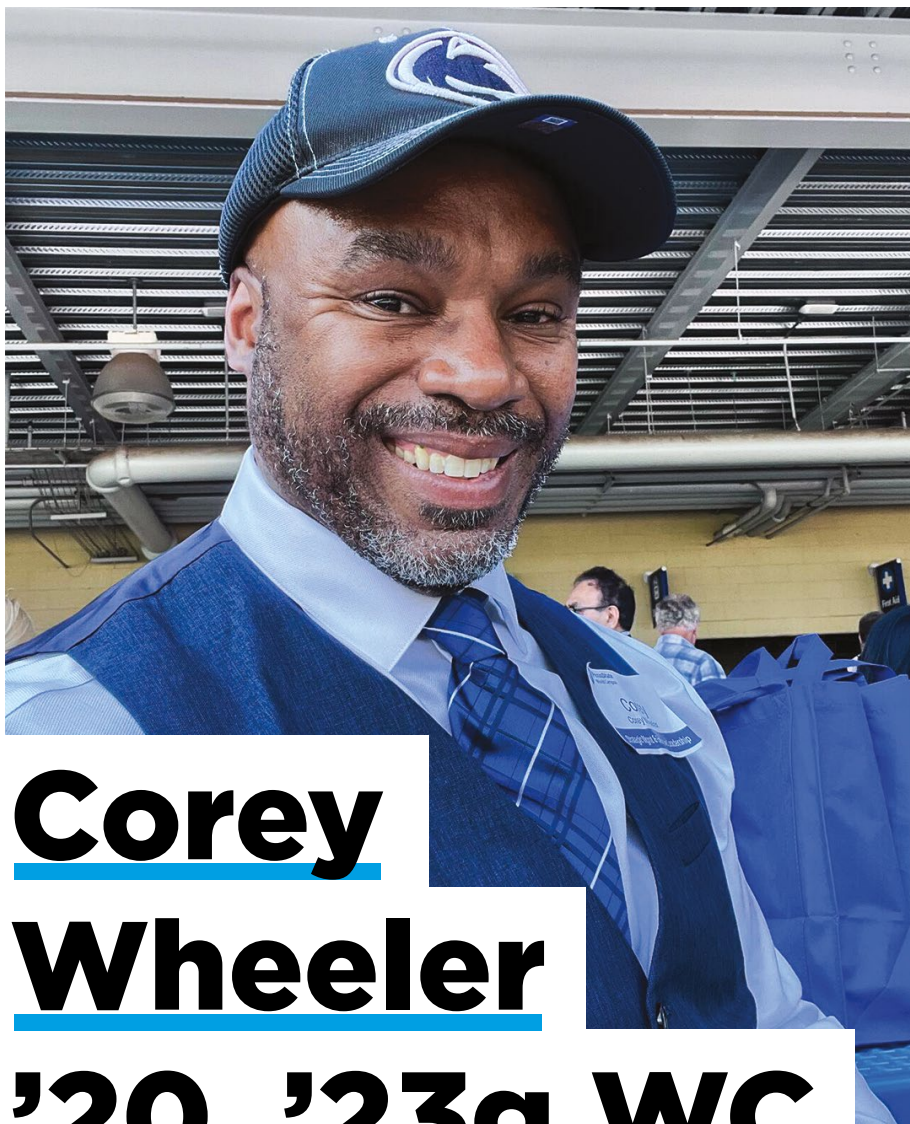
Campus Chapter of the Blue & White Society because I knew it was an integral part of providing students with connections to our global alumni network and setting them up for success not only during their time as students but as lifelong members of the Penn State Community."

Poblete is the current president of the World Campus Alumni Society board of directors and remains active in Alumni Blue Band Association. He is a long-time alumni admissions volunteer for the Penn State Office of Undergraduate Admissions.

In 2022, the Penn State Alumni Association presented Poblete with the Philip Mitchell Alumni Service Award, which recognizes an individual who has significantly contributed to the area of public service by sharing or volunteering their talent, time, and resources on behalf of the University. In appreciation, Mark and his wife Carol endowed the Mark and Carol Poblete Award for Alumni Leadership Development, intended to celebrate excellence in alumni volunteer mentorship. Previously, they had established an undergraduate scholarship as part of the Penn State Renaissance Scholarship program, generously matched by the Alumni Association as part of its 150th anniversary celebration in 2020.

Poblete encourages IST and World Campus alumni to get involved with local geographic chapters and global affinity groups of the Alumni Association to take advantage of everything the membership offers.

"As members of our Alumni Association, students will benefit from continuing to foster connections with other IST and World Campus alumni wherever their degree takes them," he said.



