



PennState
College of Information
Sciences and Technology

iconnect

Spring/Summer 2019



CELEBRATING A MILESTONE

Two decades of teaching, learning, and discovering
in the College of Information Sciences and Technology

A 20-YEAR JOURNEY

Twenty years. It's amazing how that can feel like both an eternity and the blink of an eye. That's certainly the feeling this year as we celebrate 20 years since the College of Information Sciences and Technology enrolled its first students in 1999.

When reflecting on the last two decades, it's easy to say that so much has changed. Our foundation—solving problems where people, information, and technology intersect—remains. At the same time, how, where, and in what context we do that is dramatically different than it was just 20 years ago. The recent conversations I've had with alumni, faculty, staff, and leadership who have shaped our college reflect the magnitude of this change.

One place you can see this change is in the technology we use every day. For this magazine's cover, we asked members of the IST community to share the technology that has impacted their daily lives—both today and in the first years of the new millennium. The difference is striking.

The older technology composing the cover's "2" shows raised buttons, cords, large-in-size-but-small-in-capacity external storage, and even some analog devices. The newer technology shaping the "0" shows wireless devices, touchscreens, and all-in-one tools like tablets and smartphones that are faster, more capable, and more versatile than their predecessors.

To adapt to this new world, we've launched new undergraduate majors, grown our graduate programs, and expanded our online portfolio. We've provided experiential opportunities for students to learn, work, and make an impact around the world. And we've broadened our research horizons, while at the same time developing considerable depth in several strategic areas.

Our college has risen from infancy, grown through adolescence, and is now entering maturity. Relative to our campus peers we are still young, but we are recognized for our expertise, the opportunities we provide for our students, and the impact our research has on the way individuals and organizations manage and utilize information.

Looking forward to the next 20 years, we will seize new opportunities and tackle unexpected challenges, and we will adapt and evolve as the world around us continues to change. But the one thing that won't change is the one thing that has always existed: an unwavering commitment to success for our students, faculty, staff, and growing community of alumni and friends.

Thank you for being a part of our journey. We are excited to explore the next 20 years with you.

Andrew Sears, Dean



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ON THE COVER

Two decades of technology are represented in two numerals. The “2” contains the hottest tech trends of 1999-2009, while the “0” highlights the more advanced digital devices we use today.



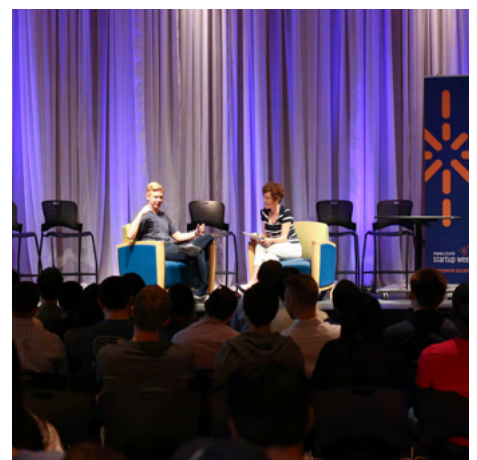
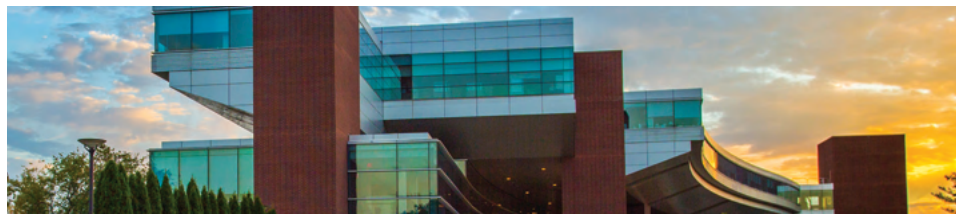
DON'T SEND US PROGRAMMERS, **SEND US LEADERS.**

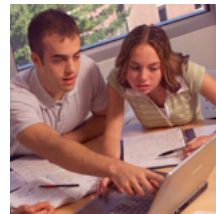


That was the response when Penn State asked industry leaders what kind of program was needed to help close the technology gap. From that, the School of Information Sciences and Technology was formally approved by the Board of Trustees on Sept. 11, 1998. However, it wasn't until the first class of students arrived at University Park on Aug. 25, 1999, that it truly came to life.

In the two decades since, IST students, faculty, and staff have innovated, inspired, collaborated, and created in a rapidly-changing information environment. They've lived, learned, taught, and researched with some of the leading minds in technology, business, health, defense, sociology, and many other fields.

And they have helped the college grow from one of the country's first information schools to a leader in education, research, and service where information, technology, and society intersect.





iConnect

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U.Ed. IST 19-19



RECORD ENROLLMENT SHOWCASES GROWTH

The College of IST's curriculum, facilities, and technology aren't the only things that have evolved in 20 years; its population is changing, too.

