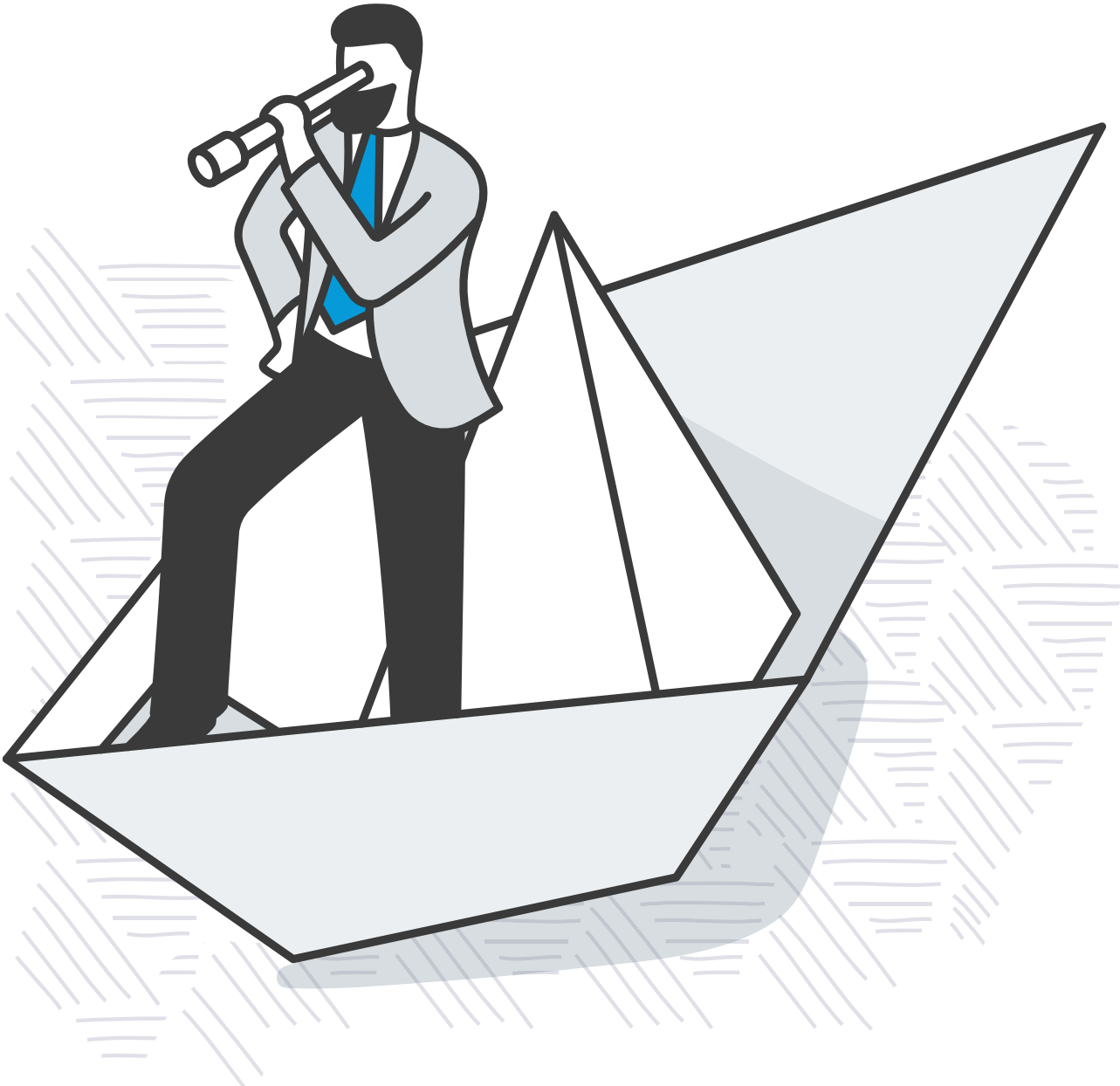
PennState
College of Information
Sciences and Technology

iConnect

Summer 2021



Navigating Ethics

IST experts share perspectives on how we can better manage the longstanding and emerging concerns of ethics in technology.

Andrew Sears, dean
College of Information Sciences and Technology

Growing Stronger

July 11 marked the start of my seventh year as IST's dean. As I reflect on my time in the college, I'm excited about the many accomplishments we've collectively achieved, which can be found in part in our growth. Take, for example, the following:

» Since 2015, our graduate and undergraduate student populations at University Park have increased by 55% and 64%, respectively.

» Since 2015, we've hired more than 50 new full-time faculty and numerous part-time instructors.

» This past fiscal year, we achieved a new record with more than $10 million in external research awards managed by the college, representing an increase of more than 180%.

» We've outgrown the Westgate Building. We now have faculty and staff in the Steam Services Building, and this fall the dean's suite and several research spaces will move to the new Penn State Innovation Hub in downtown State College. The Innovation Hub will also be home to the Invent Penn State initiative, connecting IST to the center for innovation and knowledge-sharing at the University.

This growth has allowed us to develop depth in our core research areas: data science and artificial intelligence, human-computer interaction, security and privacy, and social and organizational informatics. We're also expanding activities in three cross-cutting areas—health and biomedical informatics, ethics, and sustainability—and growing our expertise in important areas like socially responsible AI and social justice. The breadth and depth of our research is leading to new collaborations, expanded funding opportunities, and advanced discovery.

We continue to revise and expand our academic offerings to address the needs and interests of students and employers. With six undergraduate majors and a growing portfolio of graduate and online programs, we are more strategic and agile in how we position ourselves to students, industry partners, and peer institutions. As such, we're creating a more diverse and engaged community through more competitive admissions processes, increased scholarship funding in support of strategic priorities, and intentional faculty and staff recruiting practices.

Over a 20-month period, we put forth a new strategic plan to chart our course through 2025. The plan builds on our strong foundation by focusing on four key concepts: designing a student-centered experience, sustaining an inclusive environment, empowering engaged faculty, and elevating research. I'm eager to see this work bear fruit through new and refined initiatives that advance what we do best.

Finally, like most of you, there's one thing I'm excited for above all else: people! Though not a total return to normal, we expect to have a significant presence of students, faculty, and staff on campus this fall. It will be a welcome sight to see more in-person classes, student engagement programs, recruitment activities, and events. And, of course, we look forward to welcoming our alumni and friends back to campus soon.

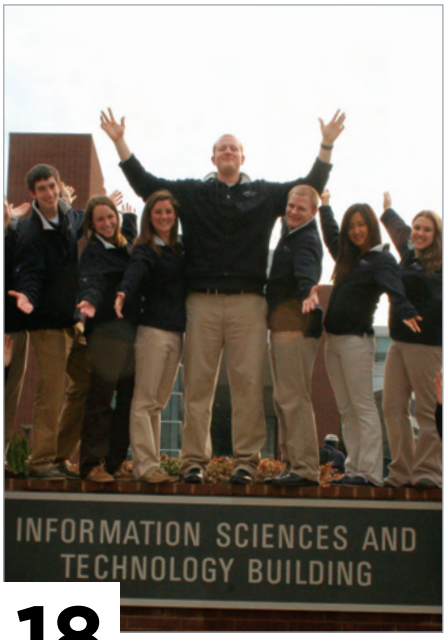
In the news release announcing my hiring, I noted that I could not imagine a more exciting intellectual space than the intersection of people, technology, and information. The many ways that this space—and the college—have changed over the last six years have only amplified that feeling.

I'm proud to look back at all we've accomplished. But with so much activity, opportunity, and potential surrounding our work, I'm even more so looking forward to what comes next.

WHAT'S INSIDE

14 BUILDING A COMMUNITY

Alumna launches nonprofit to support and empower female emergency dispatchers.



18 DID YOU KNOW?

Trivia, tidbits, and fun facts about what makes IST the place it is today.

20 ETHICAL TECH

IST experts share perspectives on the ethical challenges facing the technology sphere.

12

ON THE BRIDGE

28

YOUR IMPACT

Sara Weston (Top Left); Illustration Rasco (Right), Kavalenkava/Adobe Stock (Bottom); Joel Seidel (Bottom)

Cloudy skies and a light rain couldn't dampen the spirits of graduates and their families during spring commencement. IST's Class of 2021 joined their socially-distanced peers from the College of Education and Bellisario College of Communications at Beaver Stadium for a safe and memorable celebration of Penn State's newest alumni on May 8, 2021.

Photo by Annemarie Mountz

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Bonus Content:
Look out for this icon to learn more about individuals featured in this issue.

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COVER
Illustration by Rassco/Adobe Stock

This publication is available in alternative media on request.

U.Ed. IST 21-24

Rising to the Challenge

The IdeaMakers Challenge is a long-standing tradition at the College of IST. The entrepreneurial pitch competition—held annually during Penn State Startup Week—supports multidisciplinary teams of students in the development of early-stage business ideas emphasizing digital solutions to a problem.

Recognizing the significance that innovation and entrepreneurship play in positioning global leaders in a number of domains, alumni Bob and Susan Bardusch established the Bardusch Family IdeaMakers Challenge Endowment. The endowment will provide funding for prizes for the winning teams to advance their ideas and professional networks.

