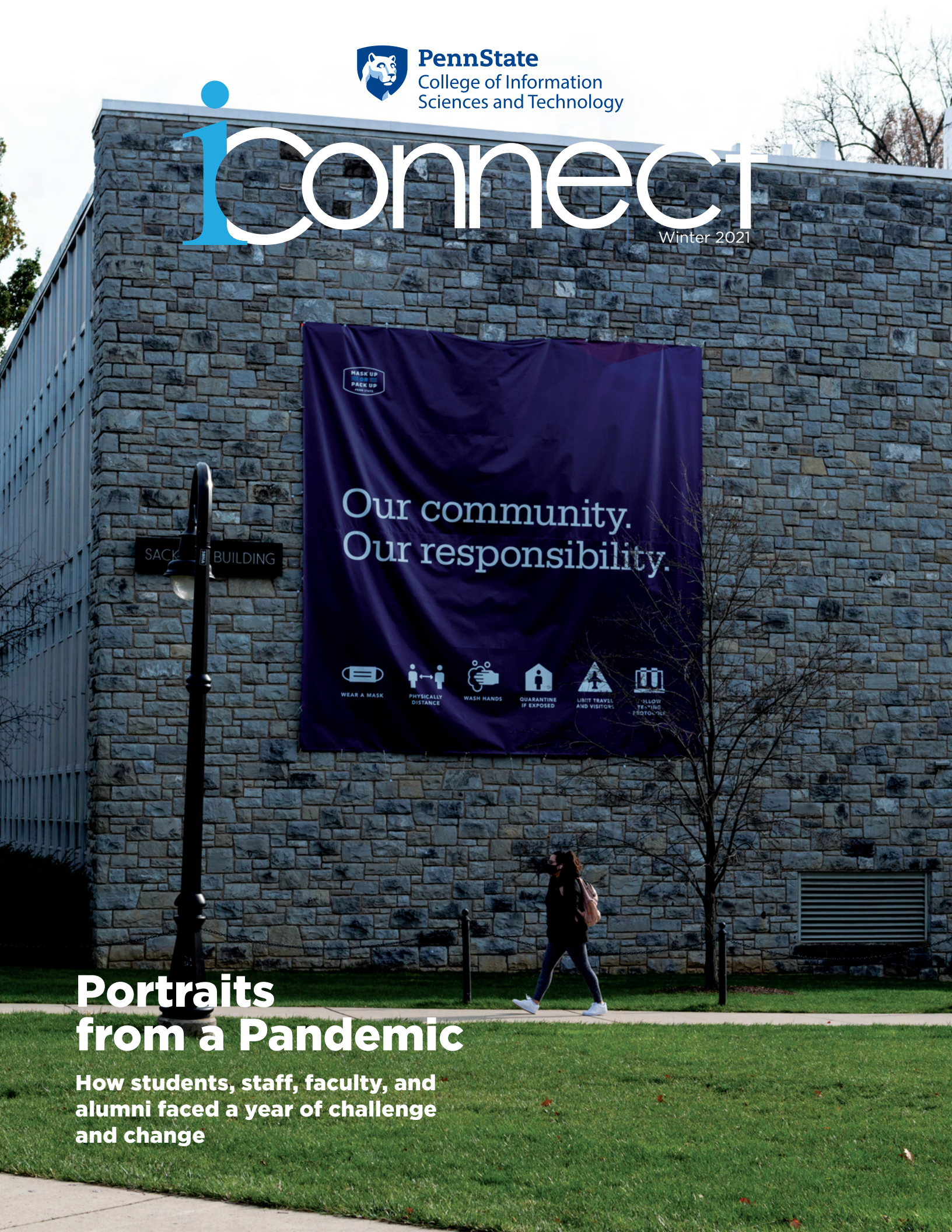
PennState
College of Information Sciences and Technology

iConnect

Winter 2021



Portraits from a Pandemic

How students, staff, faculty, and alumni faced a year of challenge and change

The Human Connection

"Our core capability is that of a provider of solutions in the information sciences and technology. But more than just being a passive purveyor of answers, IST values the human capacity for making a difference through creative leaps. We inspire solutions: through education that builds problem solvers by combining theory and real-world practice; through research that integrates people, information, and technology; through partnerships that facilitate the collaboration of industry, government, and education; through an IST community that respects and leverages diverse experience, knowledge, and values. In sum, we inspire solutions that improve the lives of people."

What I find compelling about this statement, which can be found in IST's 2004 annual report, is its focus on people. Nearly every phrase contains a unique reference to the human element that is so critical to our work—human capacity, problem solvers, partnerships, community.

Mentions of these interrelationships are everywhere in the college's early documents. This emphasis on people and society differentiated IST then, and continues to do so today.

You'll find this human-oriented approach in nearly every story throughout this magazine. Though not intended as a theme issue, these topics arose naturally as our planned stories took shape—a serendipitous example of just how embedded the people in people, information, and technology truly is in IST.

Of course, there are endless examples of this focus to be found outside of this issue. It can be seen in Distinguished Professor Jack Carroll's research, which works to make technology more accessible and explores how it can be used to connect communities. It appears in Associate Professor Lynette Yarger's use of critical social theories to examine how historically underserved groups appropriate information and communication technologies to improve their life chances. And it can be found in Penn State's new Center for Socially Responsible Artificial Intelligence, where scholars are examining the thoughtful development and application of AI to improve the human condition.

It can be seen in Steve Babb, our assistant director of student engagement, who has organized virtual communities, town halls, and engagement opportunities to keep students connected throughout the pandemic. It's found with administrative support team members Kathy Wiest and Desiree Donaldson and human resources consultant Jeanette Macaluso, who are managing the many complex parts of our ongoing faculty searches. And it's in the work done by countless other staff who are providing exceptional service to our students, faculty, and alumni by putting people first.

I am proud to see this perspective permeate our curriculum, research, service, and culture. I hope—and believe—that in 20 years, when someone revisits our current efforts, that they find IST's commitment to the human side of technology holds strong.

Andrew Sears, dean
College of IST

ILLUSTRATION BY MELITA

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WHAT'S INSIDE

ON THE COVER

Public health reminders can be found across campus—including this hard-to-miss banner along the Pattee Mall—which encourage Penn Staters to keep themselves and each other safe.

THE BIG **PICTURE**

The James Building replacement, which will primarily serve as the new home for the University's Invent Penn State initiative, will also house College of IST administrative and faculty offices and provide additional student research space on the fourth floor. Located on Burrowes Street in downtown State College, the building is expected to be completed later this year.

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U.Ed. IST 20-29

Toward Meaningful Action

In July, amid a national reckoning on systemic racism and social justice issues, the College of IST endorsed a diversity resolution to recognize the unequal treatment of Black Americans and other marginalized groups.

Though largely symbolic, the resolution—found at **ist.psu.edu/diversity-resolution**—asserts the college's commitment toward taking meaningful actions that integrate perspectives on these issues into its curriculum, research, and culture.

Moving forward, the college is taking a "build in, not bolt on" approach to incorporating diversity, equity, and inclusion into all areas of its work, including its upcoming 2021-25 strategic plan. Three noteworthy initial efforts are leading this change.

First, the college eliminated the GRE score requirement on the graduate admission application. This charges the college's admissions committee with a more holistic and comprehensive evaluation of each applicant that will increase the quality and diversity of candidates.

Second, the college revamped its undergraduate scholarship process. The new approach shows students earlier in their decision-making what financial support is available—including several new educational equity scholarships (pg. 29)—and allows IST's scholarship committee to conduct a more thoughtful review of students when considering awards.

Finally, the college is launching multiple open-rank, tenure-track faculty searches for candidates whose work advances any of IST's four core research areas and who are also engaged in research addressing issues related to social justice, such as algorithmic bias or data ethics. These job announcements will also include the college's new diversity, equity, and inclusion language. This language, which will now be included in all of the college's vacancy postings, signifies to candidates the kind of community they will be joining and the attributes the college is seeking in its applicants.

"By looking more like the world, our people will be better prepared as employees, colleagues, and citizens."

According to Jason Gines, assistant dean for diversity and inclusion engagement, this initial focus on recruiting a diverse community will help transform the academic and social dynamics of the college for minoritized and majoritized populations alike.

"Many in our community may never have been in a room with a number of people who are different from them," said Gines. "In a more diverse community, everyone is exposed to something new, which can shift the culture and environment to more accurately reflect what they'll see outside of IST. By looking more like the world, our people will be better prepared as employees, colleagues, and citizens."

Further, Gines explained, this positions IST graduates and the companies that hire them to be more creative, produce better solutions more efficiently, and create stronger workplace engagement. It also strengthens the college's partnership with organizations seeking to hire candidates with diverse skills and from underrepresented backgrounds, all while helping organizations improve their performance.

Ultimately, these efforts, many of which are being driven by the college's Inclusion Diversity Action Council and ongoing faculty and staff inclusion strategy sessions, are designed to change the structural reality of the IST experience.

FRESHIDEA/STOCK.ADOBE.COM

Generational Talents

Many IST students are the first in their families to pursue a college degree. We celebrate the first-generation students who are trailblazers in overcoming the unique barriers facing this population and achieving their dreams.

"I wanted to pursue learning on a higher level in areas that interested me to ensure that I would grow up knowing I did everything to become the most educated and well-rounded version of myself."