Corey Wheeler '20, '23g WC

From 2017–2020, **Corey Wheeler** was a full-time undergraduate student in the Penn State College of Information Sciences and Technology. He earned a bachelor's degree in enterprise integration with a minor in security and risk analysis. From 2020–2023, he attended Penn State Smeal College of Business, where he earned an MBA, a master of management in strategic management and executive leadership, and graduate certificates in business architecture and corporate innovation and entrepreneurship. And he accomplished all of it through Penn State World Campus.

"I'm an adult learner," Wheeler said. "It has been more than 25 years since I was in high school—but I didn't let that deter me from completing my undergraduate degree in IST."

He said that—as a working professional, father, and husband—disrupting his life to attend college was not an option. Penn State World Campus enabled him to take classes from his home in Southern California to meet his academic goals.

"Through World Campus, I went to school on my own time and prioritized my schedule in a way that worked best for me and not the other way around," Wheeler said. "Plus, World Campus offered a large selection of programs that I could customize to fit my career aspirations."

Wheeler researched dozens of online programs and found that Penn State had the best academic and athletic reputation among them.

"I was looking for an online experience that stood for academic quality—a university that was immediately recogniza-

"I was looking for an online experience that stood for academic quality—a university that was immediately recognizable, steeped in tradition and excellence."

ble, steeped in tradition and excellence," he said. "I wanted to be challenged with a rigorous program taught by actual professors and industry professionals. Most importantly, I needed a university that I'd be proud to call home every time I visited campus or saw my team play on TV. I got all that and much more with Penn State."

Wheeler received his bachelor's degree in 2020 and immediately began his graduate education. At the same time, he accepted a position as a solutions architect for NVIDIA Corporation, building supercomputing clusters for government customers.

"Employers like NVIDIA recognize the quality of Penn State's IST graduates," he said. "I believe my courses, student engagement activities, and experiences at Penn State played a major role in my landing the position."

From across the country, Wheeler made the most of his Penn State experience. He participated in the World Campus Student Advisory Board on the Student Engagement Committee, was as a World Campus Student Ambassador, and worked as a Smart Track mentor for adult learners. He was also a member of the Student Government Exploratory Committee, which resulted in the formation of the World Campus Student Government Association in 2019. Since 2020, Wheeler has been an active board member of the Penn State Alumni Association's Orange County, California Chapter.

And Wheeler is not done yet.

"Penn State creates leaders who can see what's possible and understand how best to take advantage of opportunities," he said. "My six-year Penn State educational journey has changed my life in fundamental and unique ways. I can't wait to see what's next."

**Of the College of IST's
38 degree and certificate
programs, the following are
offered through World Campus:**



Master's Degrees

- M.P.S. Cybersecurity Analytics and Operations
- M.E.A. Enterprise Architecture and Business Transformation
- M.P.S. Homeland Security-Information Security and Forensics Option

Graduate Certificates

- Information Systems Cybersecurity
- Enterprise Architecture
- Enterprise Information and Security Technology Architecture

Bachelor's and Associate Degrees

- B.S. Cybersecurity Analytics and Operations
- B.S. Enterprise Technology Integration
- B.S. Information Sciences and Technology
- B.S. Security and Risk Analysis
- A.S. Information Sciences and Technology

Undergraduate Certificates

- Information Sciences and Technology
- Security and Risk Analysis

Integrated Undergraduate/Graduate Degrees

- B.S. Cybersecurity Analytics and Operations/M.P.S. Cybersecurity Analytics and Operations



**For more information on the College of IST's
degree programs offered through Penn State
World Campus, contact worldcampus@psu.edu.**



2023 IST Outstanding Alumni Award

Nathan McNeese receives IST's highest honor

The College of IST honored **Nathan McNeese '09LA, '14g** at the first annual IST Alumni Symposium, held last October at the Eric J. Barron Innovation Hub Building. McNeese received the IST Outstanding Alumni Award, the highest honor bestowed by the college upon its graduates. The award recognizes IST alumni who have demonstrated a record of outstanding accomplishments and made significant contributions leveraging the expertise and knowledge gained through their degrees.

“Nathan has had a tremendous impact on academics and industry.”

McNeese earned his bachelor's degree in psychology with a minor in security and risk analysis in 2009 and a doctoral degree in information sciences and tech-

nology in 2014, both from Penn State. His area of expertise is in the field of human-AI teaming and human-centered AI. His research focuses on ways to better develop and utilize AI to improve human lives and contribute positively to society.

“Nathan is an exceptional representative of the College of Information Sciences and Technology,” said **Andrea Tapia**, interim dean. “He has had a tremendous impact on academia and industry. It is a privilege to add yet another recognition to his esteemed career.”