"What is important about the IdeaMakers Challenge is that it really inspires ideation and entrepreneurship, and also the ability to have people think outside the box, generate ideas, and go through the process of design thinking," said Bob. "What I'm hoping is that it inspires students to get involved, to ideate, and to come up with new innovative ideas that can be brought to market."

Bob, who earned his bachelor's degree in architectural engineering in 1988 and currently serves as executive vice president and chief operating officer at Valley National Bank, has been involved with the College of IST since its inception in 1999. In those early years, while working for PNC Financial Services Group, he came to IST to recruit business analysts for the company.

"At IST, technology and business come together in this nexus of being able to translate and apply technology into solving business problems," he said. "That's the glue that really applies ideation and thinking critically about technology to solve business problems in a way that is beneficial for the community as a whole."

He began to get more involved in guiding the IST curriculum by providing industry insight, eventually joining the Dean's Advisory Board in 2008, on which he still serves. He and his family have also endowed a scholarship to support IST students with financial need, and the couple's two daughters, Victoria and Alexandra, graduated from the College of IST in 2017 and 2020, respectively.

The Bardusch family (L to R): Susan, Alexandra, Victoria, and Bob.

Susan, who graduated in 1989 with a degree in general arts and sciences, said that the opportunity to support an entrepreneurial initiative like the IdeaMakers Challenge—which differs from more traditional donor funding of a professor or scholarship—reminds her of her own time at Penn State. As a student, she was able to build her own degree in the College of the Liberal Arts, and equates the flexibility she was afforded then with the opportunity she has now to encourage students think creatively and make an impact.

"Entrepreneurship is the way of the present and certainly the way of the future," she said. "Enabling students to be able to do something with their idea, and not just talk about it in a classroom setting, is very rewarding for them, for the University, and for us."

To A (VIRTUAL) Degree

Last spring, Penn State students faced a temporary but significant change in the way they learned with remote instruction at the start of the pandemic. However, for Penn State World Campus students, the ability to pursue a degree online—from anywhere in the world—has been a long-time beneficial constant as they balance academics with their professional and personal responsibilities.

"Being a teacher at a local college, I was nervous about the structure and instructor engagement with online learning. For this reason, Penn State's maturity in their online program was a big factor in my choosing World Campus. My wife is completing her master's degree at another school and constantly complains about the online platform and instructor engagement. I just log into Canvas and smile!"

Steven Thode, Michigan
Enterprise Architect at General Motors
Pursuing a Master of Professional Studies in Cybersecurity Analytics and Operations

"I am a student over 50 years old and a strong believer that it's never too late to learn something new. However, the thought of pursuing my master's degree at my age was a little daunting. World Campus has been nothing but rewarding, and I am so grateful to have this experience."

Dawn Bassakyros, Michigan
Business Architect at Ford Motor Company
Pursing a Master of Professional Studies in Enterprise Architecture and Business Transformation

"I chose World Campus for its flexibility in both work location and course scheduling, and I enjoy the opportunity to learn from instructors' professional experience. It is also one of the top-rated cybersecurity programs in the country. Getting to be online is just another benefit!"

Matthew Neale, Illinois
Information Security and Compliance Analyst at Levi, Ray, and Shoup
Pursuing a Master of Professional Studies in Cybersecurity Analytics and Operations

Photos provided (4)

CATCHING UP

EARLY CAREER PROFESSOR

Daniel Susser, assistant professor, has been awarded the Haile Family Early Career Professorship in IST. The endowed position, created in 2012 by IST Advisory Board Emeritus Member Don Haile, supports standout faculty members to foster a commitment to teaching, provide funds for emerging research, and offer recognition for their accomplishments.

ADVANCING AI

An NSF grant will help lay the foundation for the AI-Enabled Materials Discovery, Design, and Synthesis (AIMS) Institute at Penn State. The institute is led by **Vasant Honava**r, professor and Edward Frymoyer Chair of IST, and will focus on accelerating materials design and synthesis methods to help speed up discoveries and help scientists produce innovations that serve science and society.

ON MY HONOR

IST Student Government leaders have adopted an honor code to reinforce personal accountability of Penn State Values and academic integrity. All members of the IST community are encouraged to sign the IST Honor Code as a symbolic commitment to upholding the expectations of the college. **ist.psu.edu/honor-code**.

A course to counter COVID

Wash your hands. Stay six feet apart. Wear a mask.

These are the messages that have been conveyed by public health officials for more than a year to curb the spread of the novel coronavirus. The directions are simple enough to understand, but would they be easier to follow if the reasons behind them were clearer?

That is what Frank Ritter encouraged students to think about in a special topics class this spring. The objective of the course was to help students gain better understanding of how to avoid diseases and how knowledge is represented differently in various media.

"I wanted students to know more about the theory behind the non-pharmacological interventions to slow down the spread," said Ritter, professor of IST. "The theory

"Knowing how to protect yourself and your community from the disease and diseases related to this pandemic can help slow the spread of the pandemic."

helps people perform the interventions because they know the 'why' and from that can adapt them and make them more comfortable and doable."

The course was an extension of a tutor designed by Ritter at StopTheSpread.health, which teaches users how to protect themselves and others from COVID-19 and related infections, and an accompanying book co-authored by Ritter and a number of external professionals and experts at Penn State, including Edward Glantz, teaching professor of IST, and Amanda Clase, associate professor at the Applied Research Laboratory. Along with Ritter, Glantz and Clase co-taught the special topics course.

Ritter hopes the course, which was one of the first in the country to focus on COVID-19, not only served to educate his students, but also made an impact for the local community and beyond.

"Knowing how to protect yourself and your community from the disease and diseases related to this pandemic can help slow the spread of the pandemic," he said. "It can help reduce the load on the health care system, making the system able to help people who need it for non-pandemic reasons."

He concluded, "The pandemic seems to be somewhat prominent from my perspective, so creating the course seems like a step toward reducing the pandemic using the particular skills, talents, and resources around me, and protecting ourselves and those around us."

ON THE OFFENSIVE

For the second consecutive year, a team of IST students advanced to the international finals of the Collegiate Penetration Testing Competition, the world's largest offensive-based collegiate cybersecurity competition, after placing second in the Northeast Regional Qualifier.

"It goes to show that Penn State provides a strong foundational education that is competitive against other international curriculums," said team member Cara Schwartz.

Kagan Kaya/Adboe Stock (Top). Photos provided (3)

Q&A

(Ad)mission Accomplished

Signs of a healthy college can often be found in the strength of its undergraduate community. In IST, much of the responsibility for getting students interested in the college falls to **Allie Ellison**, assistant director of undergraduate recruiting. For prospective students and families, she serves as the window into life in the college by providing insights on academic programs, experiential opportunities, and career prospects, and by guiding students through the admissions process.

Q: Why are students choosing to enroll in IST?

A: Students note three main reasons for picking IST: the programs, the opportunities, and the support to ensure success. Our interdisciplinary programs expand students' skills in and passion for technology, and then put them into action on pressing world issues like climate change, economics, security, and health care. Our required internship, support services, and out-of-class experiences complement the academic programs to give students the well-rounded portfolio employers want. And despite our growth, we remain a small, supportive college with the expertise to guide students to personal and professional success. Students see that in the success stories of our alumni and recognize the value this has for them.

Q: How has the pandemic changed the recruiting process?

A: Students have always been told to follow a specific process for finding their dream college, but the pandemic created a college search like no other. The changes and uncertainty caused a lot of anxiety to both students and families, so we provided extra support to help them navigate this new, remote process. We've hosted virtual appointments and events in the past, but we expanded our offerings to be more accessible, which also gave us a chance to showcase the supportive IST community. Despite the changes to the process, students still look for the same things: rigorous programs, career development, leadership opportunities, and a place they can call home.

Q: What is the most rewarding part of your job?

A: Recruitment is a metrics-driven role, so it can be exciting to check our data dashboards to see students' growing interests in IST. However, the best part is hearing that I've helped a student or family member. The application process can be overwhelming and nerve-racking—for both me and the students!—so it feels amazing to know that I've helped ease some anxiety, introduced them to a program, or got them excited about their future at IST. I keep an email folder of thank you notes from students and families; those notes mean something very special to me.

IN MEMORY

CHAO-HSIEN CHU, 1951-2021

Chao-Hsien Chu, professor of IST and one of the college's original five faculty members, died on Jan. 15. He was an active educator, researcher, and administrator at Penn State, and marked 20 years of service to the college in 2019. He helped create the college's first academic programs and was a main designer of the SRA program and the integration and application option within the IST major.

Fang-Mei Chu has established a scholarship at IST in memory of her husband. Donations can be made at **raise.psu.edu/Chao-HsienChuScholarship**.

Addressing Period Poverty

When Jessica Strait first came to Penn State, she never imagined her passions for sewing, volunteering, and health education could help her impact thousands in the local community and around the world. Now, as a rising senior at IST, she's found a way to blend those passions to help others—and she's been recognized by the University for her efforts.

Strait serves as president of the Penn State chapter of Days for Girls, a volunteer organization that addresses period poverty—the inability to access or afford menstrual health products—locally and around the globe.