Giovanna Sunseri, Class of 2021
B.S., Cybersecurity Analytics and Operations

"Because of poverty, my parents instilled in me that education was important, and attending college was our only way for upward mobility. As I will be earning a Ph.D., I will not only be fulfilling my dream and my parents' dream, but the dreams of the next generations to come."

Bikalpa Neupane
Ph.D., Informatics

"Attending college was important to me so that I would be able to have opportunities that my parents never had. I would never have been able to achieve my current position otherwise. Earning a degree from such a unique program at an established university allowed me to get recognized by well-known firms."

Jackie Sanchez '19
Technology Risk Consultant, EY

COURTESY: GIOVANNA SUNSERI, BIKALPA NEUPANE, JACKIE SANCHEZ

CATCHING UP

GOOD FELLOW

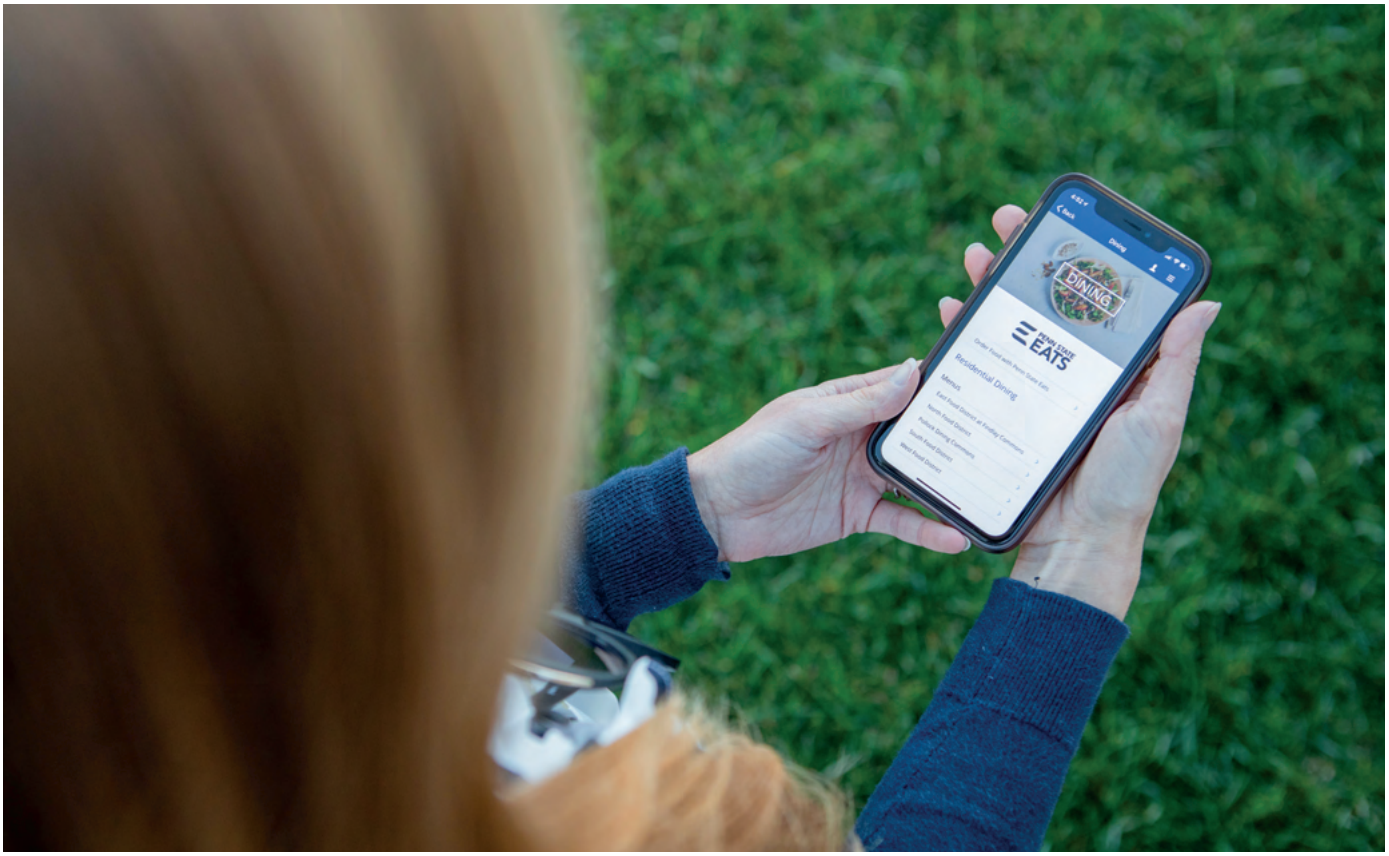
Professor Andrea Tapia has been appointed to two administrative fellowships for the 2020-21 academic year. In the Big Ten Academic Alliance Academic Leadership Program, she is addressing administrative challenges at major research universities while developing her leadership and managerial skills. As a Penn State Administrative Fellow, she is strengthening her administrative qualifications by working alongside Nicholas Jones, executive vice president and provost.

PNC PROFESSOR

Assistant Professor Amulya Yadav, whose work focuses primarily on how AI can be used for social good, was awarded the college's PNC Technologies Career Development Professorship. The appointment recognizes outstanding faculty who can make significant contributions to the college, Penn State, and the world. Yadav plans to use the funds to explore how AI can help tackle the desert locust crisis in East Africa and to design optimal COVID-19 testing policies for developing countries.

SIEM DONATION

Enigma Networkz co-founder Mark Viglione (Ag '15), who earned a minor in SRA, has finalized a software licensing agreement with the University to make his company's security information and event management (SIEM) platform, Enigma Glass, available to students studying cybersecurity analytics and operations at Penn State campuses across the Commonwealth. The value of the software donation is $75,000.



Dining on Demand

IST student group aids in user testing Penn State Dining mobile ordering app

Students across the University can now easily access information about campus dining options thanks in part to contributions from the IST student organization User Experience Professional Association (UXPA).

A subset of the national organization, UXPA teaches user experience skills to students who are majoring in human-centered design and development or who are interested in related careers. Members were asked to put those skills to the test through a project for Penn State Dining last summer. Their objective: to help redesign the dining portion of the new Penn State Go app.

Initially, UXPA was paired with Penn State Dining last spring to redesign food ordering kiosks in the West Dining Halls. However, due to the novel coronavirus pandemic and Penn State's shift to remote learning, the kiosk project was redirected into a new initiative to help prepare Penn State Go—a centralized mobile app for Penn State resources—for campus dining during the pandemic. One initiative was to quickly enable the ability for students to order food to go from campus dining facilities through the app, helping to minimize capacity and enforce social distancing in those buildings.

UXPA quickly put together a team to work on the project. Tacit Corp, the software design company that programmed the app, provided a prototype. The UXPA executive board members formatted a walkthrough survey of the app and asked their members to simulate the process of using it. Ultimately, they created a list of missing features, what was effective and ineffective about the app, and what could be improved.

"We diversified the data from different perspectives of UXPA members, and then synthesized that data for Penn State Dining and the Penn State IT team so that our perspective could then be shared with Tacit," said UXPA's project manager Nick Alico. "Synthesizing the results from our members gave us reoccurring instances that really highlighted the most prominent problems to fix before the initial launch."

"Our role isn't really to make ideas about new technologies," said Lauren Pearl, president of UXPA. "We're the ones assisting with technologies that have already been made to make them better."

The students involved were proud to see the impact their work made on a University level.

"It really shows that Penn State values student input on projects that affect students or that students interact with," Alico said.

Q&A

Pursuit of Excellence

Bringing academic and research expertise in human-computer interaction design from Indiana University Bloomington, Associate Dean for Undergraduate and Graduate Studies Jeff Bardzell joined the College of IST in August. In his role, he aims to pursue excellence in all areas connected to teaching and learning at IST—advancing top-notch curricula; crafting an engaging learning experience; and creating growth opportunities for students, faculty, and staff.

Q: Why is IST the right fit for you?

A: IST is an intellectually exciting place to be. We are in a time of change, with AI, campaigns of mis/disinformation, e-democracy, IoT, the sharing economy, and so much more. We see how social disruptions transform technology and how technology contributes to social disruptions. IST has all the right ingredients, with strong research and teaching and an interdisciplinary vision. And, I was impressed not only with the expertise of faculty and staff, but also with the collegial ways that they interacted with each other—creating synergies and a vibe that I knew I had to be a part of.

Q: How have you worked to ensure positive experiences for students during the pandemic?

A: Arguably the most difficult systematic issue related to the pandemic is that of engagement. For all of its benefits and features, Zoom makes it a little too easy to disengage. I have tried to present this as a cultural and organizational challenge, rather than an individual one. It's about whether everyone in the class makes a commitment to be present to and for each other. IST has offered workshops and regularly engaged faculty on how to teach effectively during the pandemic. When I meet with students, I remind them that if they turn off their cameras and "Zoom out," they are robbing themselves—and their peers—of one of the best developmental opportunities of their lives.

Q: What impact do you hope to make at IST?