Last fall, the college celebrated a record incoming undergraduate class with 204 new first-year students at University Park—a 37 percent increase from the previous year.

The growth is remarkable, especially when considering that there were only 105 IST students at any level at University Park when the school opened its doors in 1999. That year, 428 students were enrolled in IST programs at Penn State campuses statewide.

Since then, the college has expanded not only its undergraduate student numbers, but also its program offerings. There are now four bachelor's degree programs and two graduate programs for residential students. Online learners around the globe can earn master's, bachelor's, and associate degrees, or one of five certificates, through Penn State World Campus. In all, 18 Penn State campuses offer IST courses or degrees, and this spring more than 500 students will earn an IST degree from Penn State.

To support this surge in enrollment, the college continues to attract high-caliber faculty who bring industry experience to the classroom. Sixteen new faculty members were hired at University Park in 2018, with backgrounds ranging from computational social science to data mining and optimization to biomedical engineering.

Their diverse experiences, combined with their classroom teaching and research activities, are further advancing

**“THIS SPRING, MORE
THAN 500 STUDENTS WILL
EARN AN IST DEGREE
FROM PENN STATE.”**

IST's mission to prepare students who can meet the challenges of a rapidly-changing information age and a diverse global workforce.

Increased academic offerings and a breadth of faculty backgrounds have also led to increased research opportunities. In the last five years, research funding has increased by 60 percent. Faculty, visiting scholars, and students are

collaborating on interdisciplinary and international projects in more domains than ever before. With continued emphasis on recruiting and research funding, researchers are able to assemble larger teams and tackle bigger problems, extending IST's impact on campus, in the community, and around the world.

Advising, career solutions, and other academic support service teams have also expanded to provide one-on-one support to members of the growing student body—ensuring that a dedicated team is committed to helping each student meet their academic goals.

Even with significant growth in the last two decades, students repeatedly state that IST maintains a small-college feel. Organizations such as Women in IST and the IST Special Living Option match students with others who share their interests and desire to connect. New organizations are continually forming to support the college's evolving curriculum, such as Nittany Data Labs and the Competitive Cyber Security Organization.

OUTSIDE OF IST

The impact of IST faculty and staff reaches far beyond campus. Once the work day ends, many of them pursue their passions and positively influence their communities and the world.



NICK GIACOBE

Inside IST: Assistant Teaching Professor

Outside of IST: Volunteer with Pleasant Gap Fire Co.

I feel like I'm giving the community what they need, even on a person's worst possible day. I feel good about that and about being a part of the process.



SHARON LAZAROW

Inside IST: Undergraduate Academic Services Coordinator

Outside of IST: Adviser of Penn State's chapter of the Alpha Phi Omega service fraternity



I enjoy the sense of giving back and recognizing leadership, friendship, and service, and I try to instill that spirit in my family as well. We don't know how to not do this. This is what we live for.

KATHERINE HAMILTON

Inside IST: Assistant Teaching Professor

Outside of IST: Board of Directors Chair of Centre Safe, which aims to eliminate domestic and sexual violence in Centre County



I began volunteering to advocate for out-of-town friends who had experienced sexual assault. Centre Safe is trying to be more proactive and educate the community from a very early age. It's good to know that the experiences my friends had are not likely to be replicated here.



CATCHING UP

RECORD CAREER FAIR

Nearly 80 companies were on hand to recruit IST students at the fall 2018 Pro Expo career fair, the largest in the college's history. Recruiters represented companies from a wide range of industries, including major consulting firms, retailers, insurance companies, and government agencies. More than 900 students attended the event at the Nittany Lion Inn in hopes of landing an internship or full-time job offer.

CAMPING OUT

Twenty-six middle and high school science, technology, engineering, and math teachers participated in the first-of-its-kind NittanyGenCyber Camp last summer at University Park. Funded by the NSA and NSF, the weeklong camp trained educators in the basics of cybersecurity and data sciences, and IST faculty provided guided instruction on creating lesson plans for course content.

HOMECOMING COURT

Rita Griffith, assistant director in the Office of Career Solutions and Corporate Engagement, was named to Penn State's 2018 Homecoming University Court. The designation recognizes faculty and staff whose devotion to the campus community goes above and beyond the call of duty. As her student nominator said, "Rita coaches her students to be the best version of themselves and ... provides reassurance when students need it the most and when they don't know they need it at all."



CYBERSECURITY LEADS NEW ACADEMIC DEGREE PROGRAMS

Technology is constantly evolving and, in turn, so is nearly every industry. The College of IST continues to update its curriculum to meet these global demands. Programs and courses are continuously added or enhanced to train students with the most sought after skill sets that position them to address the world's most challenging problems.

In 2017, the college began offering a bachelor's degree in Cybersecurity Analytics and Operations. The program, which evolved from the information and cybersecurity option under the Security and Risk Analysis major, is one of the first of its kind in the nation. It equips students with the knowledge and skills to critically assess and respond to modern information security threats.