The group's biggest project focuses on producing sustainable and cost-effective menstrual health kits filled with member-sewn reusable liners, panty shields, and other care products, and then distributing them locally and sending them to Tanzania, Zimbabwe, and Chad. Days for Girls has also provided 1,000 free menstrual cups to Penn State students through an on-campus initiative after finding that 13% of survey respondents had skipped class or work because they didn't have access to period products.

"Learning how deeply period poverty can affect our own friends and neighbors as well as our partners across the globe with Days for Girls International truly validates the importance of the work that we do," Strait said.

Strait's IST background has given her the skills to succeed as president—a role she's held since Days for Girls became a recognized student organization in 2020. She notes that IST group projects, planning among peers, and a focus on writing are key traits used throughout Days for Girls' campaigns.

Jessica Strait (center) with Days for Girls members.

"The menstrual health needs analysis that we conducted with over 500 Penn State students was really an informal example of survey-based research to generate data about period inequity on campus, and much of my knowledge on good research design came directly from coursework in my classes with the College of IST," said Strait.

Under Strait's leadership, Days for Girls was named Penn State's Student Organization of the Semester in Fall 2020. She was also recently featured in a piece by The Philadelphia Inquirer.

"Destigmatizing menstruation is an incredibly important part of our work to normalize period talk and to allow menstruators in need to access care without shame," said Strait. "University and media recognition at this scale is an awesome achievement and a great way to showcase our work in a still stigmatized space."

Strait is so passionate about the organization's mission and the work that she does that she is preparing to write her undergraduate thesis on period stigma and is continuing the effort to provide free period care for Penn State students.

"Penn State really has the faculty and resources for learning about any topic that interests you, no matter how niche, and student organizations offer a platform to take action and share your passion outside of the classroom," she concluded.

Standout Students

Nick Alico
Analyzes data for Penn State's "Viral Imaginations: COVID-19," an online art and writing gallery that showcases Pennsylvanians' experiences during the pandemic.

Drew Bennison
Launched a weekly podcast, Staturdays, to analyze college football data and statistics to help fans learn more about the science behind the game.

Bailey Dismukes
Competed in the Nittany AI Challenge with an app, Reconnect, that monitors screen time and presents real-world alternatives for users to encourage tech-life balance.

Photos provided (8)

Expanding Health Care's Reach

Recent grad creates AI-powered software to improve public health outcomes in underserved communities

During the COVID-19 pandemic, Kareem Jelks felt compelled to use the skills he's learned at IST to positively help others. Jelks, who earned a degree in cybersecurity analytics and operations in May, spent the past year creating software that assists minority populations with their health care needs.

Through a partnership with the University's Project REACH and involvement with the Nittany AI Challenge, Jelks co-created—along with John Keeling, a student in the College of Engineering—Reach.AI. The supply chain management tool, powered by artificial intelligence, analyzes the social determinants of health care of the Hispanic and Latino communities in rural Pennsylvania.

The tool could be leveraged by health care social workers to raise awareness of these disparities, as well as by health care supply chain managers to improve the supply chain process. Jelks' initial aim was to prioritize COVID-19 vaccine distribution to the most vulnerable. However, due to the estimated surplus of vaccine availability, Jelks pivoted to address the diseases of despair and other issues facing vulnerable Pennsylvanians. Some of the risk factors include food insecurity, life expectancy, and early childhood development.

"COVID has significantly impacted society as a whole," said Jelks. "Though the pandemic is seemingly coming to an end, it has showed us that the vulnerable populations will continue to be impacted the most due to the social determinants of health."

Jelks received assistance from the team at Penn State REACH Project, which stands for Racial and Ethnic Approaches to Community Health and is a national program of the Centers for Disease Control and Prevention that aims to reduce racial and ethnic disparities in health care. Jelks identified each community's needs and, leveraging the IBM Cloud and IBM Watson, created the software which allows him to upload code and do statistical modeling to identify specific trends. Jelks plans to have a minimum viable product ready by August 2021.

"Health care workers that are heading supply chain initiatives need to know which suppliers have products available," said Jelks. "Right now, we're focusing on addressing the need to save time and cut costs for health care organizations that lack the proper funding to improve their decision-making by leveraging AI."

Jelks intends to make Reach.AI a non-profit organization soon, following his involvement in the Nittany AI Challenge —a competition in which his team was one of 20 selected to compete in the prototype phase. The team will continue to complete a minimum viable product this summer to compete for a prize pool of $25,000.

"Health care is so important. With digitalization and machine learning, health care can be more accessible. I aim to have Reach.AI accessible to everyone; that's what I care about most," said Jelks.

Erica Mi
Earned second place in the University Libraries Undergraduate Research Award for Excellence in Information Literacy for her work, "Supporting COVID-19 Supply Allocation through Visual Analytics."

Cassandra Motyka
Was the first-ever IST student to be a finalist for the University Libraries' Robert F. Guentter Jr. Outstanding Undergraduate Thesis Award, finishing second.

Jason Nucciarone
Developed a concept for a chatbot feature for the University's Roar supercomputer, housed at the Penn State Institute for Computational and Data Sciences.

Nurse AMIE Delivers Virtual Supportive Care to Breast Cancer Patients

Individuals with metastatic breast cancer could soon receive personalized, supplemental supportive care through their smart speaker, thanks to new research that involves IST assistant professor Saeed Abdullah.

He and Kathryn Schmitz, distinguished professor of public health sciences at Penn State College of Medicine, have developed an Amazon Alexa skill to remotely deliver validated interventions to metastatic breast cancer patients in the comfort of their own homes. Named "Nurse AMIE," which stands for "Addressing Metastatic Individuals Everyday," the platform is aimed at providing supportive care interventions to supplement medical treatment and improve the quality of life for its users.

While life expectancy of patients with metastatic breast cancer has increased in recent years, the disease continues to be associated with significant morbidity and symptoms. Patients make frequent trips to the doctor to manage their medical issues, but often don't have time in those appointments to address secondary symptoms or supportive care needs.

"So you have this catch-22," said Schmitz. "The great news is that individuals in this population are living for a longer time. The not-so-great-news is that they're living with significant symptom burden."

That's where Nurse AMIE comes in, interacting with users to address four key areas: pain, fatigue, sleep, and psychosocial distress such as anxiety and depression. Each day, a patient opens the skill on an Amazon Alexa Echo Show and is greeted by Nurse AMIE—portrayed on the screen by a nurse wearing a white lab coat. After answering questions about their current symptoms, users are presented with a recommended evidence-based intervention to help manage them—from short, guided meditation sessions, to exercise videos, to lessons in cognitive behavioral therapy.

"Our goal was to lower the burden for breast cancer patients by making sure they can use this supportive platform without worrying about which button to click or getting overwhelmed by the technology," said Abdullah. "We have seen an increasing number of individuals, particularly older individuals, become more inclined to use smart speakers. So this seemed like a really great opportunity to bring not only the clinical expertise, but also more accessible systems, to this specific population."

STUDYING ADVERSE POLICE INTERACTIONS

Adverse encounters between police officers and young men from underrepresented backgrounds garner significant national attention around topics of social justice and have been called a matter of public health by several organizations. Shomir Wilson, assistant professor of IST, is part of a new multi-institution project that aims to examine police radio communications to observe what happens during these encounters and study any patterns of interaction that may lead to unfortunate or tragic outcomes. The work combines research in human development, natural language processing, computational social science, and privacy.

Wilson will lead a Penn State team to develop automated methods to sort through police radio transcripts to understand how incidents are structured to be able to identify distinguishing characteristics in language that may predict incident outcomes. He will also work to identify potentially sensitive data and determine the best approach for sharing it with the research community while also protecting the identities of those involved.

"Law enforcement officers frequently use their radios to report what they encounter, and they use a combination of standard jargon and freeform language to quickly describe situations," said Wilson. "We want to go beyond the literal descriptions and try to infer what police are thinking and assuming during encounters. If we can do that, it's a step toward identifying strategies that will de-escalate adverse encounters."

Lessening Bias in Live TV Broadcasts

Syed Billah, assistant professor of IST, and his team have developed an interactive tool designed to assist media producers in balancing the on-air presence of different phenotypes—an individual's observable physical traits—in live telecasts.

During live broadcasts, producers must make instantaneous decisions that reflect what appears on air, which could lead to unconscious bias in the content that is presented in the show.

However, when using the tool, called Screen-Balancer, producers were able to reduce the difference in screen times between male and female actors in live telecasts by 43%, and between light-skinned and dark-skinned actors by 44%, according to the study.

"Our goal is to ensure the screen times of male and female actors, and actors with different skin tones, are balanced," said Billah. "And we can do that using artificial intelligence and data visualization techniques in real-time, without hindering producers' artistic freedom."

He added, "Before Screen-Balancer, there was no such tool. It was all ad hoc; producers have had to balance the screen times of different actors in their head, which is not easy."

The Screen-Balancer interface is modeled after a switcher, a large multi-monitor control panel used by a producer to view various shots from multiple cameras in the studio and select which will appear on air in real-time.

"Our goal is to ensure the screen times of male and female actors, and actors with different skin tones, are balanced."

A producer would see the same camera feeds they'd see in the switcher—including several input streams showing each camera's angle and view; a preview stream, which the producer can use to isolate a particular camera feed from the input feeds; and an output stream, which is what is currently appearing on air.