A: I have learned that research, teaching, and service can mutually inform and support each other. When that happens, it puts me in a position to help people do what they want to do. I can help faculty more tightly couple their teaching to their research, bringing cutting-edge knowledge—and passion—into the classroom. I can help students meet their goals to prepare them for the next stage of their careers and for a lifetime of learning and achievement. I can help staff reach their goals, hopefully retaining them in the college as they move through their careers.

May the force be with you

Kicking off an unprecedented academic year in a fun way, students in Megan Costello's IST 432 and IST 337 virtual classes were greeted by Penn State alumnus **Joonas Suotamo**, who is best known for portraying Chewbacca in recent releases in the "Star Wars" movie saga. Suotamo shared a brief message with students on the first day of class through the popular video-sharing website, Cameo.

"I really hope that everyone has fun this semester. I really hope you practice your Wookiee words and all of the important stuff that Professor Costello teaches you," Suotamo said in his message.

COURTESY: JEFF BARDZELL (TOP); COURTESY OF MEGAN COSTELLO (RIGHT)

Earning His Wings

Junior makes the best "of a bad situation" to earn pilot's license during pandemic

Ever since his first time on a plane—at age 7 when his family moved to the United States from Haiti—Trevor Baptiste dreamed of earning his pilot's license. It wasn't a lack of focus or enthusiasm that stood in his way; it was only a matter of time.

When he arrived at Penn State, Baptiste put his dream of being a pilot on hold to focus on school. But his passion for aviation grew when he received a scholarship from the Air Force in 2019 to take flying lessons. He had an internship with PwC confirmed for summer 2020, so he set his sights on earning his pilot's license after graduation. Then COVID-19 struck.

"I checked with my local flight school, and they were still open and doing classes, so I just went for it," said Baptiste, a junior studying security and risk analysis. "I just thought, 'why not make an opportunity out of a bad situation?'"

To earn his license, he had to complete 40 hours of both ground training and flight training, be endorsed as a test candidate by his instructors, and then pass the flight test. He woke up daily at 4 a.m. to attend training, returned home for his internship from 11 a.m. to 4 p.m., and then headed back to the flight school for more training.

Thanks to that hard work and determination—and time saved not commuting to his internship—Baptiste passed the test and is now a licensed pilot.

"It was a lot of studying and late nights," said Baptiste. "I can't say it was a walk in the park."

Baptiste is now one of the fewer than 3% of pilots in the world who are Black, and of those, among the fewer than 1% who are under 30 years old. While joining these groups wasn't part of his original goal, it changed how he views his accomplishment.

"I wish that a younger version of me had somebody like me to look up to, because growing up I didn't know any Black pilots at all," he said. "I have to show young people that just because you don't see much of us in this type of field doesn't mean that it's not possible."

He secured another internship with PwC this summer and hopes the experience will provide clarity on a difficult choice: whether to pursue aviation or cybersecurity as his career.

"I really like PwC and I really love consulting and I want to see where that takes me. But I've always wanted to be a pilot," said Baptiste. "So, it's like a battle between my old dreams and my new dreams."

Either way, Baptiste will be ready wherever he lands.

Standout Students

Rahil Mehta
Data Sciences major co-founds non-profit, runs summer camp to teach children about STEM using interactive methods.

Camilla Beaderman
Cybersecurity major is one of 15 students nationwide selected for Foreign Affairs Information Technology Fellowship program with U.S. Department of State.

Joel Sakyi
Recent grad launches mobile app Vybrnt to help students from underrepresented backgrounds find community on campus.

COURTESY: TREVOR BAPTISTE (TOP); RAHIL MEHTA, CAMILLA BEADERMAN (LEFT)

Fighting Food Insecurity

IST student leads campus food bank

In a recent Penn State survey, nearly a quarter of students said that they have decreased the size of their meals, or have skipped meals altogether, because they didn't have enough money to eat.

Food insecurity is a reality on campus, and College of IST student Spencer Wallace is on the front lines to combat it. As president of Lion's Pantry, he oversees the campus food bank and the student organization that operates it, with the mission of addressing and mitigating student hunger and informing the campus community about these issues.

"The Lion's Pantry and food insecurity was something that I never really acknowledged when I first came to Penn State," said Wallace. "Food insecurity is a very hidden problem; it's not very acknowledged, and it's stigmatized. So a lot of students simply don't think it's here or they don't think about it on a day-to-day basis."

When he joined the organization during his freshman year, Wallace was simply looking for volunteer experience to add to his resume. But his interest quickly deepened.

"It made me open my eyes about bigger issues and bigger problems in the world and at Penn State," he said. "It helped me realize these problems and want to do something about it. It helped me realize a passion of mine and something that I can put my efforts toward, both in and out of school."

On track to earn his degree in security and risk analysis in May, Wallace said that his involvement with Lion's Pantry has transformed his career goals.

"It's encouraged me to give back to my fellow students and people in general, and to look for that in companies or industries I'm interested in as well," he said. "I found this whole experience to be very rewarding, and it's something I want to keep a part of my life in the future."

The skills Wallace has learned at the College of IST have also translated into his work at the pantry.

"I'm using more technology to track incoming and outgoing goods using Excel and Tableau and different software programs to process data to get a better inventory system for the pantry," he said. "One of the biggest things I've learned from the College of IST is how to manage a project, work with a team, and manage technology with a set deadline—which is massive for the Lion's Pantry."

While Wallace has certainly gained many skills to add to his resume through his Lion's Pantry involvement, he has found that the experience has been life-changing on a personal level.

"I love the Lion's Pantry and everything that [we] do for students and everything that we do for our community," he said. "It's a really rewarding experience. And so it went from just a way to get involved in school and boost my resume to something that is truly a passion of mine and something that's a part of my everyday life now."

Faith Konidaris
Adult student researches 5G wireless tech and open-source intelligence in virtual internship with Office of the Director of National Intelligence.

Brett Randby
IST senior brings positivity and excitement to 101st Penn State Homecoming as the weeklong virtual event's emcee.

Jessica Strait
Fourth-generation Penn Stater slated to participate in leadership programs and gain business mentor as a Cargill Global Scholar.

COURTESY: FAITH KONIDARIS, BRETT RANDBY, JESSICA STRAIT (RIGHT)

AI Could Predict Substance Abuse Among Homeless Youth

An algorithm developed by a team involving IST researchers could help predict susceptibility to substance use disorder among young homeless individuals.

"Proactive prevention of substance use disorder among homeless youth is much more desirable than reactive mitigation strategies, such as medical treatments for the disorder and other related interventions," said Amulya Yadav, assistant professor of IST. "Unfortunately, most previous attempts at proactive prevention have been ad-hoc in their implementation."

"To assist policymakers in devising effective programs and policies in a principled manner, it would be beneficial to develop AI and machine learning solutions which can automatically uncover a comprehensive set of factors associated with substance use disorder among homeless youth," added Maryam Tabar, doctoral student in informatics.

The researchers built the model using a dataset collected from approximately 1,400 homeless youth, ages 18 to 26, in six U.S. states. They then identified environmental, psychological, and behavioral factors associated with substance use disorder among them—such as criminal history, victimization experiences, and mental health characteristics.

They found that adverse childhood experiences and physical street victimization were more strongly associated with substance use disorder than other types of victimization, such as sexual victimization. Additionally, PTSD and depression were found to be more strongly associated with substance use disorder than other mental health disorders, according to the researchers.

Next, the dataset was divided into six smaller sections to analyze geographical differences. The team trained a separate model to predict substance abuse disorder among homeless youth in each of the six states due to their varying environmental conditions, drug legalization policies, and gang associations. They observed several location-specific variations in the association level of some factors.

"By looking at what the model has learned, we can effectively find out factors which may play a correlational role with people suffering from substance abuse disorder," said Yadav. "And once we know these factors, we are much more accurately able to predict whether somebody suffers from substance use."

Tricking Fake News Detectors with User Comments

Most fake news detectors flag misleading online articles based on their titles or content. However, new findings from a team of IST researchers have shown how these detectors can be manipulated through user comments, allowing adversaries to influence the detector's assessment of the story even if they are not its original author.

The researchers developed a framework—called Malcom—that showed how "adversaries can easily use random accounts on social media to post malicious comments to either demote a real story as fake news or promote a fake story as real news," explained doctoral student Thai Le.

That is, instead of fooling the detector by attacking the story's content or source, commenters can attack the detector itself.

To test this approach, Malcom was created to generate, optimize, and add malicious comments that were readable and relevant to the article. Then, the team assessed the quality of the artificially generated comments by seeing if humans could differentiate them from those generated by real users. Finally, they tested Malcom's ability to fool fake news detectors and compared its performance to several popular alternatives.

Malcom performed better than the baseline for existing models by fooling five of the leading neural network-based detectors more than 93% of the time.

This approach could be appealing to attackers because they do not need to own the content. The researchers hope their work will help those charged with creating fake news detectors to develop more robust models and strengthen methods to detect and filter-out malicious comments, ultimately helping readers get accurate information to make informed decisions.

Associate Professor Dongwon Lee and Assistant Professor Suhang Wang contributed to this research, which was supported by the National Science Foundation. The team presented their paper virtually at the 2020 IEEE International Conference on Data Mining in November.

VCHALUP/STOCK.ADOBE.COM (BOTTOM); ANDRII/STOCK.ADOBE.COM (TOP)

Using Smartphones to Diagnose Strokes

"When a patient experiences symptoms of a stroke, every minute counts," said James Wang, professor of IST.