The college designed the new degree in response to a critical gap in cybersecurity education. According to researchers, there are as many as three million unfulfilled cybersecurity jobs in the U.S. today—a number that continues to grow.

Interest in the degree from incoming students has been incredibly strong,

with nearly half of first-year students enrolling in the new cybersecurity program for fall 2018.

Penn State also recently became one of the first institutions in the country to offer a bachelor's degree program in Data Sciences. Established in 2016 and awarding its first degree in 2018, the program is an intercollege initiative between the College of IST, the College of Engineering, and the Eberly College of Science.

In the major, students receive interdisciplinary training in analyzing large-scale data sets to address an expanding range of problems in industry, government, and research.

With nearly every industry impacted by the ability to gather and analyze data, and the amount and speed at which data is being formulated, skilled technicians who can examine the information and make informed recommendations are in high demand. The College of IST has emerged as a leader in teaching these new methods, tools, and skills at the undergraduate level.



Since 2012, Startup Week has provided opportunities for enterprising IST students to hear stories, gain advice, and network with leading entrepreneurs and innovators from companies like Weebly, Dell, Reddit, Dropbox, and Microsoft. The event regularly catches national attention, and its reputation across campus helped it expand from an IST-specific event to the University-wide Penn State Startup Week in 2017.

While IST still hosts tech-related events for its students and plays a central role in planning, more than a dozen academic and administrative units now coordinate various opportunities focused on innovation in medicine, sustainability, the arts, education, and a variety of other fields.

The 2018 Penn State Startup Week featured more than 40 unique events—many of which showcased interdisciplinary collaborations—and hosted student pitch competitions, entrepreneurial workshops, and dozens of alumni speakers, mentors, and panelists who shared experiences with the University community. Events are also expanding to commonwealth campuses, allowing more students to benefit from the experience.

The 2019 Penn State Startup Week is planned for April 1-5. View the schedule and watch livestreams of various events at StartupWeek.psu.edu. If you're an entrepreneur interested in sharing your story with Penn State students at future Startup Week events, email StartupWeek@psu.edu.

 @PennStateStartup

#BeGreater

CREATING AN INCLUSIVE HOME

As the College of IST continues to grow, there are more opportunities—and a greater need—to foster a diverse and inclusive IST community. Jason Gines, director of the Office of Inclusion and Diversity Engagement, shares how these focuses are helping the college shape the next generation of global leaders.



iConnect: What are IST's ongoing initiatives to promote a diverse and inclusive community?

Jason Gines: The most important thing in the last two years has been to reconstitute the college-wide Inclusion and Diversity Action Council (IDAC), comprised of faculty, staff, and student volunteers. As part of its programming, IDAC is launching a series of events that encourage open conversations in a safe space, as well as focusing on expanding the notion of diversity to include everyone in ways that are important for the college.

IDAC is also looking at how equitable practices are to those providing education for our students, in terms of how they are being evaluated and the considerations of what should be happening relative to how they're judged in a particular sense. For example, the committee is looking at research models where there is equity between how female and male instructors are rated in a research institution.

iConnect: How do you build an inclusive community and ensure that it is carried beyond the walls of IST?

JG: We provide many opportunities for education beyond the classroom. By working with numerous offices and departments in the college, and establishing a presence at prospective- and incoming-student events, our office is embedded in multiple

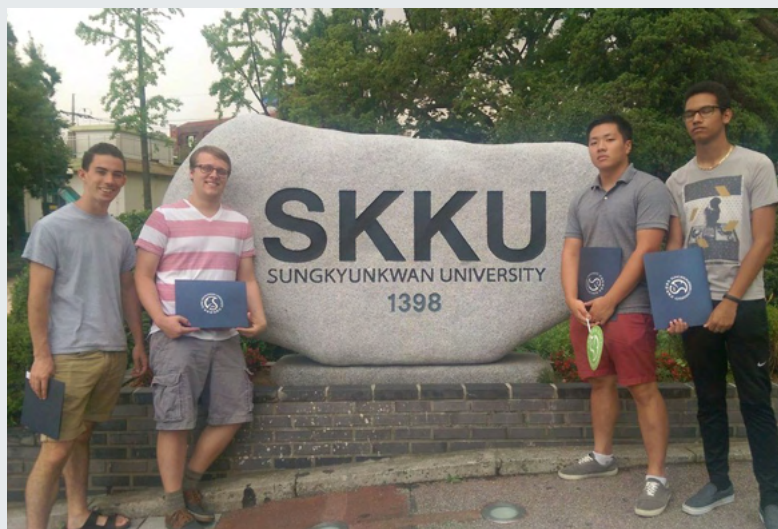
touchpoints to let each student know the importance of developing their own identity and honoring the identities of others. We have also developed a diversity module as part of IST 495—the college's required internship program—which prepares them for the domestic and global diversity they'll find in the workforce or in higher education.

iConnect: How do these efforts help to prepare students for the workforce and life after graduation?