Screen-Balancer then uses facial recognition and computer vision algorithms to detect the number of males or females or individuals with different skin tones on each camera feed. It displays these distributions in real-time using data visualization techniques, primarily through bar charts.

"These bar charts are specially designed to make visual comparison faster. By the end of the show, we hope the bars showing the overall distribution of the screen time of male and female subjects, and subjects with different skin tones have equal heights," said Billah.

RESEARCH BRIEFS

SIGCHI VP

Shaowen Bardzell, professor, has been elected as executive vice-president for the Association for Computing Machinery Special Interest Group on Computer-Human Interaction, the premier international society for all professionals, academics and students interested in human-computer interaction. Her three-year term began July 1.

ACM FELLOW

Mary Beth Rosson, professor, has been named a 2020 Fellow of the Association for Computing Machinery. ACM, the world's largest educational and scientific computing society, recognizes the top 1% of its members as fellows for their achievements related to information technology and outstanding service to ACM or the computing community.

AMAZON RESEARCH

For the third consecutive year, **James Wang**, professor, has received an Amazon Research Award, which will aim to advance understanding of people's emotional expressions from their body language. He was the first Penn State researcher to earn this award in 2018.

IFIP PIONEER

Distinguished Professor **Jack Carroll** is one of six recipients of the 2020/2021 Pioneer in Human-Computer Interaction Award of the International Federation for Information Processing Technical Committee on HCI. Carroll is the second U.S. recipient since the award was established in 2010.

Empowering 911der Women

The phone rings and you pick it up. It's a hysterical mother, trying to perform CPR on her child. You must stay on the line, assess the situation, and audibly instruct her on how to help her child, all while staying calm. You help the mother save her child's life. You hang up the phone, put on your coat, and go home.

This is one of many things that could happen in a day in the life of a 911 dispatcher.

According to the International City Managers' Association, nearly a quarter of emergency dispatch personnel experience symptoms of post-traumatic stress disorder, and the national turnover rate of 911 dispatchers is more than 17%, according to the University of Georgia.

IST alumna Sara Weston '05 is committed to serving those individuals through a new nonprofit, which raises money to provide mental health resources, training, outreach, and other programming to emergency dispatchers. Named 911der Women (pronounced nine-one-Wonder Women), the organization specifically supports the women who fill these roles.

By Emma Riglin

Macbeth Studio

Organizing a Community

Weston began working with first responders after graduating from Penn State. She worked on projects to improve public safety radio communication as part of the telecommunications and technology division of a State College-based engineering firm.

"It checked a few boxes for me: that I was learning, working with technology, and helping people," said Weston.

As she found herself more interested in how technology could support emergency communications, Weston started working with the 911 division of the company on transitioning 911 communications to IP networks, which is where she found her true passion.

"911 is still run on old copper wiring," said Weston. "When you call an Uber, they know exactly where you're standing. But when you call 911 from a cell phone, they can't track your exact location."

Weston's job was to help municipalities and states convert their 911 systems to IP networks so they could more easily find callers in need of help as well as have other benefits of a Next Generation 911 system. During this time, Weston frequently found herself in 911 call centers conducting technology audits and talking to first responders. But it turned into more than a job for Weston.

"I got to know these dispatchers personally," said Weston. "It's such a difficult, heartbreaking job. Anything can happen when the phone rings."

She added, "It took me a while to understand that, because they seem so put together and strong. But there's so much going on in their minds."

Emergency dispatchers are overwhelmingly female, according to Data USA, and Weston began to form a bond with the women she met. They expressed feeling overwhelmed and underappreciated, which Weston could relate to from her own career experience. However, Weston had resources to turn to when she felt like that. These women didn't.

"I wanted to help connect the dots between these amazing women who are in the trenches, taking calls, helping people, and feeling these emotions—helplessness, anger, loneliness—and trying their best every day to make a difference and save lives," said Weston.

With this in mind, she created 911der Women in June 2019. It started as a small Facebook group, and Weston invited a few of her friends who worked in 911 to join.

"It caught fire," said Weston. "By the weekend there were 1,000 women in it. Now there are over 7,600."

To Weston's surprise, she had organized a community. Group members gave each other advice, asked questions in a judgement-free zone, and shared chal-

lenges about their difficult jobs. After seeing so much success in the group, Weston decided to take it beyond social media. She wanted to not only provide dispatchers with support, but with real, tangible tools and resources. So, Weston decided to launch a nonprofit organization.

"I had no idea what I was doing," said Weston. "I had never started a business, but I taught myself how to. At first, I thought, 'I'm not capable of doing that.' But at the end of the day, I did it."

Weston, with the help of several group members, came up with a mission statement and programs for the organization, and then began fundraising.

"I'm a Dreamer"

After a 15-year career in the technology industry, Weston took a leap of faith and left her job at a public safety technology firm in December to run 911der Women full-time from her home in Orlando.

"I did not start out to found a nonprofit; I didn't even dream that it would be what it is today," said Weston.

She is currently starting a therapy program for the organization. Therapy costs are increasingly high and often aren't covered by insurance. The 911der Women program will match organization members with therapists that specialize in public safety and PTSD and sponsor members for free sessions over 12 months.

"These first responders have to mentally flip a switch from being at work to coming home after dealing with difficult situations all day," said Weston. "It's hard even having an office job to flip a switch when I'm done with work. But the things that dispatchers experience at work are almost impossible to leave behind."

In addition to therapy and a forthcoming yoga program, the organization focuses on professional development through workshops, mentorship programs, and speaker events. Weston wants to take a multi-pronged approach to the organization, focusing on physical and mental health and professional development.

"As women, we often downplay our accomplishments," said Weston. "We want these women to know that they're qualified and to believe in themselves."

She added, "That's what we're starting with, but I'm a dreamer. I believe we could save the world. But for now, we're taking these steps and hoping to make a difference."

A Vision to Empower

While there are more women filling dispatcher roles, leadership positions are disproportionately male. Weston wants to focus on this disparity and empower the members to believe in themselves and apply to leadership positions.

"The idea was born from me seeing and feeling injustice," said Weston, referencing her experiences in the tech industry. "The pain of being treated poorly devastated me and made me feel like I shouldn't try to advance my career. I want women to have opportunities for advancement and mentorship, and to be taught confidence."

When Weston entered the workplace after college, she felt lost. She didn't know how to act or dress as one of only a few

Weston draws from her own experiences as a mom to sons Vincent (5) and Anthony (3) in her efforts to support and empower 911der Women's members.

Photos provided (5)

911der Women connects and supports female telecommunicators across the country, including (L to R) Roxanne Van Gundy, 911 Emergency Communications Director in Lyon County, Kansas; California Congresswoman Norma Torres, who previously worked as a 911 dispatcher and led a 1994 campaign to require the hiring of bilingual 911 operators; and Kesha Beckley, a Quality Assurance Specialist in Prince William County, Virginia.

women. She wished she'd had a mentor that had gone through the same challenges to help her through her first few years.

"Women have specific needs and challenges, especially as mothers, and even more so during the pandemic," Weston added. "I'm fortunate that I can work from home, but having my children with me while I'm trying to work is nearly impossible. Dispatchers still have to go to work, so what are they supposed to do with their kids?"

Weston's hope is that 911der Women will help in this mentorship capacity and empower the organization's members.

Always an OptimIST

Weston grew up in Ohio, but her parents attended Penn State, so choosing the University was an easy decision. As a first-year student in the fall of 2001, Weston wasn't sure what her path would be. She was more interested in liberal arts, but the College of IST was brand new and intriguing to her.

"I didn't become interested in technology until I found the College of IST," she said. "I saw it as a way to learn about technology and get the skills that I knew I would need no matter what job I went into."

While Weston enjoyed learning about technology and problem solving, it wasn't always easy. She often felt behind and was always the last person in the computer lab. But the need for her to work harder than she ever had was an important lesson to learn.

"That's what we're starting with, but I'm a dreamer. I believe we could save the world. But for now, we're taking these steps and hoping to make a difference."

"That set me up for everything," said Weston. "I started as a consultant at age 22, and it was a sink-or-swim environment, but majoring in IST taught me that I was capable. Even when I wasn't the best, that was okay; I just worked harder."

"Working with others is so important; that started in IST," she added. "In IST, you meet people with diverse opinions and ways of working. That is an invaluable skill that set me up for success in my career and with starting a nonprofit."

15 THINGS YOU (MAYBE) DIDN'T KNOW ABOUT IST

1 **The Westgate Building** was inspired by the Ponte Vecchio bridge, which crosses the Arno River in Florence, Italy, and is where Renaissance Italians gathered to share ideas and conduct business.

2 The college's **first graduates** have their names inscribed on some of the Westgage Building's **400,372** bricks.

3 In 2005, **IST hosted the first-ever iConference**—a national gathering of information school administrators, faculty, and students—to share best practices of research, education, and iSchool life.

4 The **768-foot-long** Westgate Building is connected by a **955-foot-long** concrete walkway that spans Atherton Street.

5 In the last two years, IST researchers were awarded more than **$25 million** in external funding and seed grants.

6 The School of IST was approved by the Board of Trustees as a **college** on January 20, 2006.

7 Unique semesterly courses expose students to emerging topics, including **Blockchain**, **Humanitarian IT**, **Cybercrime**, **Social Media Mining**, **Data Ethics**, and **Cloud Computing**.