McNeese currently serves as the McQueen Quattlebaum Endowed Associate Professor of Human-Centered Computing at Clemson University School of Computing, where he teaches undergraduate and graduate courses on human-computer interaction, human-AI interaction paradigms, and teamwork and technology. He is the director of Clemson University's Team Research Analytics in Computational Environments (TRACE) Research Group and the founder of TRACE Camp, a web development programming bootcamp aimed at providing educational

accessibility to diverse populations at the undergraduate level. He was the Clemson University Junior Researcher of the Year in 2022.

Since earning his doctorate at Penn State, McNeese has been a principal investigator or co-principal investigator for more than 30 research grants and awards, generating more than \$38 million in funding. His work is funded by the National Science Foundation (NSF), Air Force Office of Scientific Research, Office of Naval Research, Army Research Office, and the U.S. Department of Education, among others. His research has received multiple best paper awards and has been published in peer-reviewed human-computer interaction and human factor venues more than 150 times.

In 2023, he received the NSF CAREER award, the National Science Foundation's most prestigious award in support of early career-development activities. McNeese will use the \$580,227 grant to develop AI systems that act as good teammates with humans to make AI more effective, accepted and utilized.

Congratulations, Nathan!

2023 IST Emerging Professional Award

IST presents newest honor to Christy Grim

The College of IST presented its first Emerging Professional Award to **Christy Grim '17 WC, '23g**. The award—announced at the IST Alumni Symposium last October—was created to showcase recent alumni who are earning notable achievements by leveraging their IST knowledge to make a positive impact on the world.

Grim graduated from Penn State World Campus in 2017 with a bachelor's degree in IST and a minor in security and risk analysis. She earned her master's degree in project management in 2023 and was recently accepted into the engineering doctoral program at Penn State.

“Embarking on a new career path later in life isn’t a deviation, it’s choosing an unexplored trail packed full of possibilities.”

As an adult learner who was managing a family and working full-time as an optician, Grim chose to pursue her education through Penn State World Campus, taking online classes from her home in Winchester, Virginia. She was an active member of the World Campus community, where she joined the Blue & White Society and served as vice president of the World Campus Tech Club. Grim was named the College of IST commencement student marshal for her outstanding academic record and unique journey to transform her career.

“Embarking on a new career path later in life isn’t a deviation,



it’s choosing an unexplored trail packed full of possibilities,” Grim said. “Embrace all challenges and do the things that scare you the most, for within those moments lie the keys to unlocking personal and professional growth.”

Prior to graduating, Grim left her 18-year optician career—where she had earned state licensure and national certifications—for an unpaid internship with Lockheed Martin. Grim’s internship led to a full-time position, where she quickly rose through the ranks. She has received multiple promotions since graduating from Penn State.

Now, as a solution train engineer for Leidos’s defense sector—Leidos acquired Lockheed Martin’s Information Systems & Global Solutions business segment in 2016—she specializes in Agile methodologies and has organized and led software development teams on multiple continents. While managing a portfolio of with a \$35 million budget, she is paying it forward by making time to mentor other emerging professionals.

Congratulations, Christy!

IST Alumni Symposium

The college’s first annual Alumni Symposium was held last October at the Eric J. Barron Innovation Hub. Presented by the IST Alumni Society, the event featured keynote speakers, breakout sessions, and presentations by college leadership about current trends in technology and the future of IST.



Paying It Forward Through Endowed IST Scholarships

Two alumni are supporting the next generation of IST professionals through the Dean's Advisory Board Matching Scholarship Program in the College of IST. Financially supported by members of the board, the 1:1 matching fund enables donors to double the impact of their gifts.

Colin Murphy '03 had dreamed of attending Penn State since he was 9 years old, and with the help of his parents, that dream came true. Now he's paying tribute to his parents for their support. Murphy recently made a commitment to establish the Richard and Veronica Murphy Dean's Advisory Board Matching Scholarship in honor of his mother and in memory of his father.

Murphy's father, Richard, earned a degree in petroleum engineering from Penn State in 1962 and was a lifelong supporter of Penn State. The younger Murphy followed in his dad's Penn State footsteps and enrolled in 1999.

"Financially speaking, it wasn't easy for me to get to Penn State," Murphy said. "It required financial aid and loans. And it required help from my dad, who—along with my mother, Veronica—made my dream a reality."

Murphy was a member of the first class of what was then called the Penn State School of Information Sciences and Technology. He graduated with a bachelor's degree in IST in 2003, and later earned an MBA in strategic management and a master of public administration in international affairs from the University of Texas at Austin.