JG: The presence of diverse teams increases productivities, and different perspectives of problems lead to more comprehensive solutions. When you have more diversity, it increases a class's capacity to approach things differently. This has the potential to follow students for a lifetime. Our nation is being transformed dramatically. In the next 30 years, it is estimated that there will be a numerical equivalent of those who identify as Caucasian and those who identify with another designation. If the majority of IST graduates work domestically, it's a statistical likelihood that the workforce that they will be in and inheriting will look very different than it does even today. IST is a preparatory institution for what's to come, and it is our college's duty to be a leader in that regard.

IST GOES GLOBAL

Students can now access the world's fastest internet speeds to complete assignments and prepare for finals near the filming location of Game of Thrones, thanks to new study abroad opportunities offered by the College of IST. Through partnerships with Sungkyunkwan University in Seoul, South Korea, and Rochester Institute of Technology in Dubrovnik, Croatia, IST students can earn credits toward their degrees by completing semester-long courses abroad that are matched to their curriculum back home.



Alexa: What's Happening in Happy Valley?



As a Penn State student living off campus, Steven Weber wanted to have a more efficient routine while waiting for the bus to arrive. He thought, wouldn't it be great if he could ask his smart assistant when the next bus would pull up to his stop?

Weber, a senior studying IST, got the chance to bring that vision to reality, thanks to a class assignment in an information sciences and technology course last fall.

"The project I pitched was to develop both a Google Home and Amazon Alexa skill that would help provide information to Penn State students and State College residents," said Weber. "The goal was to allow users to ask their smart assistants about events around town, bus locations and routes, academic calendar information, and more."

Weber was one of several students who pitched their ideas in the course, which mirrored a simulated startup environment.

A panel of judges then selected three projects to receive hypothetical funding. Weber was able to use this funding to "hire" eight of his classmates as developers for the project.

"It was up to me to set up a hiring process, negotiate salaries, and assign roles," he said.

Thus, Happy Valley Helper was born. While the initial assignment was to develop a programming project for the class by the end of the semester, Weber's team took their idea a step further. The students launched their platform on Google Home and Amazon Alexa in early December 2018. The platform provides students on campus and local community members the ability to learn information about Penn State and State College events and activities by simply asking their smart assistants.

Currently, the skill is able to provide details about upcoming Penn State sporting events, real-time CATA bus schedules, and information from any of the University's academic calendars. The team hopes to ultimately include additional community happenings, such as First Friday in State College and other local events.

"The whole point of Happy Valley Helper is that it's not just for Penn State, but also for people who visit the area and are interested in events downtown or on campus," said Alex Woodruff, a senior studying IST, who served as the Google implementation lead developer for the project.

OPPORTUNITIES AWAIT

Grace Hopper was a computer programming pioneer and a U.S. Navy rear admiral. But for women in IST, she is also the namesake for the **Grace Hopper Celebration**, the world's largest gathering of women technologists. Each fall, a select group of women in IST receive financial support to attend the conference, which allows them to learn from and network with leading minds in the field. This annual event is one of the many off-campus opportunities

available to IST students. This past year, students with varying interests and aspirations received support to attend the Richard Tapia Celebration of Diversity in Computing, a daytrip to New York City to network with IST alumni, and an alternative spring break trip. Students on this year's spring break trip recently returned from Austin, Texas, with past groups visiting tech hubs in Seattle and San Francisco.



IMAGE PROVIDED (BOTTOM)

Navigating the career journey

Undergraduate IST students are required to complete at least one internship before they graduate. Roughly half complete multiple internships, and more than two-thirds receive a job offer from one of their internship providers.

And while the college offers abundant resources to navigate this process, students may find it intimidating to get started. Enter Ryan Feng.

Feng, a senior majoring in IST, is the college's first peer career assistant. Having completed three internships with UnitedHealth Group, Optum, and JPMorgan, he now serves as a resource for other IST students looking to get a head start on their careers.

"Each of my internships has been a phenomenal experience where I got to make a difference in the world, meet awesome people from other universities, and live in exciting cities," said Feng.

Now back on campus, Feng is helping students identify their own interests, conducting resume reviews and mock interviews, and finding opportunities that align with students' career aspirations. Because of his professional success—he has received nine internship and job offers to date—the college believes he can provide a unique outlook to other students.

"The new peer career assistant position is making an impact by showing the level of commitment that the college and other students have made to helping students achieve their career goals."



"The significance of getting career and internship advice from a peer is that sometimes it is less intimidating," said Rita Griffith, assistant director of professional development. "It allows students to get answers from the student perspective."

Those perspectives closely mirror the college's professional development initiatives, which students will continue to build upon long after graduation.

"Career success is a process that happens over time and not overnight," said Griffith. "As students learn more about this resource, we will see them actively gaining confidence in their own abilities to become engaged and confident in their capacity to solve problems."