That's why Wang, in collaboration with partners at Penn State and Houston Methodist Hospital in Texas, have developed a new tool that could diagnose a stroke in as little as four minutes with the accuracy of an emergency room physician—all through the patient's interaction with a smartphone.

The team's novel approach identifies abnormalities in a potential stroke patient's face or voice, such as a drooping cheek or slurred speech, by using computational facial motion analysis and natural language processing.

"The acquisition of facial data in natural settings makes our work robust and useful for real-world clinical use, and ultimately empowers our method for remote diagnosis of stroke and self-assessment," said Sharon Huang, associate professor of IST.

To train the computer model, the researchers asked patients experiencing stroke-like symptoms to perform a speech test to analyze their speech and cognitive communication while being recorded on a iPhone.

The model showed comparable diagnostic accuracy to clinical tests, such as CT scans or consultations with neurologists, but did so in far less time. In a stroke, the team explained, millions of neurons die every minute, making early and quick diagnosis critical to providing the best treatments.

"We have great therapeutics, medicines, and procedures for strokes, but we have very primitive and, frankly, inaccurate diagnostics," said project collaborator John Volpi, a vascular neurologist and co-director of the Eddy Scurlock Stroke Center at Houston Methodist Hospital. "If we can improve diagnostics at the front end, then we can better expose the right patients to the right risks and not miss patients who would potentially benefit."

"Currently, physicians have to use their past training and experience to determine at what stage a patient should be sent for a CT scan," added Wang. "We are trying to simulate or emulate this process by using our machine learning approach."

The results could help physicians more quickly determine critical next steps for the patient. Ultimately, the application could be used by caregivers or patients to make self-assessments before reaching the hospital.

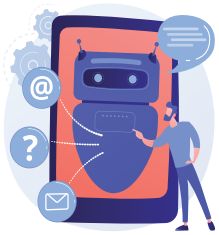
The team presented their research virtually at the International Conference on Medical Image Computing and Computer Assisted Intervention in October. Penn State has also filed a provisional patent application jointly with Houston Methodist on the computer model.

COURTESY: HOUSTON METHODIST HOSPITAL (BOTTOM); ILLUSTRATION BY VISUAL GENERATION (RIGHT)

RESEARCH BRIEFS

ONLINE PUNISHMENTS

Users who make controversial comments online may have their content removed or account suspended. New research from Assistant Professor Yubo Kou shows that not all of these behaviors are malicious, and the resulting punishments could be deemed unfair or confusing to the user. Kou's NSF-funded study is examining how users experience these punishments to better understand human-punishment interaction.



CHECKING UP

In a recent study, graduate student Yue You found that existing chatbot-based symptom checker apps don't compare to a visit to a medical facility. These apps, she said, do not allow for a physical exam, final diagnosis, or analysis of test results. The findings could inform the design of health care chatbots and help users understand how AI can inform their health.

LEARNING AFTER COVID

When college students and instructors return to a traditional classroom setting once public health guidelines allow, IST researchers suggest that some tools and concepts adopted during remote learning should continue. Ed Glantz, teaching professor, and Chris Gamrat, instructional designer, propose that concepts such as mixed class-delivery modes and supplemental recordings should be considered in future teaching to further advance learner engagement.

COLLIN KLEEST
B.S. in Information Sciences and Technology
Class of 2021

CHALLENGE & CHANGE

IST adapts to life and learning during the pandemic

Students filling the classrooms and hallways of Westgate Building. Football games at a packed Beaver Stadium. A bustling downtown. Those are some of the scenes at Penn State and IST during a typical fall semester, but the last year was anything but typical. We asked members of the IST community—students, faculty, staff, and alumni—how the novel coronavirus pandemic has impacted their academic, professional, and personal lives. Here are a few of their stories.

By Emma Riglin

As the president of Emerging Technology (EmTech), an IST student organization in which members build smart home technology using Raspberry Pi and other technical devices, Collin Kleest was looking forward to working with the group's members on various projects. But with COVID-19 restricting in-person gatherings, Kleest was challenged to change the entire way the organization operated.

"COVID has changed a lot about the way we run the organization because we can't meet in person and we can't get that personal connection with the members," Kleest said.

During a typical semester, EmTech members would hold lab trainings to get new students acclimated to the organization and to teach them the basics of using Raspberry Pis and Linux, the small computers' operating system. Then, the rest of the semester is usually dedicated to individual student projects using the Raspberry Pis.

But even with restrictions in place, the organization found a way to continue its projects. Kleest and other officers held weekly virtual educational webinars, branching out and teaching their members about not only about Raspberry Pi and Linux, but other types of technologies as well.

While it was a challenge to teach members about a system that they couldn't physically access and use on their own, Kleest said he learned a lot that helped him plan ahead for the spring.

"Before the spring semester started, we sent Raspberry Pis to our members," he said, noting that when the group met in person, students would share devices, but the college purchased additional devices so all members could safely participate at a distance. "That way, students can be working on them hands-on instead of just watching us do a lab online like we did in the fall."

AMY GARBRICK
Director, Office of Learning Design; Adjunct Professor

As director of IST's Office of Learning Design and an adjunct professor, Amy Garbrick holds a unique position: she's helped fellow instructors transition to remote learning environments while also being able to test the recommended methods in her own class.

In her staff role, Garbrick and her team trained and consulted with IST faculty in preparation for the fall semester, and have stressed the importance of their own positive attitudes to keep students engaged. The significance of this is amplified in her own virtual classroom, where, in a first-year seminar course, she's inteacting with students whose full Penn State experiences are limited by COVID-19.

"Besides the typical feelings about going to college, being away from family, and adjusting to dorms and a roommate, there's all this other stuff and they feel like they can't do anything or go anywhere. The traditional ways to meet people and build community are just so different," said Garbrick. "There's a lot of stress. So I try to be upbeat during class, and regularly ask them how they're doing."

She has also adapted her lessons for a virtual classroom. While typical in-person experiences for her class include field trips to the University's Knowledge Commons and the Dreamery, as well as the hands-on dissection of a computer, Garbrick has found online alternatives to these activities. She has also taken advantage of technology resources—like Zoom breakout rooms and the game-based learning platform Kahoot—to help students interact with her and each other.

But, with all her efforts, she recognizes that some of these things just don't have the same value as a typical in-person experience—especially at IST where group work is emphasized.

"The face-to-face, impromptu activities that you can get students to do to brainstorm together in a group is a lot easier to do in the classroom," she said. "But we're doing all we can to give them a comparable academic experience online."

EMMA CRISSMAN
B.S. in Enterprise Technology Integration
Class of 2024

When Emma Crissman's high school closed the week of March 13, she was ecstatic about what she thought would be an extended spring break of her senior year. But she quickly realized that the situation wasn't something to be excited about. As her school kept pushing back the date that students would return to in-person instruction, Crissman missed her senior prom, graduation, and the other events that high school seniors look forward to all year.

With plans to attend Penn State in the fall, Crissman waited all summer to hear how the University would handle the 2020-21 academic year. After preparing to potentially miss out on her first year of an in-person college experience, she was thrilled to learn that she would begin her degree in person at University Park. But, with her first semester now behind her, Crissman's Penn State experience hasn't exactly been what she'd expected. Due to lack of in-person events, limited interaction with other students in classes, and restrictions on residence hall activities, it's been more difficult for her to make friends and find community.

"I've always been a person that can make friends with other people right away," Crissman said. "But it's so much harder than it normally would be to meet people."

However, because she hadn't experienced college life before, Crissman found an aspect of excitement and mystery when it came to her first-year college experience.

"Everything to me is fun because I never knew a different Penn State; the experience hasn't been taken away from me," she said.

Crissman said she initially underestimated the effects of COVID-19—that is, until she tested positive for the virus. That experience not only changed how she viewed the severity of the virus, but also her assessment of Penn State's response.

"It showed me how much Penn State really does care," she added. "Every single one of my professors made a point to make sure we were taking care of ourselves and our health. It showed me that everyone on campus is trying the absolute best they can, and they do have the students' best interests at heart."

COURTESY: AMY GARBRICK (TOP)

CHACHA CHEN
M.S. in Information Sciences and Technology
Class of 2021

As many IST students grappled to make sense of the pandemic after the first U.S. case was diagnosed in February, others, like Chacha Chen, had been watching the impact of the coronavirus in their home countries for weeks.

Chen, a Chinese native pursuing a master's degree at IST, was concerned. Her parents, both doctors in Ningbo, Zhejiang, China, had given her a glimpse of the peril they were seeing.

"The virus was out of control, and as it spread all over the world and hit America, I knew the severity—and the harm it could do to our health—from the very beginning," Chen said.

Like her peers, Chen had to quickly adapt to remote learning and conducting research from home. But being so far from home, she has struggled with being disconnected from people—both colleagues at Penn State and her family in China.

"We have lost connections during this pandemic," she said. "That's the most disappointing thing from this crisis."

Before the pandemic, Chen, who arrived in the U.S. in August 2019 to begin her studies at Penn State, had been planning a visit home to China in summer 2020. With travel restrictions in place, however, she has been unable to take the trip.

"I can go back to China, but I'm not sure if I could come back later," she said. "I could fly to China and stay quarantined for two weeks and then be quarantined on the way back for another two weeks. So it would take two months for me to get there and back [for a month-long visit]."