8 IST opened in 1999 with **5 faculty** and **425 students** at 13 Penn State campuses. Today, more than **1,800 students** are taught by **71 full-time faculty** in 24 degree programs across 21 campuses.

9 The college's first **career fair** started with **12 companies** in 2005. Today more than **300 companies** actively recruit IST students.

10 Spring 2021 marked the **10-year anniversary** of the IST Diplomats. Since its inception, more than 150 students have served in the college's student ambassador group.

11 There are over **7,500 IST alumni** living in all **50 states** and **54 countries**.

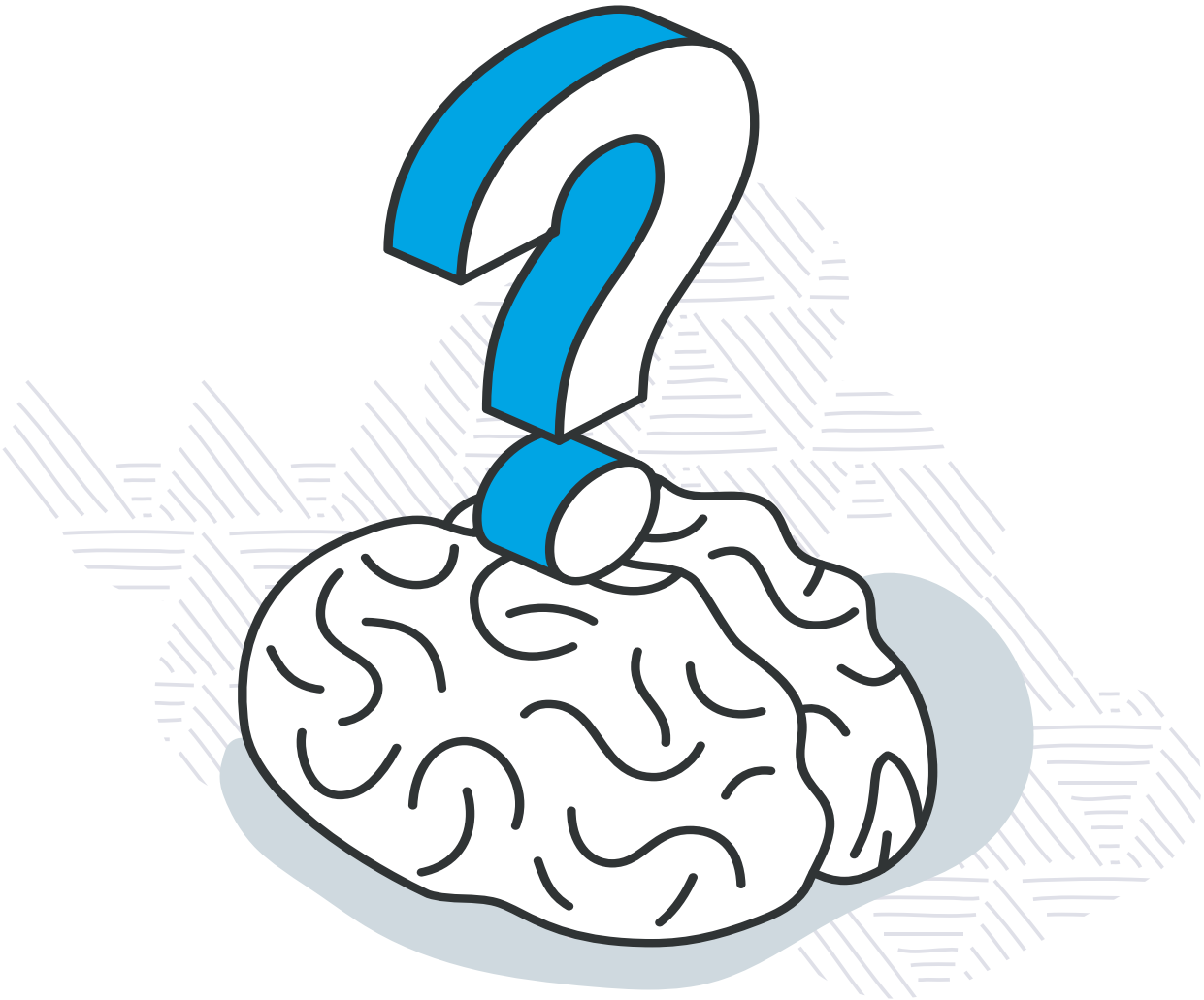
12 IST has **4** primary research areas:
- **Data Sciences and Artificial Intelligence**
- **Human-Computer Interaction**
- **Privacy and Security**
- **Social and Organizational Informatics**

Plus **3** cross-cutting areas:
- **Ethics**
- **Health and Bioinformatics**
- **Sustainability**

13 The pluralization of **"Sciences"** in the college's name carries a lot of meaning: it demonstrates the multidisciplinary approach toward understanding both the information and technology as well as the context in which it is used.

14 IST has raised **$299,958.15** for THON since 2005.

15 The most popular names of IST alumni: **Michael** and **Lauren.**



A QUESTION OF ETHICS

By Jordan Ford

As companies and organizations negotiate the balance of internal pressures to innovate and external pressures to act responsibly, they face ever-growing questions about the ethical development and application of new technologies. We asked four faculty experts—each of whom joined the college in the last three years and strengthen IST's footprint in ethics-related research—about what is at stake, where we need to go, and how IST and Penn State are helping to get us there.

Illustrations by Rassco/Adobe Stock

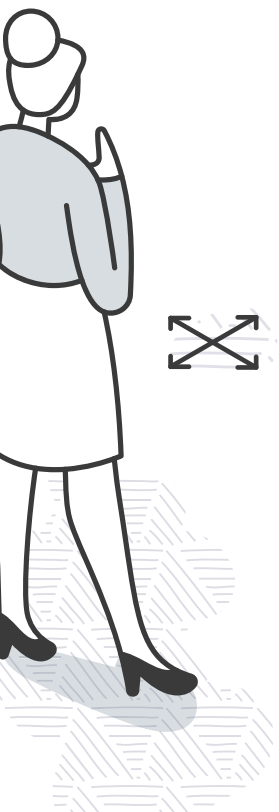
TOADVINE: How do the themes of ethics, equity, and justice intersect with your own research?

J. BARDZELL: My background is in comparative literature and philosophy, so I brought those sensibilities forward into human-computer interaction design. I've been trained to think about criticality: to pursue it, to teach others in critical thinking, and to engage in moral and aesthetic inquiry with artifacts like art and film. Many basic questions from the arts carry straight into computing issues, so I try to cross disciplinary borders of design theory to focus on aesthetic user experiences, creativity support, and emerging social computing practices.

RAJTMAJER: Much of my work analyzes how information is shared—often voluntarily or unintentionally—and spread, as well as how it is manipulated and weaponized by adversaries. My focus is on understanding how this sharing is influenced by values like privacy, trust, and truth, and its impact on democracy. I'm also very interested in questions about solutions: how can we better manage the processes of information sharing and spreading? What are the tradeoffs involved with that management? Who is the arbiter of truth and where should these decisions really lie?

S. BARDZELL: My research field is human-computer interaction design, and my overall research program brings humanistic thinking to computing research. This includes unpacking the sociocultural impacts of interactive technologies, investigating stakeholders, community, and use-situations where culture is strongly implicated in the success of the technology, and developing and deploying technological interventions for positive social change. I am especially interested in leveraging critical theory such as feminism to broaden participation in computing. My recent work includes feminist utopianism for design futuring, care ethics, women's health—such as menopause and menstruation—sustainable agriculture and food politics, and global ecology and environment justice.

SUSSER: My research runs along three parallel tracks, and questions about ethics and justice are central to all of them. First, I'm trained as a philosopher, and some of my work explores core questions in philosophy of technology, especially focusing on the ways technology shapes our experiences and decision-making. Second, I try to intervene in larger interdisciplinary debates about the relationship between technology and important social and ethical values, such as privacy, autonomy, and democratic accountability. Finally, more than anything else I think about how philosophical tools can address very concrete ethics and policy challenges. Abstract debate is fun and interesting, but I also want to help solve the complex conceptual and normative problems standing in the way of policy makers, activists, engineers, and others working to ensure that new technologies make everyone's lives better rather than worse.



Jeff Bardzell
Professor of IST;
Associate Dean of Undergraduate and Graduate Studies

Shaowen Bardzell
Professor of IST;
Professor-in-Charge of Human-Computer Interaction

Sarah Rajtmajer
Assistant Professor of IST;
Research Associate,
Rock Ethics Institute

Daniel Susser
Assistant Professor of IST;
Research Associate,
Rock Ethics Institute

Ted Toadvine
(Moderator)
Nancy Tuana Director of the Rock Ethics Institute;
Associate Professor of Philosophy, College of the Liberal Arts

TOADVINE: What do you see as the key ethical issues raised by information technologies moving forward? Are these the issues that we are already hearing about, or are they instead emerging concerns that have yet to receive the attention they deserve?