Feng credits his experiences as an IST student with advancing his professional opportunities, and he is excited to share what he's learned with his peers.

"The new peer career assistant position is making an impact by showing the level of commitment that the College of IST and other students have made to helping students achieve their career goals," said Feng. "Showing what is possible with an IST degree makes a huge difference. I hope students will enjoy internships and job hunting as much as I do."

ASKING WHY:

Red Cell Analytics Lab positions next generation security analysts

Students can analyze emerging global security issues—such as the disappearance of Malaysian Flight 370 or the examination of the campaign that targeted the 2016 U.S. presidential election—without ever leaving Westgate Building.

Red Cell Analytics Lab (RCAL), a student organization at the College of IST, weaves classroom concepts into hypothetical and real-world security scenarios. Members gain a number of professional skills, such as collaboration, critical thinking, analytical writing, and briefing.

Most importantly, members emerge with a new understanding of how current events affect local, national, and international affairs, and how they can effect change to improve our nation's security and prosperity.

More than 500 members have participated in RCAL in the club's 10-year history. In celebration of the milestone anniversary in 2019, current members are hosting the Red Cell Analytics Lab 10th Anniversary Project Showcase this Spring to highlight the organization's research contributions and commitment to providing the resources and learning opportunities for members to become successful "next generation" analysts.

"Ever since I was young, I have always loved critical thinking and asking a thousand questions," said McKenzie Powell, president. "RCAL really lends itself to that. Our members love asking 'why?'."





Supporting emergency response through social media analysis

As Hurricane Florence approached the U.S. coast in September 2018, IST researchers deployed a remote digital support team to analyze filtered social media posts coming from Charleston County, South Carolina. Their mission was to improve crisis response operations by providing critical information and requests for help to emergency responders.

The research team, which includes doctoral students Rob Grace, Shane Halse, and Eric Obeyesekare, and associate professor Andrea Tapia, had been working with Charleston County Consolidated 911 Center to develop a tool that would integrate posts into its emergency response operations. The storm provided the opportunity for the researchers to put their project into action.

"It's another wave of data collection and of finding information about the community that dispatchers might not otherwise have," said Halse.

Hurricane Florence ultimately navigated north, sparing Charleston County from the worst of its devastation and, therefore, minimizing the number of actionable social media posts in that area. Yet, it still provided an

opportunity for the research team to test their work and to make adjustments for the future.

The team ultimately hopes to incorporate these tools seamlessly

"It's another wave of data collection and of finding information about the community that dispatchers might not otherwise have."

inside large 911 centers, or to provide remote support in times of crisis for smaller emergency response units.

"While remote digital support teams assist emergency and crisis management organizations around the world, the procedures for coordinating the efforts of remote teams of digital volunteers and 911 dispatchers in affected areas remains less established," said Grace. "Our work with the Charleston County Consolidated 911 Center during Hurricane Florence saw the development of procedures that will make coordinating the work of digital volunteers and 911 dispatchers more seamless during the next crisis."

RESEARCHERS EARN OUTSTANDING PAPER AWARD AT TOP SECURITY CONFERENCE

Wenbo Guo, a doctoral student in IST, and his research team earned the outstanding paper award at the 2018 Association for Computing Machinery Conference on Computer and Communications Security (CCS), one of the most competitive and prestigious conferences in the field of computer security.

"Getting a paper accepted is very hard in this venue," said Prasenjit Mitra, associate dean for research in the college. "Getting the best paper award in CCS is a major achievement. Crème de la crème."

The paper described a new technique, named LEMNA, that could significantly benefit security analysts and machine learning developers to establish trust in deep learning models. Similar existing techniques focus on image, vision, or text applications, but LEMNA is one of the first to explore how to identify, explain, and correct classification errors made by deep learning models for security applications.

"The model can tell you its decision, but it cannot tell you why it made [the one it did]," said Guo. "The long-term importance of LEMNA is that it's a useful tool. Using LEMNA, we can build trust in the deep learning model, and if we can explain why the error occurred we can probably patch the error."

"It's the start of the field," he concluded.



LAVIZZAR/ADOBE STOCK (TOP); IMAGE: PROVIDED (BOTTOM)



WATCHING THE CLOCK: Faster countdowns may make people more patient

David Reitter, associate professor of IST, found that individuals may have more patience when time flies by on a countdown clock compared to when the clock slowly ticks off the countdown, even when both clocks cover the same amount of time.

Through a series of experiments, Reitter says that the speed of a countdown clock affected the patience and decision-making of video game players, both during and after the game.

“What we found was really quite astonishing in that we could influence people’s patience not just during the countdown, but we could also influence people’s patience for what came after,”

said Reitter, who worked with Moojan Ghafurian, a former Penn State student.

A faster countdown with more numbers may make it seem like time is passing faster, which reduces impatience and encourages more deliberate decision-making, according to the researchers.

“Countdowns create a different sense of the time that has passed,” Reitter said. “And a faster countdown creates a sense of a shorter time having passed during the wait, so it alters your sense of time a little bit.”