Kevin Afoakwah was less than two months away from graduating when the COVID-19 pandemic hit. He had to simultaneously transition to a new learning environment while planning for his future. While Afoakwah was disappointed that he didn't get the typical Penn State graduation experience, the pandemic taught him how to adapt to all types of challenges.

"I feel like it was a great learning experience on how to overcome adversity," he said. "I was in this unique position to understand that I just had to move on with my life, even though things didn't go the way I'd planned. It's opened and broadened my perspective of how the real world is going to be; there will be moments when you achieve something, and you don't get a celebratory moment for it. And that's okay."

Afoakwah was fortunate enough to already have a job lined up before the pandemic. After his summer 2019 internship with Lockheed Martin, he was offered a full-time position upon his graduation. However, instead of moving to a new city and going into the office like he planned, he has been working from home since June.

"Being that my career is computer-based, it was a very easy transition," said Afoakwah. "It was not my expectation to start my career like this, but it's showing me how we can still work without even without having to go into an office."

Although the last few months have gone differently than Afoakwah expected, he looks forward to his future at Lockheed Martin and aims to keep moving forward through any obstacles he may face.

"My advice to my past self and to current students is to not let adversity define you or make you feel like you're not improving or making change," he said.

KEVIN AFOAKWAH '20
Software Engineer, Lockheed Martin

KALI UONG (BOTTOM)

DAN ANDRASCIK '06
Director of IT Audit, American Red Cross

When the pandemic hit last March, forcing many employees to transition to remote work, Dan Andrascik's team at the American Red Cross didn't skip a beat. As director of IT audit, Andrascik said that the organization's choice to have most employees work remotely was crucial for its continued operations.

"Being a nonprofit, they made an organizational decision to focus on enabling a remote workforce to reduce administrative funds," said Andrascik, who graduated from IST in 2006. "So, the fewer administration costs we have, the more we can provide to our clients whether that be disaster victims or through Blood Services."

While his workload has increased, Andrascik has also taken a step back from routine tasks to ensure that the Red Cross' mission is the main priority.

"In the essence of COVID, with resources being depleted, we have folks doing 10 things at the same time," he said. "Whether it's assisting local chapters, or helping with blood donations and blood drives, the IT teams have had to take a step back and make sure that we are all pulling in the same direction as an organization and that we're not disrupting those mission critical items."

With a background working in IT for Johnson and Johnson, Heinz, and Dick's Sporting Goods, Andrascik was looking for a way to make an impact through his career and started at the Red Cross five years ago.

"I'm amazed every day at the organization and its ability to respond and react to different things and to personally be able to continue to support the mission," he said. "It's been remarkable to be part of an organization that is continuing to support efforts and deliver our mission even through this insane time."

KRISTY BRYAN
Assistant Director, Office of Undergraduate Academic Advising

When Kristy Bryan got word during spring break that Penn State was moving to remote learning in response to the novel coronavirus' spread across the U.S., and that students wouldn't be returning to campus, she thought it would be for a few days. Bryan, assistant director in the college's Office of Undergraduate Academic Advising, and the advising team had just a short amount of time to prepare to leave the office and work from home to provide seamless service to their advisees.

She quickly sprang into action and started preparing the five other IST advisers to advise students virtually. Luckily, her previous work as an adviser for Penn State World Campus had prepared her for the transition to remote advising.

"We knew we were going virtual, for what we thought was a week to two," Bryan said. "We had about two days to prepare, so we did a crash course, making sure everyone could log in, and had them take their computers home that night."

But they never came back to the office. Bryan and the rest of the IST advising team have been coaching students remotely, from their homes, since last March. While the method in which the advisers communicate with students has changed significantly, their primary duty to assist students remains the same.

"We're still making sure we're connecting with our students and that we're available to our students," said Bryan. "That's always going to be the same, and hopefully we've accomplished that."

With remote work carrying over to the fall 2020 semester, Bryan saw a lot of positives emerge in the virtual environment, such as greater accessibility for more students, stronger relationships, and better time management.

"It forced us to start looking at things a little differently," she said. "We can set up meetings easily and really start forging these relationships with students."

Bryan thinks many of these adaptations could permanently change how she approaches her work. She sees the possibility of more flexibility in where staff work and for students to be able to choose whether they want to meet with their adviser online or in person.

The most important thing Bryan learned from this experience is the importance of face-to-face interactions for effective communication. She said a 15-minute conversation with a student over Zoom can clear up a problem quickly and effectively, while it might take a few days to fix over email.

"We just want students to be able to access us," she said. "Students shouldn't have to try to find the answer on their own; they want to be able to talk to us. So that was our goal: to be more accessible."

Bryan understands that it's a difficult time for students. She wants to do all she can to position herself and her fellow advisers to be a safe space and resource for students. She said she most looks forward to being in person with her colleagues and advisees when public health guidelines allow.

"This is pushing us to be more innovative in a lot of great ways and I'm looking forward to the products of that innovation," she concluded.

COURTESY: DAN ANDRASCIK (TOP)

IYONNA WILLIAMS
B.S. in Information Sciences and Technology
Class of 2022

Upon deciding to enroll at University Park last fall after spending two years at the Altoona campus, Iyonna Williams was looking forward to the ultimate Penn State experience. But when the pandemic extended month after month—causing the University to enforce public health practices like social distancing and switch to primarily remote and mixed-mode classes—Williams soon realized that her Penn State experience would be much different than she'd hoped.

"I thought I was going to experience what it's like to go to a big university," she said. "I was ready to meet new people, go to events, join different clubs, and everything like that. But because of the pandemic, none of that could happen. I don't even leave my house much, because I'm so scared of getting COVID. It's definitely a bummer, but I'm trying to make the best of it."

Like many students, Williams, a third year student studying information sciences and technology, feels fatigued after a semester and a half of virtual classes.

"I mean, I love computers," she said. "I love spending time sitting at a computer. But I would love to have that in-person experience as well."

Despite the challenges, Williams has taken advantages of opportunities to connect with her new campus and community. She and her roommate have made a point of exploring State College as much as they can with social distancing, and she became involved with the IST Diplomats, the college's student ambassador program.

She encourages other students, especially change-of-campus students, to do the same.

"I'm not sure how long this whole COVID thing is going to go on, but always try to keep a positive mind when navigating through the college experience, because it's going to be different for years to come," she said. "So just make the best out of the situation and find things that you enjoy doing."

EDUCATOR

ALUMNI

SUPPORTER

DONOR

MENTOR

PARTNER

MAKING THE CONNECTION

FRIEND

IST's people-centric approach is creating meaningful connections between students, faculty, alumni, and corporate partners—in the classroom and beyond

By Jordan Ford

COLLABORATOR

STUDENT

ADVISER

COUNSELOR

The friends you make in your residence hall. The faculty member who serves as your mentor. The former classmate who helps you find your next job. The alumna who provides industry insight to shape a new major. The corporate recruiter who recognizes your name in a pile of resumes.

College is about more than the classes students take. It's about building solid connections that help students become graduates, pursue meaningful careers, and remain engaged as alumni.

The value of these relationships is certainly not unique to Penn State. But it takes on added significance in the College of IST, where programs center on nurturing relationships that create well-rounded student experiences, advance research discovery, and shape the future of the college.

ON AND OFF CAMPUS

Students with strong support networks are more likely to stay in school, achieve higher levels of success, and graduate. These social, academic, and professional connections lay a critical foundation from the first day—and that foundation is strengthened when students get involved.

"We're working to make sure that everyone has the skills and opportunities to build theirs."

"These networks are vital to a student's holistic growth," said Steve Babb, IST's assistant director for student engagement. "We promote engagement through four core initiatives: student organizations, education abroad, undergraduate research, and the IST Diplomat student ambassadors."

These cocurricular experiences, to which Babb essentially serves as a concierge, provide avenues for students to translate technical knowledge into interpersonal skills, leadership development, conflict and project management, and teamwork.

"I help students understand what resources are available, advocate for their needs, and provide support by guiding them on their desired path," he said. "But once they're started, I get out of the way so they can be self-sufficient."

His biggest goal is to equip students with the skills to find and build their own communities. Because of the pandemic, however, there are fewer opportunities to create these connections naturally.

"Now, it's harder to strike up a conversation with the person sitting next to you in class or chat up someone new in the coffee line. It takes more effort for students to find that engagement," he explained.

This poses a tremendous challenge for students who don't have existing communities, like first-year students and those who started at a Penn State Commonwealth Campus. Babb is working to combat this challenge through online forums, town halls, and other programs.

Despite these obstacles, IST's core engagement initiatives – most notably the college's 16 student organizations – remain key to helping students build social networks that also enhance their life skills and career prospects. Support from college leadership and the emergence of identity-based organizations like Women in IST and the Women, International, Racial, Ethnic Diversity Intercultural Network are aiding those who traditionally may have faced the most difficulty in finding their communities.

Said Babb, "Joining a student organization based on its mission statement is a great place to start, but staying engaged in one based on the community it builds is critical in the student's complete development."

Looking ahead, Babb is spearheading new initiatives to enhance the first-year experience, provide more interpersonal development opportunities, and enable all students to find their place in the college.