RAJTMAJER: I think we have the right things on our radar, but we're still missing important aspects of these challenges. For example, algorithmic fairness is front and center, but all the solutions discussed are technology solutions. We default to "how do we design a fairer algorithm" and it's about interpretable AI—if you can explain the black box, then you can judge its fairness. We're not going to solve the challenge of fair AI only by having a better algorithm; algorithms are part of broader systemic contexts that support systemic goals. Another example is smart cities and cybersecurity. There is certainly a focus now on securing cyber-physical systems, but we are not having broader conversations about the environment, such as megacities of the future, where cyberthreats may have catastrophic impacts on equity and provisioning of basic services.

S. BARDZELL: Ethical issues are often positioned in a human-centered way. Time and again, humans use non-human actors, such as animals and insects, to achieve human ends. While environmental catastrophes threaten us all, they disproportionally threaten the vulnerable in the margins—not only minorities and women but also these non-human stakeholders. Human-centered design approaches are not sustainable, and in fact they are catastrophic. For example, in the pursuit of labor efficiency and greater yields, industrial farming has developed high dependency on fertilizers and pesticides. Without adequately taking the capacity and adaptability of the environment into consideration, these practices have resulted in the production of drug-resistant pests and virulent diseases. Given that both human and non-human stakeholders shape complex socio-technical entanglements, we need to decenter the human in this design process and think relationally about humans' place in the broader ecology so we can better prioritize the needs of the non-human stakeholders.

"We need to decenter the human in this design process and think relationally about humans' place in the broader ecology."

TOADVINE: My background is in environmental philosophy, so your thoughts really resonate with me. I immediately start to think about how we're building drone pollinators to replace bees because of the huge collapses of colonies. A lot of the collapses are because we bring them from one part to other parts of the country, which makes it easy for diseases to spread, so I think about the broader context when we're building pollination drones. But we may have no choice but to technologically reengineer systems that we're breaking. Daniel, what do you see as the leading things we should have on our minds?

SUSSER: At some level, I tend to think it's the same age-old ethical questions appearing in new guise, regardless of how the underlying technologies change. But there has definitely been a shift lately in how people are thinking about addressing those problems—more collectively and democratically, and away from thinking about the technology development process in isolation, toward a more integrated view of how the background social, economic, and political conditions shape the development of these tools. Science and technology studies scholars have been arguing for this perspective for 50 years, so the fact that it's gaining some footing in the public sphere is very exciting.

J. BARDZELL: A unique aspect of a field like AI is that Moore's Law has caught up—we now have massive data sets that allow things like micro-activity tracking at an unfathomable scale, but it makes the algorithmic "black boxes" impossibly big. For example, Google has a monopoly on what may be the biggest behavioral data set in human history, but how can we bring some of these benefits to small micro-farmers who have iPhones and Excel instead of petabytes of data on the cloud? This difference in scale is aggravating the digital divide in ways that we can't yet comprehend. When we look at the global urbanization Sarah described, the climate crisis, and this paradigm of computing that only a tiny number of actors can meaningfully fully leverage—this combination of things is a significant issue moving forward.

TOADVINE: How do we get ahead of these problems? Our values often aren't part of the conversation when new technologies are designed or deployed; we always seem to be doing damage control. So how do we think them through from the beginning before we unleash them on the world?

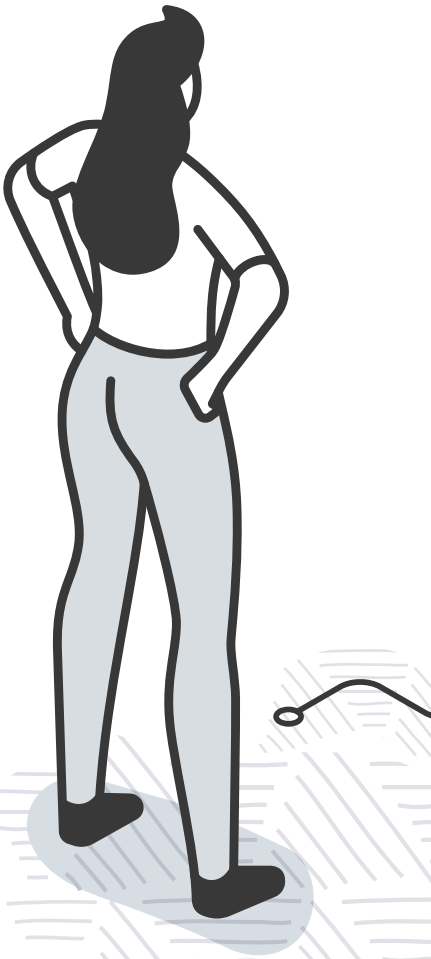
SUSSER: I'm encouraged by the ascendance of information schools, like the College of IST. Bringing together researchers from a variety of disciplines helps to break down academic silos, making it easier for people like me to learn about emerging technologies in depth, and enabling my more technically focused colleagues who are interested in incorporating more critical humanistic perspectives into their work do so from the ground up. But it's difficult to look out at the world and feel optimistic about the broader context—the social, economic, and political conditions driving the problems we've discussed. The same drivers of issues like the climate catastrophe and wealth inequality are driving problems in the technology sphere. And there's a feedback loop between these systems that reinforce such dynamics. We need good, rigorous scholarship, yes, but we also need a lot of political organizing and activism—like some of the movements we're seeing emerge among tech workers in Silicon Valley—to create the conditions for meaningful change.

TOADVINE: I see we've gone full dystopian very early in the conversation! But you're right, there are possibilities in addressing some of these issues through political action and activism in ways that we haven't gotten serious about yet, but perhaps that's on the horizon and will lead to democratic transformations. Shaowen?

S. BARDZELL: To get ahead of ways that technology works against democratic and other values, we need to develop new methods for IT research, design, and development, imbuing such processes with emancipatory values from the ground-up. Such considerations cannot be an afterthought. One democratic design approach that comes to mind is participatory design. Participatory design originated in labor movements in the 1960s and 70s in Scandinavia, known as the workplace democracy movement. At the heart of this tradition is a commitment to ensuring those who will use information technologies play a critical role in their design. Participatory design strives to enable those who will use the technology to have a voice in its design, supporting mutual learning between multiple participants in collective "reflection-in-action." Participatory design is especially suited for many of the "wicked problems" we are facing today—complex societal and cultural problems that are difficult to solve, such as climate change and food security. Increasingly, designers and technologists are shifting from working for clients to working with them, in recognition that different kinds of competencies and expertise are located across different stakeholders, organizations, and communities, and that possibilities for intervention are envisioned, contested, and transformed in a collective manner.

RAJTMAJER: The first thing I think about is incentives. If these technologies are going to be designed differently, who's going to design them and what are their motivations? How can the profit motive play into creating technologies that better support our values? There are a few things that have gone wrong: we overpromised the benefits of these technologies at the individual level to garner support—like the promises of personalized medicine—but for the most part, companies have been the primary beneficiaries thus far. Policy is reactive so I'm not too optimistic that policy can get us out in front of these problems. Pushback from users and customers may be the best motive for change, but I worry that people won't push back until they really feel the negative effects of technology. The best scenario is that we're reactive, but we react together, we react quickly, and we react significantly enough that it impacts the decisions tech companies makes in the future.

"The best scenario is that we're reactive, but we react together [and] we react quickly."



TOADVINE: Your response makes me think about how we seem to have lost any real valuing of something like a public commons. Maybe this is another way to think about how we value that again, if we're moving toward a megalopolis like you mentioned earlier. Where will the commons be? Who will own what? What will remain of what we own and value collectively? They're interesting questions. Jeff, your thoughts?

J. BARDZELL: As Daniel mentioned, we need big structural changes. The emergence of iSchools like IST is a huge organizational change in higher education, and their tech-centered versus human-centered organization establishes an internal dialectic that locates radically different viewpoints in a single unit—and that creative tension is going to be really productive. The democratic impulse has been foundational in computing, even if some of it has been lip service and a lot of it has been shallow. The maker movement and Sarah's comments about explainable AI are perfect examples of this impulse. Even the people who write algorithms don't really know what's happening in those neural networks, but the impulse to make it explainable shows that democratizing desire bubbling up in a very technical agenda. That undercurrent has always been there, but it's growing more powerful and that gives me some hope.

SUSSER: Now I feel bad, I don't mean to be dystopian! Let me add two reasons for hope. First, technologies today are agile. For example, rather than spending a year or two developing a new product, companies now release software provisionally and see what works and what doesn't and then respond to problems as they emerge. On one hand, this can contribute to the "move fast and break things" mentality that many people argue is a problem with Silicon Valley. But the positive side is that they can also be much more responsive to demands for accountability, to the ethical and political demands from people affected by these technologies. So, even if humanist perspectives are not incorporated from the beginning, ground up movements for accountability can get more traction.

A core premise of democracy is that decisions are not permanent: when the will of the people changes, we can change how things are done. Technology has often been a problem in this respect, because once they were implemented, they were difficult to change—think, for example, about recent conversations around how to make our energy infrastructure more conducive to renewable sources of energy. The dynamism of digital technologies creates more opportunities for democratic oversight, if we can muster the will to demand it.