Reitter recently shared his findings on the podcast gameshow, Tell Me Something I Don’t Know.



FUSCO HONORED

David Fusco, assistant teaching professor of IST, was recognized with the college’s 2018 George J. McMurtry Faculty Excellence in Teaching and Learning Award. Named for a former associate dean of the College of Engineering who was instrumental in the founding of the College of IST, the annual McMurtry Award recognizes IST faculty members who consistently provide an exceptional learning environment. Fusco shared the innovative teaching methods, interactive classroom styles, and real-life stories that comprise his rounded approach in the classroom during his McMurtry lecture, “Educating the Next Generation of Leaders, Who Happen to Use Technology.”

**IST researchers continue to break new ground.
Here’s how their work has been supported since Jan. 1, 2017.**

\$28.2

million in new funding
awarded to IST researchers

91

awards secured for new
and ongoing research

31

sponsoring agencies that
have awarded funds

IST 1999 - 2019 MILESTONES

The digital video recording platform TiVo is introduced.

1999

With 43 new courses and five faculty members, IST opens its doors to 105 students at University Park.

As clocks approached midnight on Jan. 1, 2000, people around the world anxiously anticipated the impending impact of the Y2K computer bug. But when the Y2K bug arrived with a whimper, those feelings quickly gave way to the excitement and wonder of the new millennium.

For the College of IST, those positive feelings were also breaking through at Penn State. Though its doors had been open for only a few short months, students and faculty were already building a college that would adapt in the year 2000 and beyond.

The first online course, IST 110, goes live.

2000

Anxiety gives way to celebration in the new millennium as the Y2K bug causes minimal disruption to the world's computer systems.

The first 12 IST doctoral students begin classes.

2001

IBM introduces the world's first multicore computer processor.

The IST Alumni Society officially forms.

2003

IST's first full baccalaureate-degree class graduates with 300 seniors from across the state, 117 of them at University Park.

The social networking site "The Facebook" is launched.

2004

The Information Sciences and Technology Building is officially dedicated.



IST launches its online master of professional studies degree program through Penn State World Campus.

2009

Bitcoin, a digital currency with no central bank, is invented and launched as open-source software.

2010

David Rusenko '07, co-founder of Weebly, receives the Alumni Achievement Award from the Penn State Alumni Association, becoming the first IST alumnus and youngest Penn Stater ever to receive the award.

Spotify's music streaming service is launched in Sweden.

2008

IST's first degrees in Security and Risk Analysis are awarded.

2012

The first IST Startup Week is held at University Park.

2013

Nick Berardi '03 is recognized as the first recipient of the Penn State Outstanding IST Alumni Award.

John M. (Jack) Carroll is named IST's first distinguished professor.

2016

IST becomes the College of Information Sciences and Technology by approval of the University's Board of Trustees.

The University's Board of Trustees approves a new Data Sciences bachelor's degree program, an intercollege degree offered by IST, the College of Engineering, and the Eberly College of Science.

2006

The University's Board of Trustees approves a new Security and Risk Analysis bachelor's degree program.

2017

The WannaCry ransomware impacts more than 230,000 computers, with attackers demanding bitcoin to unlock encrypted data.

The University's Board of Trustees approves a new Cybersecurity Analytics and Operations bachelor's degree program.

2019

IST celebrates the 20th anniversary of enrolling its first students.







THEN & NOW

It had been only 14 months from when IST's conceptual plan was approved to when the School of Information Sciences and Technology opened its doors in the fall of 1999. We sat down with Jim Thomas, IST's first dean, and Andrew Sears, IST's current dean, to see what has changed—and what hasn't—for the College of IST in the 20 years since.

INTERVIEW BY **JORDAN FORD**

iConnect: Tell us how the College of IST started.

Jim Thomas: The University was strongly encouraged by a lot of companies in the late '90s to help fill the need for more students with backgrounds in information technology-related fields. President [Graham] Spanier saw the emerging success of information schools as part of the response to that need, so he put a committee together [chaired by then-Provost Rodney Erickson] to create the conceptual and functional foundations for an endeavor. The ideas that emerged from that committee became the School of Information Sciences and Technology. As part of the approval of the school by the Faculty Senate, I was asked to chair a committee to develop a new bachelor's degree curriculum, and [then-associate professor of computer science and engineering] Joe Lambert chaired a committee that was developing the associate degree curriculum. George McMurtry, who was an associate dean in the College of Engineering at the time, served as IST's acting head administrator to help establish the school. When a national search for a dean was launched, I was invited to give my view of what the school should look like, and soon after I had an offer to become dean. Joe, who became our senior associate dean until 2008, and George played vital roles in getting the school started. Without them, IST would not have happened.

iConnect: What did that initial concept look like?