Today, Murphy is the senior vice president of customer success and chief customer officer at BMC software. He credits his Penn State IST education as a "significant jump starter" to his 20-year career in enterprise technology operations.

"This endowment is important to me because I know it's not easy to find the



Colin Murphy '03

financial resources to do what you need to do," said Murphy, a current member and president-elect of the IST Alumni Society Board. "It's also really important because Penn State was such a huge part of my dad's life. I am extremely grateful to him and my mother."

Jen Romano '05 has made a commitment to establish the Jennifer Romano Dean's Advisory Board Matching Scholarship. The scholarship will be awarded to IST students who contribute to the diversity of the student body, who are first-generation college students, or who have a demonstrated financial need for funds to meet their necessary college expenses.

Romano earned her bachelor's degree in IST with a minor in telecommunications in 2005. When she was an undergraduate student, she worked on an IST project with Accenture, a global professional services company. Prior to graduating, she was recruited by the firm's New York office. She transferred to the Accenture London office in 2012 and has been there ever since.

"I feel lucky to have had the opportunity



Jen Romano '05

to attend Penn State," Romano said. "I had a supporting and able family that could help me to afford the cost of a degree, and I want to provide an opportunity to those who may not have the support or ability to attend on their own."

Romano, who now serves as Accenture's head of sales for strategy and consulting in the U.K. and Ireland, credits the education and exposure she received in the College of IST for her successes over the past 18 years.

"The IST curriculum kept up with the ever-changing technology landscape and could not have set me up better for becoming a consultant," she said. "My IST training was an incredible steppingstone to what turned out to be a pretty successful career!"

Romano also leads her division's inclusion and diversity agenda.

"I try to ensure that everyone in our organization is given the same opportunity to succeed regardless of age, race, gender, sexuality, disability, or social economic background," she said.

Thank you, Colin and Jen!



In Good Company

Corporate giving, engagement bolster retention and belonging programs

Since its launch in 2022, IST's Be You in Tech initiative has been strengthened by funding and expertise from companies looking to build talent pipelines and create a more diverse workforce. Thanks to these partnerships, IST students are connecting with corporate leadership through a series of annual events to explore how their identities and experiences can be assets for their professional growth.

RSM US is the founding sponsor of the initiative's signature event—the Be You in Tech Summit—where students challenge established standards to explore the importance of diverse experiences and perspectives in technology.

More than a dozen companies have supported IST Insiders, which connects newly admitted students to the college

community through a two-day immersive event. Once on campus, these students engage in student organizations that use corporate gifts to earn professional certifications, attend hackathons and conferences, and host career development workshops.

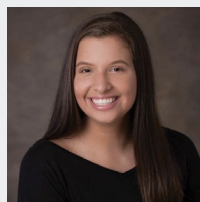
Last year, PwC hosted monthly professional development workshops and social activities, as well as provided funding for students to attend the Grace Hopper Celebration of Women in Computing and the ACM Richard Tapia Celebration of Diversity in Computing Conference. IST Corporate Associates like Boeing, GEICO, and Deloitte provided similar funding that, when matched by the College of IST, allowed for more students to engage in these experiences.

These mutually beneficial partnerships enable students to learn about each company's culture and commitment to student growth and belonging, while connecting students with recruiters and future opportunities on a level not possible through other events.

"These companies, just like the College of IST, are committing to our students in meaningful ways," said **Madhavi Kari**, assistant director of diversity, equity, and inclusion. "These partnerships show our shared values and commitment to providing resources and creating a better environment for our students. The more support these companies offer, the more we can do and the more successful our students can become."

IST Grads Named Young Alumni Ambassadors

The Penn State Alumni Association selected two recent IST graduates to serve as 2023-24 Young Alumni Ambassadors. The program is a yearlong experience that enhances the connections between young alumni, the Penn State Alumni Association, and the University and helps participants develop skills to become the University's future volunteer leaders.



Madison Borkovich '23, human-centered design and development and film production, graduated with dual honors from Schreyer Honors College and is pursuing a law degree from the University of Miami



Divisha Singh '23, information sciences and technology, works as a cyber risk and regulatory associate for PwC in New York, helping clients assess and manage cybersecurity risks

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Alumni Awards • Blue Band Drum Major • 25 Years Online •
IST's First Graduates • New Student Engagement Center



STAY CONNECTED

Watch your email for details on upcoming
alumni networking events this spring in:

- » New York City
- » Philadelphia

Connect with the IST Alumni Society and
see how you can get involved at
ist.psu.edu/alumni-society.

alumni@ist.psu.edu

@ISTatPennState