Second, every field of scientific and engineering endeavor has gone through the kind of crisis moment that computing —a relatively young field—is going through now. It's perfectly normal and healthy. At the beginning, people focus only on the good that new forms of human ingenuity can bring. But eventually, we are forced to confront the harms they bring too. What we're seeing now suggests that many computing professionals are really interested in taking this responsibility seriously. These days, most of my students come into the classroom understanding that technology is not value neutral —which wasn't the case a few years ago—so instead of having that debate we can get to work on some of the deeper, more nuanced problems. The zeitgeist is changing. People are thinking more critically about the kinds of technology we're developing, and that's a good thing.

"These days, most of my students come into the classroom understanding that technology is not value neutral—which wasn't the case a few years ago."

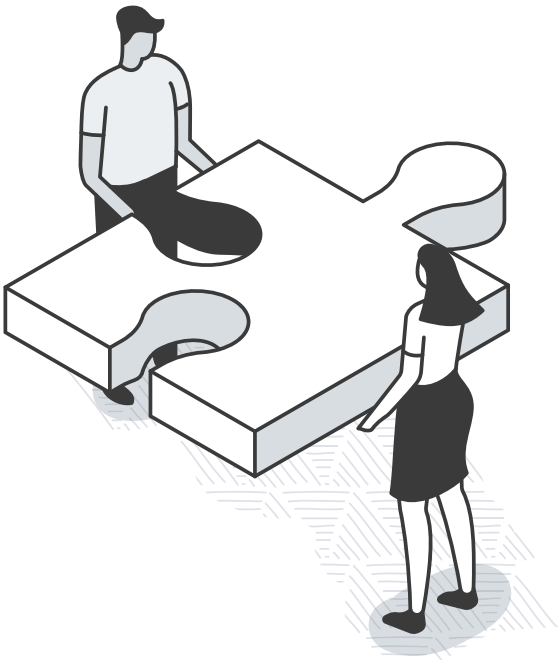
TOADVINE: I appreciate the full spectrum of perspectives about both the challenges and opportunities we're facing. In that regard, what work is being done—and what work do we still need to do—in academia and at Penn State to address these issues? What are we doing right and what do we need to do differently to meet these challenges?

S. BARDZELL: As I said earlier, we need to make sure that all the stakeholders have a say in our processes. And while I appreciate the fact that, for example, places like IST are bringing in these human-centered perspectives, we need to have infrastructure, procedures, and policies created and cultivated in place for stakeholders to ensure that their voices can be heard. That in itself is a wicked problem. If stakeholders don't understand what's even going on, it compromises their ability to understand and express their needs and desires. Technical agendas such as explainable AI are one approach, while participatory design is another. A college like IST is positioned well to integrate technology- and human-centered methodologies, but doing so is easier said than done. I think we'd all like to see some of our disciplinary boundaries more blurred. We also need to make sure that those in power—when they see issues, when they see problems—are courageous enough to confront these challenges and work to ensure that different perspectives are recognized and honored. Broad culture change like that is much harder, but it's important for all of us to do our part to make this happen.

RAJTMAJER: At this point, the agendas of funding agencies—both government and industry—drive the research we see taking place in academia. The dependence of the individual academic researcher on external funding is extremely strong–I think to the point of being problematic. There also needs to be space for research that's not in direct response to a funding call, and that research should be centered and valued. Something that should set academic institutions apart is commitment to research without a direct profit motive. Some universities, colleges, and individual departments succeed in this more or less than others. At the core, I think this should remain in focus if we're going to address these challenges.

TOADVINE: This is exactly the kind of issue that comes up when we talk about environmental justice. Working with communities, for example, may not pull in major grant funding, so we need to think about alternative ways for how academic research gets recognized and rewarded. We need to make sure researchers have the freedom to explore these questions even if they aren't being funded by a grant. Daniel, what do you think?

SUSSER: I think the next big frontier in reshaping structural and institutional perspectives has to do with training graduate students. To meaningfully contribute to interdisciplinary



debates about new technologies you don't have to become an expert in every related field, but you do have to develop a certain level of competence—and confidence—in multiple areas. And it just takes time to build that. We need to rethink the timescales and funding models that enable the coursework and other training graduate students need. And to Sarah's point about funding, in recent years we've seen a contraction in federal, state, and local funding for academic research. One consequence is that corporations tend to step into that vacuum. There are big conversations in tech ethics and critical tech scholarship around what this means and what kinds of institutional structures we can put into place to ensure that corporate funding doesn't poison the kind of work that people do. I tend to think it's less a problem of corporate funders corrupting individual scholars, and more that they change the nature of the playing field, such that work that is amenable to corporate interests gets elevated and work that isn't gets suppressed. Either way, we need to think about how to protect the kinds of freedoms that academics love to talk about in the abstract, but which really require material and institutional support.

J. BARDZELL: Universities are well positioned to counter some of the market incentives and forces that Sarah noted. IST embodies this because it has hired several of us who have humanities backgrounds and is trying to bring the rigor and legacy of the humanities to bear on technological problems. I study aesthetic philosophy, and one of the big questions there is: what is the properly aesthetic quality of a work of art? Can aesthetic qualities be separated from the real-world impacts of art? Look at the Nazi propaganda film *Triumph of the Will*. It had an extraordinary impact on cinema. It was unbelievably inventive with its visual representation of a powerful and benevolent government; its visual tactics continue to be used today. But *Triumph* was in service of white supremacist, racist goals that led to actual violence and murder. So, it leads to this great philosophical question: can we call a work of art great if it's in service of evil, or if it represents evil as though it were good? We can ask the same question with something like facial recognition. It offers benefits, such as improved lighting and coloring in mobile phone photos. Yet facial recognition is also used by surveillance states. It's also better at recognizing white faces than the faces of color, which leads to misidentifications and unjust policing. What strikes me is that most people will treat *Triumph* and face recognition differently: *Triumph* cannot be a great film, but most will say that facial recognition is a good thing overall. It's a similar ethical question: we've got something that's truly innovative, but something that's also been used in service of values that we don't agree with or has had consequences that go against our values. You can critique the analogy, but it's important for technologists to engage in conversations like this and work out what they think is appropriate. That's something universities can do, and I think the College of IST is well positioned to do.

"We've got something that's truly innovative, but something that's also been used in service of values that we don't agree with."

Pitching a Dream

Scholarships and support help Joel Seidel overcome homelessness and grow as an entrepreneur

Joel Seidel's transition from high school to Penn State was one filled with uncertainty. On his 18th birthday, Seidel became emancipated from his parents and, in turn, homeless. With seven months to go until his high school graduation, Seidel worked part time to pay for his car insurance and slept in the basement of a friend of a friend until he could earn his diploma.

Despite his hardships, Seidel had his sights set on Penn State. Pursuing a college degree was something he always wanted, but went against his parents' strongly-held religious beliefs—thus, one of the reasons for separating from them. So, in the fall of 2016, with his last $10 spent filling his gas tank and no idea how he was going to pay for his education, he arrived at University Park. And he hasn't looked back.

"I spent too much time worrying about how I was going to pay for this, because leaving wasn't really an option," said Seidel. "I didn't have anywhere to go back to."

One of Seidel's former instructors recognized his potential and, along with her family, helped to support Seidel as he started his academic career. Additionally, in his second year, he received a Penn State Trustee Scholarship, and in his final year was the recipient of the David Rusenko Entrepreneur in Residence Scholarship–an award up to $10,000 given to an IST student who has entrepreneurial experience or involvement.

Seidel's involvement more than qualified him for that award. After high school, his team earned a national award in software development at the Technology Student Association National Conference. At Penn State, he was on one of five student teams selected to participate in Invent Penn State's Summer Founders Program in 2019; was part of the winning team for the 2019 HackPSU; and worked as a software developer and project lead at the Penn State Nittany AI Alliance, where he also helped launch the Nittany AI Advance student program. He participated in the IdeaMakers Challenge during Penn State Startup Week and the Invent Penn State Venture & IP Conference.

While Seidel has a natural entrepreneurial spirit, he says that his success in the pitch competitions stemmed from his need to win prize money to pay for his second-semester tuition. He and two other first-year students shared their idea for a medical supply chain platform in the Smeal Supply Chain Pitch Competition. They won second place.

"My teammates and I didn't know anything about supply chain, but we learned quickly when they said there was a $1,000 prize," said Seidel. "The idea that took hold was really formed out of necessity."

In his last year at Penn State, thanks to financial support he received from the scholarship funded by IST alumnus David Rusenko '07, Seidel was able to focus solely on his academics and entrepreneurial endeavors.

"I'm so thankful to David and the other scholarship donors for giving me the opportunity not only to be able to be here and survive, but to be able to thrive," he said. "I showed up at Penn State with nothing, and I've gotten to do so many things because of their generosity."

Seidel graduated in May and began his career as a consultant at Accenture. He plans to carry forward a few startup ideas and finds a parallel between his entrepreneurial spirit and the hardships he faced when he first came to Penn State.