JT: It was all about how information, people, and technology intersect. We needed to be multidisciplinary, so we drew on a variety of different subjects. We wanted students to understand technology—the hardware and programming side—but also understand how technology is used and how information is managed in any setting to make a difference. At a certain point, computer science or engineering takes over, or business or sociology takes over, and although we intended some overlap, we wanted a program that positioned students at the center of the information, people, and technology intersection.

iConnect: How have those foundational ideas evolved over the last 20 years?

Andrew Sears: That founding mission is really what continues to differentiate our college and our graduates from those in other programs. Our students understand not just the technology; they also understand people and organizations, and they're able to think about how solutions will fit within an organization. We've added some additional technical depth in certain areas, but there's a recognition of the importance of the people involved, and there's always the focus on understanding the context in which that problem lives.

iConnect: Finding the right name to fit those concepts was part of the challenge. How was the name chosen?

JT: Well, we were building a program that allowed for an understanding of how technology is used by any organization in any setting, and "information science" without the "s" at the end had the connotation of a singular topic. We wanted to be a multidisciplinary school, which meant we had to go to "information sciences" to capture the wider range of disciplines.

AS: Now, technology is so pervasive it's almost redundant in our name. One of the challenges information schools face is that there is no universal language for what we do. There is no single name you can pick that will result in everyone immediately recognizing what it means.

iConnect: What were the other challenges in getting the college off the ground?

JT: One of the big hurdles was figuring out where the students would come from. Nobody knew who we were or what we were trying to do. There was no hiring record for our graduates.

AS: And few understood what the degree actually was.

JT: Right. So why would they come here? We had to develop the message to answer that question. And then we had to attract faculty much the same way. Students, faculty, and staff—they had to take a chance on us because nobody really knew if it would succeed. And then trying to get donors without any alums was equally fascinating. Most of that early success came from our

original advisory board members, who worked hard to get people engaged and to be part of the adventure. Thankfully, I think we got the right people at the beginning who were willing to make something happen here that wasn't happening anywhere else in the country.

iConnect: Have those challenges changed in the last 20 years?

AS: We still have a challenge in that "information sciences and technology" is not a label that immediately resonates with high school students, but the advantage now is we have two decades of successful graduates, nearly 80 companies showing up each semester to recruit our students, tremendous faculty research, and so on. We can point to these things, and it helps overcome some of the barriers. And we have a great story—IST didn't come with the preconceived expectations that come with other, well-established programs that would have shaped how the college developed, because IST was essentially created from nothing.

JT: It's not that we were baggage free, but it was just a different discussion. We had a clean slate, so we could build the college without the entanglements of existing programs.

iConnect: How did the opening of the building at University Park in 2004 impact those challenges?

JT: The building's impact was critical because once it was completed we could point to it and show people what we had in mind to bring the concepts to life. That was exciting because we gained legitimacy, not just because of the building, but because we had something physical that represented us.

AS: We still have that impact today. You bring visitors and prospective students to campus, and they see the building. It is a very striking building, and it really makes an impression.

iConnect: What was the impact when the School of IST became the College of IST in 2006?

JT: That was huge for us. When IST had only about 250 students, I'd be at a meeting for the Council of Academic Deans, sitting across from the dean of the Smeal College of Business, which at the time might have had 5,500 students. It was, for lack of better words, awkward. The day that we became a college—



although the numbers didn't change that day—it created a sense of legitimacy, especially internally. It created a different sense of self for the school and who we were in the marketplace.

iConnect: The college is now close to outgrowing its current space. What is IST doing to prepare for that potential change?

AS: For the last 15 years everyone in the college has been in the same physical space, so outgrowing our existing space is going to be a real challenge for us. We're at the very upper end of being a small college in a big university, and we want to maintain the familiar culture despite our growth. Maintaining the relationship between a student and their adviser and career counselor, for example, is one of the easier pieces because we will simply have to grow that staff proportional to the number of students to maintain that one-to-one relationship. But as the number of faculty grow, and we have to expand to new spaces, that will create other challenges. We're approaching this carefully—the limited physical space, the growth in our student and faculty numbers, making sure we maintain that sense of community. I think we're equipped to handle this well, but it's going to be different.

iConnect: What are the other challenges and opportunities facing the college today?

AS: The biggest opportunity continues to be the explosive growth in the amount of information that's being generated and the ubiquitous nature of technology. I used to tell students that there's nothing interesting that happens that doesn't involve information and technology. But then I realized that *nothing* happens that doesn't involve information and technology. Everything is impacted by what our students study, so the opportunities are endless. The challenge is that what we're doing continues to be new, and we need to give students a broader understanding of the disciplines and opportunities that exist. If we can do that, we can continue to attract students. Of course, as we attract more students, we need to ensure we have the other resources to support them. And, we need to make sure our curriculum is preparing them for where they'll go in their careers.

iConnect: What has been the mindset for shaping the curriculum?