"We know how important it is for students to have strong social networks," he explained. "And we're working to make sure that everyone has the skills and opportunities to build theirs."

IN THE CLASSROOM

For many students, these peer-to-peer connections don't just pay social dividends; they can also strengthen academic performance.

"When I talk with students who have low exam scores, I often ask, 'How did you study for this exam?' More often than not, I find that they are studying alone," said Nick Giacobe, assistant teaching professor and director of undergraduate programs. "They're

"There's nothing better to help you learn than teaching it to someone else."

missing out on the content connections they would have made if they had studied in a small group."

Working in groups, explained Giacobe, is a critical skill found throughout the IST curriculum. It helps students reflect on the content and make new links to the material. It brings individual competencies together, exposes understanding to other viewpoints, and helps to reinforce what they learned. It also prepares students for what they'll need to do in the workplace—work with different personalities and different skill sets to reach a common goal.

But faculty are thoughtful about assessing students individually to ensure they understand and can apply the material. Interpersonal relationships can be the difference in how well students grasp these concepts.

"In teams, I see the students teaching each other, and there's nothing better to help you learn than teaching it to someone else," said Giacobe.

With nearly endless opportunities for students to apply what's learned in the classroom to cocurricular and professional experiences, he notes, students have to take initiative to grow as people. And while announcement emails and promotional flyers can get lost in the mix, a student's social network—their friends—can cut through the noise and expose them to new opportunities.

"It's about this part of growing up that occurs in this timeframe," Giacobe said. "It happens in classes, on campus, in social and professional organizations—all of these different experiences that can shape a student's development. The more connections they make in and out of the classroom, they more likely they are to engage in the academic and external experiences that can set them up for success."

IN A CAREER

Making friends, getting involved, and earning good grades can consume much of a student's attention. But as they inch toward graduation, their focus often shifts to something new—getting a job. Again, connections prove central.

"We want students to build relationships with employers because it helps them better prepare for the job they want and differentiates them from other applicants," explained Zoe Meyer, IST's director of career solutions and corporate engagement.

Meyer's team is responsible for coaching students through that professional preparation, sharing what they should be doing to position them for career success. But, as is the case in the classroom, it's on the student to take action.

"We're a resource office, not a placement office. It's up to students to take advantage of what's out there," explained Meyer, echoing Giacobe and Babb.

Those resources include resume reviews, mock interviews, college-specific career fairs, and events with individual employers. First-year students take on career-related course assignments—such as creating a LinkedIn profile and making introductions to employers at the career fair—to begin building these professional relationships. The careers team then adds additional development milestones, such as an undergraduate internship requirement, as the student progresses through each year.

"Our programs and resources are set up to help students make connections and establish their careers before entering the real world," explained Meyer. "Internships, for example, expose them to professional norms and provide an environment where they can safely explore their interests and learn from mistakes without their job on the line."

To that end, she notes, more than half of students increase their odds of landing a job offer by completing multiple internships, and nearly 85% of the college's bachelor's degree recipients are hired by a company they interned with.

Many of these internship opportunities are available through the corporate relationships that Meyer's team facilitates, which produces positive outcomes for students, the employers, and the college. With many in-person opportunities altered due to COVID-19, these efforts—and the collaborations with industry partners that create them—have taken on increased significance.

"We encourage students not to get tunnel vision for their internship or job. Case competitions, organization leadership, course projects—some experience is better than none, and now there are more

"Our programs and resources are set up to help students make connections and establish their careers before entering the real world."

virtual opportunities they can pursue," said Meyer. "No matter the circumstances, we're going to help students connect with employers and access the resources they need to create a successful future."

AFTER PENN STATE

Alumni play a critical role in connecting IST students to these professional experiences. They expose them to what's happening in the industry, become part of their professional networks, and help them understand what they want to do.

For example, more than 30 alumni helped IST students prepare for the college's fall career fair by meeting in advance on the fair's online platform. Students were able to get comfortable with the new virtual format and receive feedback on their resumes and interpersonal communications from alumni in their desired fields. It also engaged alumni from locations around the globe who likely could not have attended an on-campus event.

"Our alumni want to be in front of our students, so we're working to involve them in programs where physical location isn't a barrier," explained Kim Woodward, IST's alumni relations and stewardship officer. "Alumni engagement is invaluable to helping our students prepare for life after Penn State and shaping the future of IST."

"Alumni engagement is invaluable to helping our students prepare for life after Penn State and shaping the future of IST."

It's also important, Woodward notes, that there are strong links between alumni after they earn their degrees. These networks help graduates maintain a positive relationship with the college and Penn State, as well as allow them to continue building their networks—just like they did as students.

Many of those connections are facilitated by the IST Alumni Society Board, which is evolving to meet the changing needs and demographics of the college's alumni.

"We're seeing more diversity of backgrounds, class years, and careers represented on the Board and in our program participants," said Woodward. "This diversity better connects us with the entirety of our alumni community and strengthens initiatives like our mentoring program, where we can match students with mentors who have similar backgrounds and experiences."

Sharing successes, difficulties, and new perspectives creates a strong community between and among students, alumni, and the college. And providing opportunities where these connections can thrive—in person and from a distance—enhances the overall health of the college community.

Concluded Woodward, "Connected alumni become engaged alumni. Engaged alumni bring their expertise to the classroom. They give time and resources to support our students and grow our programs. Building and strengthening these connections improves everything we can do as a college."

THE STATISTICIAN IS IN

Through a unique background blended in science, math, and medicine, Justin Silverman is driving impactful research that's getting recognized on a global scale

by Jessica Hallman

"I firmly believe that good research comes when you're having fun."

Those are the words of Justin Silverman on what motivates him in his work. And, judging from his research output, he's been having quite a bit of fun.

Silverman, who joined the College of IST last year as an assistant professor with a focus in biomedical statistics, made global headlines last summer for his study suggesting that 80% of U.S. COVID-19 cases went undetected in March 2020.

He and his research team analyzed data from the Centers for Disease Control and Prevention (CDC) on the number of patients who sought medical care for influenza-like illnesses during that time span. That number, said Silverman, was far in excess over what was reported in previous years. By applying probabilistic models that Silverman had developed for the analysis of non-linear time-series data, they found evidence that this excess influenza-like illness was actually caused by the novel coronavirus—largely going undiagnosed due to limited testing capacity at the start of the pandemic.

Their work was published in the journal Science Translational Medicine, and their findings were covered by CNN, The Economist, WebMD, Business Insider, and other major media outlets.

"There were a good two months of my life where I had to put my research aside to answer questions from journalists," he said.

While the study made a significant impact on the understanding of COVID-19 and yielded great interest from the media and public health officials, Silverman says that he never set out to get involved with researching the novel coronavirus. But his colleague and research scientist at Montana State University, Alex Washburne—who Silverman describes as "a science cheerleader, someone whose love of science is infectious"—approached him early in the pandemic with a number of observations that could not be explained under the conceptual model of COVID-19 that was common in the field at that time.

"In January he started emailing me about some things he'd noticed in COVID, and about the spread of it around the world that didn't make sense—particularly how fast it was reported to double in the population," said Silverman.

They went on to participate in a forecasting challenge from the CDC, through which he and Washburne developed their overarching theory that the disease was moving faster and infecting more people than anyone was reporting.

"We realized that we were seeing just the tip of the iceberg," said Silverman.

So Washburne, from his office in Montana, and Silverman, who was working in North Carolina at the time, analyzed data of patients seeking treatment for influenza-like illnesses but not diagnosed with the flu to prove their assumptions.

"When Alex and I reconvened a few weeks later, we had gotten almost identical answers from two completely different paths," said Silverman.

Their work also led Silverman and Washburne to be consulted by various academic, industry, and government organizations.

"Presenting our work to Governor Andrew Cuomo's task force and being asked how New York State should respond to COVID-19 was a surreal experience," said Silverman.

With Silverman's COVID-19 research making a national impact, he feels the obligation to keep moving it forward. He has since written an article

"I FIRMLY BELIEVE THAT GOOD RESEARCH COMES WHEN YOU ARE HAVING FUN."

outlining the difficulty of determining the true fatality rate of COVID-19, and is currently involved with a wastewater sampling study that aims to give advanced warning of potential COVID-19 outbreaks at Penn State and in the community.

DUAL DEGREES SHAPE RESEARCH INTERESTS

While the ongoing pandemic may not be Silverman's preferred research focus, his combined medical and statistical training and his research interests in biomedical data make him a well-qualified expert on the topic.

Silverman earned a bachelor's degree in physics and biophysics from Johns Hopkins University, then he simultaneously pursued both an M.D. and Ph.D. in computational biology and bioinformatics from Duke University through the Medical Scientist Training Program, funded by the National Institutes of Health. That program graduates approximately 200 candidates annually.

"It's a combined program," explained Silverman. "I spent eight years pursuing both degrees, finishing off with med school."

According to Silverman, he is among the handful of the program's graduates every year that don't pursue medical residency after earning their degrees.

"I think it may be six or so students per year that go right into a faculty appointment rather than doing residency or a postdoc," said Silverman. "And then of those, I can count on one hand the number who have gone into statistics in the past 20 years."

But, the dual degrees have made both a personal and professional impact on him.

"The M.D. really helps shape my interests," he said. "Without the M.D., I would probably be in some obscure theoretical branch of math that had very little impact."