> **"I'm so thankful to ... scholarship donors for giving me the opportunity not only to be able to be here and survive, but to be able to thrive."**

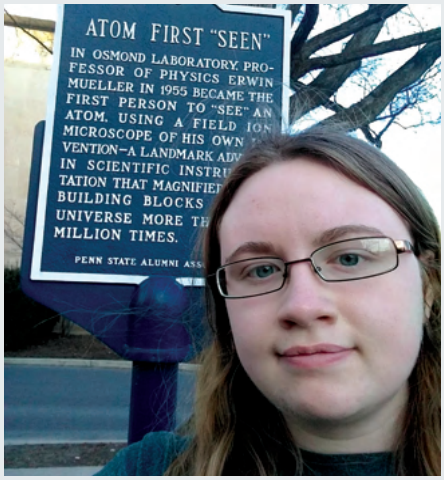
"I've learned that whatever it is, just go for it. In the end, what's the worst that could happen? It fails? Well that's fine, you just try again," he said. "As long as you're putting yourself in the best position to succeed, things will work themselves out."

Photos provided (Top-2)

Ready, Willing, and Able

When Miranda Pinder was in grade school, she had many struggles in the classroom. At eight years old, she was diagnosed with attention deficit hyperactivity disorder and a nonverbal learning disability. It was difficult for her to focus on the teacher's instruction and to read the body language and nonverbal cues of her peers.

"[My disabilities] made my academic life almost a nightmare," said Pinder. "My less-than-ideal ability to concentrate and fully grasp what my teachers were trying to communicate during class made it difficult to do well in school. Add on top of that my social awkwardness, and I was very quickly alienated from the rest of my peers growing up."



With determination and ambition, she took charge of her abilities as she entered middle school, vowing to put in the extra effort it would take to succeed academically. She became a full-time knowledge seeker, teaching herself everything from science to history to computers. By the time she was 11, she had taught herself how to use DOS, Linux, and Windows. From there, her fascination with technology grew.

She then set her sights on Penn State and the College of IST, which she chose for its programs that are deeply attuned to the fast-paced, evolving technological world.

"Not only does IST recognize the career-focused needs of its students through the implementation of specialized majors, but it also represents everything I strived to work toward for so long: a place of purpose built on the foundation of knowledge, one that recognizes struggle and accomplishment and ambition and passion, with the steps built on wanting to become more than the hand of cards dealt to you," she said.

"I grew very fond of Penn State's 'We Are' unison-based culture, as it gave me a sense of the University acknowledging this idea that its students are not alone in their studies but rather a part of a bigger picture," she added. "Penn State wants their students to feel like they belong, and that they are the main contributors to the message that the University wants to send to the world. I wanted to be a part of that."

At IST, Pinder was awarded a Mike and Rosemary Laphen scholarship, which provides annual financial support as well as personal mentoring from the benefactors to help recipients succeed in academics and build a strong foundation for personal success. The scholarship was a blessing for Pinder's family: Pinder's mother had left her career to homeschool and care for Pinder's brother, who has Down syndrome.

"After finding out that I received this scholarship, it was like someone out there was saying 'I believe in you, go for it!'," said Pinder. "It meant so much in terms of feeling like my hard work paid off and I was getting some acknowledgement for it."

Get Involved

As a member of the College of IST community, you can share your expertise, experiences, and story to inspire future generations of IST students. Check out the opportunities below to connect, volunteer, and engage.

- » Become a **mentor**
- » **Speak** in classrooms
- » Participate on an **alumni panel**
- » Assist with **student recruiting**
- » **Host students** at your organization
- » **Become a member** of the Alumni Society Board

Learn more about these and other ways to engage with IST **ist.psu.edu/alumni-engage**.

Taking a Chance

Pedro Huerta '08 has seen the global reach of a College of IST degree. His family moved from Peru to the United States in 2003, and soon after Huerta began exploring higher education opportunities. After visiting Penn State, he fell in love with the campus and IST.

"I knew I wanted to go into a program that was focused on technology, but a lot of programs I'd found were lacking on the business side," he said. "IST was a great mix of both business and technology—which led me to what I wanted to do."

Today, Huerta is a digital expert and agile coach at McKinsey & Company, working as a consultant with some of the biggest companies in Latin America to help them develop their digital products and reorganize to become more agile organizations. While the technical skills he gained at IST serve him in this role, he draws even more on the soft skills that IST reinforces—mainly, communication, teamwork, and project management.

"I'm embedded within the organizations and really try to help them learn by doing, which is pretty much what is taught at IST," he said. "It's very much balancing between showing them the way of how to do things and allowing those little failures that are going to help them build mental models so they can eventually do it on their own."

As a Latinx alumnus currently working in Peru and impacting the technological innovation of several large companies in the region, Huerta was invited to serve on a virtual IST Alumni Identity Talks panel this spring. The series was launched to inspire an open dialogue for IST students and alumni and provide unique viewpoints to help all attendees thrive in diverse personal and professional communities.

"Sometimes, to have the most success, you just have to take a chance on yourself."

Huerta was happy for the chance to reconnect with the college in this capacity. But shortly after he got the request, he and his parents contracted COVID-19 and were hospitalized. Tragically, his mom passed away on April 5. While Huerta took extended time off work and cleared all meetings from his calendar to grieve and recover, there was one appointment that he kept: the IST panel.

"My mother was always very much focused on education, and I wanted to

share a little bit of her story through me," he said.

Through the course of his career, Huerta made the hard decision to leave a good job with GE and a U.S.-based professional network to move back to Peru to be closer to family—a decision that proved to be significant given their recent battle with COVID. He wanted to share his experience with students and let them know it's OK to follow their hearts.

"Sometimes, to have the most success, you just have to take a chance on yourself," he said.

PAYING IT FORWARD

Angela Govila '03 and Ankur Tarnacha '05g note that IST is the foundation for everything they have: their education, marriage, family, and careers. Now, by creating the Govila and Tarnacha Educational Equity Scholarship in the College of IST—which was matched 1:1 through Penn State's Educational Equity Matching Scholarship Program—they're paying it forward for future students.

"The scholarships [I received] weren't big, but I still remember feeling so grateful...because it helped me be more independent, pay rent, get food, and do simple things that people take for granted when they come from different backgrounds," Angela said. "I had decided that when I get to a point where I feel comfortable enough, we're going to give back."

Photos provided (2)

Class Notes

Send us your news.
We want to celebrate your professional accomplishments and personal milestones with the IST community!

Email your news to **alumni@ist.psu.edu** for possible publication in a future issue of *iConnect*.

Ken Panco '03 has launched an online community of support for individuals with bilateral calcaneal fractures, or fractured heels (fracturedheels.com). Panco, who broke both heels and his back after a fall in 2014, recently joined Amazon Web Services as a business development manager.

Since the pandemic began, **Michael Neel '09** has revisited his longtime passion of filmmaking and screenwriting. He won best short screenplay at a local film festival, then decided to launch his own film festival, called "What Will They Think of Next." Neel says that to be an IST student means you never stop learning and that his educational skills got him through 2020.

Michael Reinert '09 started Reinert Consulting Group in State College in 2019. The firm, which focuses on IT services, hired four IST interns last summer.

Armand Dotsey '10 recently established an online pilot training program to grow awareness in personal aviation. After the pandemic, Dotsey plans to begin his own business of aviation transport of VIP passengers and critical medical devices.

Nicolas Neumann '13 was named the managing partner of a real estate firm in Miami.

Fredrick Faylona '16 was named 2019 Member of the Year at Harrisburg Young Professionals, one of the biggest young professional organizations in Pennsylvania. He's been an active member since 2012 and held several leadership positions from 2016 to 2019. In February 2021 he was elected to the Board of Directors of Historic Harrisburg Association, a non-profit that aims to preserve and restore historic neighborhoods in the state's Capital Region.

Tribhuvan Watts '16 is actively working on two startup companies in alternate fuels and organic fertilizer and soil amendment. During his time at Penn State pursuing both an MPS in enterprise architecture and an MBA, he learned how to apply his knowledge to his portfolio of projects, which ultimately led to the launch of his startups.

After earning a master's degree in enterprise architecture from IST, **Rohit Anand '17** was accepted to the Smeal College of Business' MBA program through Penn State World Campus and graduated in December with an honors certification. He recently started a new job as a digital product strategy and consumer experience manager with a health insurance organization.

Collin Demoss '18 was recently promoted to business analyst at Blue Mountain Quality Resources, a leading developer of industry standard asset management products and services designed exclusively for the Life Sciences industry. Located in State College, Blue Mountain supports numerous community service initiatives, such as the local food bank, Toys for Tots, and the preservation of local history through the Centre County Historical Society. Demoss thanks his IST professors for his smooth transition from Penn State Fayette to the University Park campus.

FROM OUR HISTORY

Members of Women in IST (WIST) take a break from activities to smile for the camera in 2011. The student organization, founded in August 2000, exists to ensure that female students and faculty members are equally and actively involved in all aspects of education and in the rapidly-changing tech industry.

*Do you have pictures from your days at IST you'd like to share? Send them to **alumni@ist.psu.edu** or tag **@ISTatPENNSTATE.***

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IN THIS ISSUE:

Remembering Chao-Hsien Chu • Entrepreneurial Endowment
Supporting Breast Cancer Patients • From Homeless To Alum

MARK YOUR CALENDAR

» **ALUMNI IDENTITY TALKS**
Hispanic Heritage
September 15

» **HOMECOMING TAILGATE**
October 23

Stay tuned to your email, IST social media channels, and **ist.psu.edu/alumni-events** for details of these and additional events!

alumni@ist.psu.edu

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