He added, "I have also found that statisticians and clinicians often don't talk well together, partly because the way that they think is so fundamentally different. Plus, it's very hard for a biomedical statistician to have a full picture of how the whole health care system works if they haven't worked in a hospital. I've found that it's been wonderful to really be able to have a foot in both camps."

Justin Silverman (right) with his wife, Rachel, and son, Isaac.

STATS AT HOME

For Silverman, a love of data runs in the family. He met his wife, Rachel, at Johns Hopkins, where she studied applied math and statistics while he pursued his physics path.

"I thought stats sounded so boring and gave her a hard time about it," said Silverman. "And now here we are, 12 years later, and I only do stats."

Later, while Silverman was completing his program at Duke, Rachel earned a doctorate in biostatistics at the University of North Carolina and now works for Merck as a biostatistician. They spend their careers analyzing statistics, but their passion for numbers and data doesn't stop when the work day ends.

Together the Silvermans maintain a blog, statsathome.com, which mathematically explores everyday problems—including why Rachel's mom never gets opening points when playing Bridge, and whether their pet dog loves them more in the kitchen compared to other rooms in the home. (Side note: the Silvermans' dog, Gauss, is named after a famous mathematician).

The Silvermans also create an annual scavenger hunt for their friends and family which they call the "Matzah Hunt".

"We are not particularly religious, but Rachel and I both loved the Passover tradition of the hunt for the middle matzah," said Silverman.

In the Passover tradition, an adult hides half a piece of matzah somewhere in the house and kids go on a scavenger hunt to find it. The Silvermans wanted to transform this into a tradition that their adult friends and family could also enjoy.

"Honestly, it's really just an excuse for Rachel and me to make up puzzles throughout the year and throw a big party in the spring," he said. "We go all out and have even ended up creating some novel statistical methods to help plan the party."

"As far as I know—and I like to say please don't correct me if I'm wrong—I am the world's only expert in the statistical methods for party planning," he added.

While stats drive much of Silverman's interests in his research and in his personal life, that's not all that defines him. A lover of the outdoors, Silverman enjoys rock climbing, backpacking, and trail running. He's run distances comparable to marathons and ultramarathons, tracking 3,000 miles last year. He also loves spending time outdoors with Rachel and their one-year-old son, Isaac.

And when he was exploring institutions at which to begin his career, Penn State appealed to him because it would allow him to add a new layer to his identity: farmer.

"Penn State is one of the few places in the country where I could both be at a top research institution and have a farm," he said. "And now we've got five cattle and 25 poultry, and we are getting set to add goats to the farm in the spring. It's awesome. We absolutely love it."

IMPACTFUL WORK AT IST

While the opportunity to own a farm was certainly appealing to bring the Silvermans to Happy Valley, the chance to hone his research at Penn State was the biggest draw.

"There are a lot of departments around the country that really try to box faculty into a predefined mold of what they view as successful," Silverman stated. "What I really love about IST is that they don't do this. When I interviewed I was essentially told that I could research whatever area I wanted and I could publish in whatever journals I wanted. I just need to ensure that my research is relevant to the mission of the college and that the journals where I publish are quality venues that will have an impact on relevant fields where people, data, and information intersect. All IST wanted was faculty who were at the top of their respective fields, doing impactful work."

So far, he's been working on a variety of projects in addition to his COVID-19 research. He is working to develop decision support tools for physicians using electronic health data; using Bayesian statistics to predict in real time which emergency room patients have bacteria in the bloodstream; exploring issues of antibiotic resistance and how to alter microbiomes; and analyzing ancient DNA to determine how dental plaques on teeth have changed over the past 700,000 years.

"There are so many different things to do," Silverman said. "It's really fun."

"IST WANTED FACULTY WHO WERE AT THE TOP OF THEIR RESPECTIVE FIELDS, DOING IMPACTFUL WORK."

Silverman is one of 10 new faculty members to join the College of IST this academic year. His interdisciplinary background and interests align with the college's emphasis on the intersection of information, technology, and people. He has a joint appointment at Penn State, also serving as assistant professor in the Department of Medicine and as a Faculty Fellow at the Institute for Computational and Data Science.

This spring, he also began teaching his first class at Penn State: Elements of Machine Learning.

"I just love teaching," he said. "I love answering student questions. It's like a puzzle: you not only have to figure out why a student is getting confused, but you also have to figure out how to present the material in a new way to help the student overcome their specific confusion."

And given that his expertise in statistics is largely self-taught, Silverman hopes that his own experience will impact his students.

"I find that I have a very different approach and different way of thinking about stats than is classically taught," he said. "I'm very excited to have put a course together [that explores] alternative ways of thinking about these things."

At the end of the day, Silverman's background and unconventional path to the College of IST perfectly position him to continue conducting impactful research, stemming from his interests and his ability to have fun.

He concluded, "I love science. I love math. And my interests typically lie in human health. So that's pretty much what motivates me."

COURTESY: JUSTIN SILVERMAN (TOP/RIGHT)

The opportunity to own a farm was among the things that drew Justin Silverman to Happy Valley to begin his career at Penn State.

PROBLEM SOLVED

A focus on access and opportunities leads alumnus to create scholarship

Corey and Leteace Lee with their two daughters.

Last January, Corey Lee made a list of goals he wanted to accomplish in the year ahead. Some—create more family memories, earn a promotion, strengthen close relationships—were fairly common. One goal, however, was less so.

"I set a goal at the beginning of the year to create a scholarship," said Lee, who earned his bachelor's degree in security and risk analysis in 2012 and now works as an enterprise security executive with Microsoft in Washington, D.C. "I wanted to find ways to give back to my community and individuals who need support to reach opportunities that may not be within their grasp."

Lee was able to reach his goal in October when he created "The Corey Lee Family Scholarship" with his wife, Leteace—a 2012 graduate from Penn State's College of Health and Human Development—and two daughters. Lee created the scholarship in memory of Jimmy Brown (inset), a friend and 2012 IST alumnus who passed away in 2019 and was, according to Lee, "always positive, full of joy, and dedicated to helping others."

The scholarship was matched dollar-for-dollar by the College of IST Dean's Advisory Board and supports IST students with financial need who are first-generation or from underrepresented backgrounds.

"Finances are typically the biggest barrier for students to attend college," he said. "I didn't come from a lot. I'm a first-generation student. I come from a diverse background. But it's not enough for people just to see an example in me; they need an opportunity."

Lee's journey to Penn State started in the criminology program in the College of the Liberal Arts. He liked solving problems and thought he would be a good detective. After an adviser introduced him to the College of IST, however, the Bunton-Waller and Schreyer Scholar found a new path.

"I'm extremely blessed to be in the position I'm in, and it felt like the right time for me to infuse some positivity into the world."

"All of my SRA classes interested me. I learned all the different aspects of analytics, economics, computer science, and risk analysis," Lee explained. "To put all those pieces together and see technology through these different lenses, they were all practical to my degree and to my life."

An "analytical person at heart," Lee noted he gained a more holistic education through that diversity of classes and study abroad experiences in Argentina and China. Once he better understood how to break down complex problems through a global perspective, it fueled his interests and abilities to solve them.

That mindset helped him on his mission to solve a new problem—what's the best way to give back?—which was expedited amid the recent national climate of "negativity and gloom," as he describes it.

"The global pandemic, a recession, people are losing their jobs. There's social unrest and political division," he explained. "I'm extremely blessed to be in the position I'm in, and it felt like the right time for me to infuse some positivity into the world."

With a significant item crossed off his annual to do list, Lee hopes his scholarship has far-reaching impact.

"As more educational access is opened up for more people, we create more diverse and inclusive corporate environments which have a greater impact throughout society," Lee said. "Once students are given an opportunity, they can do wonders with it."

COURTESY: COREY LEE

New Scholarships Aim for a More Inclusive IST

Matched 1:1 through the University's Educational Equity Matching Program, six new scholarships—established by generous alumni and friends of the college—will provide $755,000 in endowed funds to support students with financial need who contribute to the diversity of IST and Penn State.

In addition to creating to a more diverse, equitable, and inclusive Penn State, the scholarships will help to advance diversity in the workforce.

"I've seen first-hand the urgent need companies have for critical IT skills around cybersecurity, data analytics, machine learning, and AI, to name a few, which nicely align with the College of IST," said Doug Balog, who endowed a scholarship with his family. "Additionally, companies need diversity in experiences, thoughts, and perspectives to engage in these important IT topics and their debates by developing a richer set of underrepresented women and men to fully participate and bring their unique insights."

He added, "Educational grants, along with corporate and University matching programs, provide a wonderful tool for bringing all these resources together in attracting and retaining this next generation of diverse talent."

According to Jason Gines, assistant dean of inclusion and diversity engagement, the scholarships will benefit more than just the recipients.

"The scholarships also broaden and raise the opportunity for everyone to hear from different and diverse perspectives and to understand that there are broader ways to approach issues and problems. It gives us all a grander sense of our educational experience," he said.

"Andrew and Beth Sears Educational Equity Scholarship in the College of IST," established by Andrew Sears, dean of the College of IST, and wife, Beth.

"Balog Family Educational Equity Scholarship in the College of IST," established by IST Dean's Advisory Board member Doug Balog '83 and family.

"Catalano Family Educational Equity Scholarship in the College of IST," established by Ann Catalano '83 and family.

"Murchison Family Educational Equity Scholarship in the College of IST," established by IST Dean's Advisory Board member Rod Murchison '91 and family.

"Nick and Melinda Berardi Educational Equity Scholarship in the College of IST," established by Nick Berardi '03 and wife, Melinda.

"Steve and Rita Pace Educational Equity Scholarship in the College of IST," established by IST Dean's Advisory Board member Steve Pace '02 and wife, Rita.

THANK YOU!

Last October, a fund for IST students facing financial hardships got a boost thanks to the college's "Sip and Paint" event. Led by State College artist Maure Furmanek, participants produced a fall-inspired Penn State painting during the virtual event, with all proceeds benefiting the college's Completion of Dreams Emergency Fund.

In early December, thousands of Penn Staters shared their pride by participating in the University's sixth annual Giving Tuesday campaign, with IST alumni and friends making gifts to support the IST Alumni Society Program Endowment and supplementing what was raised in September during the college's annual apparel sale. The initiatives raised more than $4,500 for IST students, programs, and experiential opportunities.

Learn how you can support IST students at **ist.psu.edu/give**.

MICHELLE BIXBY/PENN STATE (TOP)

GAMING FOR CHANGE

Ashlyn Sparrow ’10 aims to impact social justice issues through video game design

As social justice conversations prevail around the country, IST alumna Ashlyn Sparrow is contributing to the discussion in a unique and impactful way: through her role as a video game designer.

“I like to view games as a medium where you can actually think through larger social problems,” said Sparrow, who is an assistant director at the Weston Game Lab at the University of Chicago. “It's one of the few mediums where you can kind of try something you’ve never experienced before and put on someone else's shoes.”

After graduating from Penn State in 2010, Sparrow earned her master’s degree in entertainment technology from Carnegie Mellon and has been working at the University of Chicago for nearly eight years. In her role, she teaches high school and university students how to design their own video games around the greater goal of social impact. Sparrow’s work in experimental game design has explored issues such as diversity and inclusion, climate change, and public health.

A significant aspect of Sparrow’s job is teaching her students where to start. Recently, Sparrow asked local Chicago high school students to design a game around the topic of public health, with the students deciding to focus on the issue of violence in their community. Sparrow said the students were grappling with how to intersect their topic with other issues in their community, such as police violence, substance abuse, and criminalization of minority groups.

“These young people didn't want drugs to be sold in their communities, but if they were being sold, they didn't want the police to get violent with unarmed individuals, especially those of color,” Sparrow said.

So, with Sparrow’s help, the students created a fantasy-style game that portrayed their view of how they wanted law enforcement to act in these situations. In the game, players acted as either police or drug dealers. The goal was for the police and drug dealers to land on the same physical spot in the game, which sends the drug dealers to jail without the need for escalation.

“There's no shooting or violence in the game at all,” Sparrow said. “It allowed these students to think about how they could improve their community.”

But Sparrow’s job doesn’t end when the game is designed. It continues in the conversations that extend out of the game and into the real world. At the end of the program, Sparrow brought in several University of Chicago police officers to play the game with the students. The students played as the police officers, and the officers as the drug dealers.

“The conversations that were happening … that was exactly what we wanted,” said Sparrow. “It's about having a conversation, knowing your community, interacting with them in non-violent ways and figuring out a better solution.”

“I like to view games as a medium where you can actually think through larger social problems.”

COURTESY: ASHLYN SPARROW

Informing a City

Jason Lally '05 helps drive San Francisco's data during pandemic

As chief data officer for the City and County of San Francisco, Jason Lally carries the daily responsibility to help each of the city's approximately 50 departments make the best use of its data.

That responsibility becomes especially critical in the middle of a global pandemic.

In response to COVID-19, Lally and his team support public reporting including a number of dashboards and reports showing data related to different aspects of the pandemic response throughout the city. His team of three works with partners across the city to identify appropriate ways to share sensitive public health data, automate data sharing, and equip people with tools and best practices to leverage that data in the response.

"We're really focusing on building up the many analysts across the city to make sure that they are equipped to answer any number of questions that arise," said Lally, who graduated from IST in 2005. "That's not all that different from what we do in non-COVID times, but maybe just more frantic and constantly changing."

Lally, who was promoted to chief data officer last February, was quickly thrust into building a process to share COVID-19 data internally. Luckily, he and his team had already been working on an internal hub for the exchange of data.

"It's kind of what we planned anyway, but we just had to do it faster than we had planned," said Lally. "The thing about a crisis like this is that it really brings things into stark focus."

Pandemic aside, Lally and his team are responsible for helping the city's departments establish governance and policies to ensure they're managing data as assets. Additionally, they provide assistance for data sharing, principally through the city's open data portal, as well as develop analytics strategies and methods to put the data to use.

"The best part of my job is feeling like I can actually bring a set of skills to meaningfully meet real problems and do that with some of the best and brightest people who are very passionate and committed public servants," he concluded. "There's a magic that happens when you can light a path around technology or data and bring that perspective to somebody who has deep subject matter expertise in an area like public health. And when those things come together and you can move something forward, it's absolutely one of the best feelings in the world."

COURTESY: JASON LALLY (TOP)

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**.

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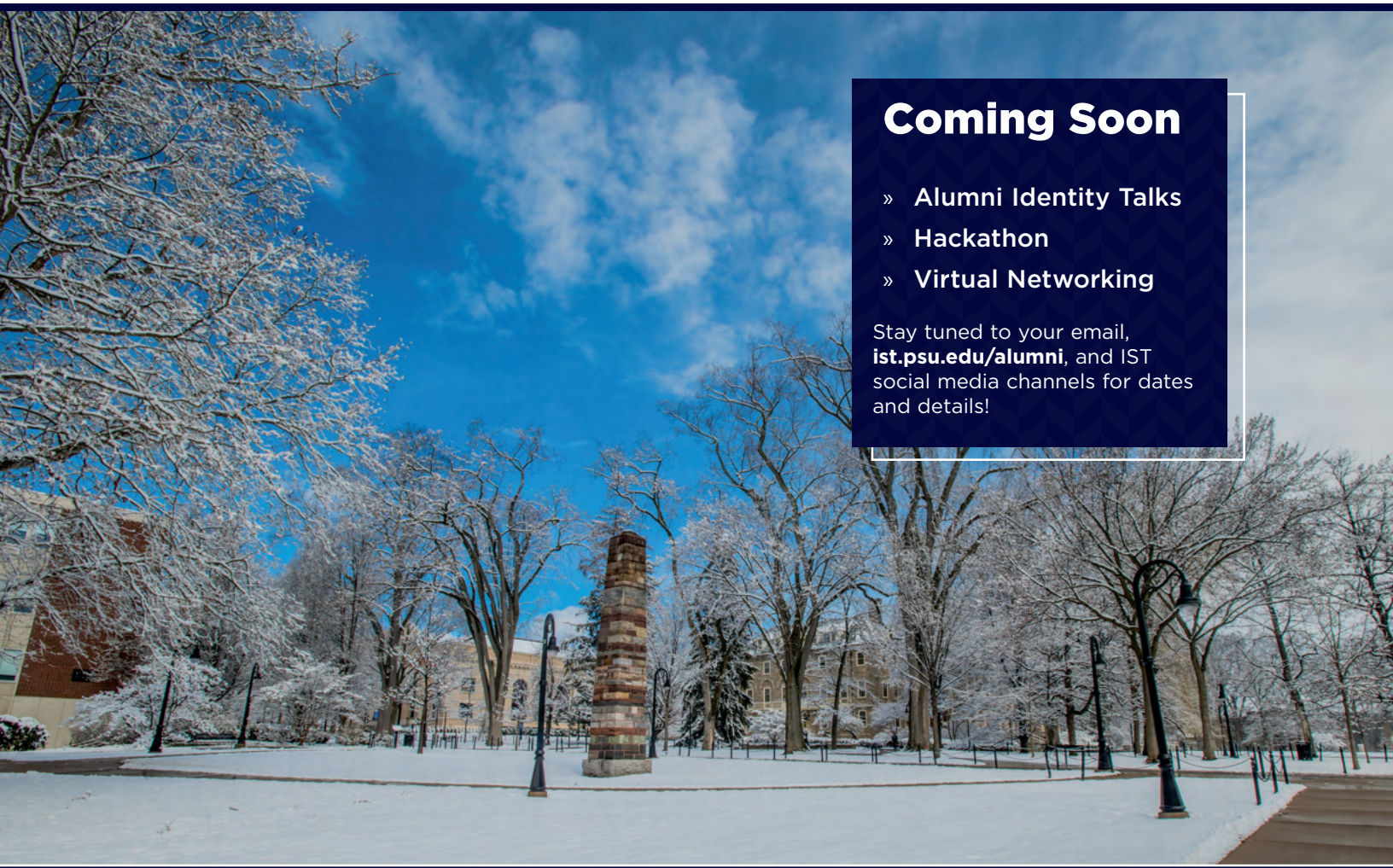

Coming Soon

- Alumni Identity Talks
- Hackathon
- Virtual Networking

Stay tuned to your email, **ist.psu.edu/alumni**, and IST social media channels for dates and details!