JT: Our first faculty were strongly urged to have a joint appointment with another college to make that multidisciplinary piece come alive, and we wanted to think differently about how we educate, what we educate, and where we educate. That got us into problem-based learning, where students needed to know how to ask the right questions. To borrow a phrase from one of our early faculty members, our faculty were urged to no longer think of themselves as the “sage on the stage,” but rather the “guide on the side.” All of that required a different frame of mind, both for our faculty and our students.

AS: We still have the emphasis on group projects and communication skills, and we of course require an internship. We hear from employers that these experiences help differentiate our students, and our students agree, particularly after they've

been working and have had an opportunity to experience the impact of what they did on campus in their careers.

iConnect: What else has changed in the curriculum since the college's inception?

AS: I've been encouraging faculty to take a deep dive into the curriculum to truly reassess it. What happens normally is you roll out a curriculum and then you make little adjustments, but you don't often revisit the foundations. We've made changes to add technical depth, and now we're focusing more on the ethical issues. It's critical that our students not only be able to extract knowledge from data, for example, but that they understand the intended and unintended consequences of what they're doing. In 20 years, this college will have invented and then completely reinvented its curriculum. That just doesn't happen in most traditional fields.

JT: With that original curriculum, we talked about getting our students to understand the right questions—not necessarily having all the answers but understanding how technology ties to competitive competency whatever the industry. It was a way of probing how information and technology could make a difference, not educating students to be the “knowers of everything.” We, of course, taught the basics, but even those would change so we encouraged students to think about change, creativity, and solutions not tied to any one industry or discipline. We were literally trying to build the leaders of a global, digital economy.

**“THE DAY THAT
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LEGITIMACY.”**

AS: That's critical. If they just take the question they're asked and put a solution in place, then they don't fully understand the impact of what they're doing. But if they know to ask questions and the directions that go with those questions, they get a much better understanding of the potential impact of what they're doing. That part of the curriculum will always be there.

iConnect: Is there a type of student the college has attracted that best fits that philosophy?

AS: One of our strengths is that we attract a broad range of students, but that also presents some unique challenges. For example, we attract students who have strong technical backgrounds. We also attract students who have strong people skills but little technical skill. You rarely get students coming in who have a solid footing in all three areas—people, information, and technology—so we have to design a curriculum that takes students on this massive skill spectrum and work to get them to a relatively similar place.

iConnect: How has that impacted the overall diversity of the IST community?

AS: Yes. The college is getting a crisper message about what we're doing, society is embracing certain ideas, and certain topics are getting more visibility in the general media. All of that is helping us attract students. Our incoming class to University Park has almost tripled in the last three years, so that growth certainly brings a more diverse range of students.

JT: The diversity of our students and faculty was critical in the beginning, not just as it relates to gender, nationality, or race, but also regarding intellectual diversity. Part of that was because of the diversity we had in our vision and curriculum. We were pulling from so many different disciplines, and many of the critical issues from understanding the digital divide to human-computer interaction to digital law and policy were being led by a set of diverse, exciting scholars.

AS: You look at the technology field in general, and it is not as diverse as others. We are working hard to reflect the diversity of gender, race, and other underrepresented minority populations that we see across the country. One way we're doing that is by building up our Office of Inclusion and Diversity Engagement and having them work closely with our undergraduate recruiting team. That's an important connection so we can be more deliberate and thoughtful about diversity and better reflect where we want to be.

iConnect: As the college has grown and student backgrounds have become more diverse, how has faculty hiring been impacted?

AS: More students bring a need for more faculty. In fact, we've hired over 40 percent of the college's current faculty in the last three years. That's exciting, but it's also a challenge. How do you bring them in and make sure they have the resources and support they need to be effective in the classroom? How do we not fundamentally alter the culture of the college? We want to hold on to those critical pieces of what makes this college what it has been while embracing its new and evolving nature.

JT: That percentage of new faculty takes us back to our first years, and we had the same challenges. We really had to work to engage people with our culture and our message. Twenty years later, IST is doing the same thing on a larger scale because of all the growth the college has experienced.

iConnect: How have changes in technology and society impacted the college?

JT: Look at our foundation of people, information, and technology. If nothing else, technology has changed so dramatically and has had such an impact on people and information—from information access, to the form of

information, to the way people are socialized and live their lives. That foundation is still in play, but the very nature of IST has been altered because of the rapid change that's occurred in society around all three of those constructs.

AS: It's interesting for us right now because we sit where those three areas come together. If you look back at the history of computing-oriented disciplines, the expectation is that growth is followed by a period of decline. As the world has shifted and technology has become so universal, we're no longer at a point where things are going up and down. They're just going up. When we look at career outcomes, our graduates are employed in nearly every sector of the economy. If there is ever a piece of the economy that experiences a bit of decline, there are many other opportunities for our students to pursue.

iConnect: Part of that change has come along at the same time as the rise of Penn State World Campus, correct?

JT: That's right. Penn State World Campus was near the beginning of its existence in 1998 when IST was starting up. We didn't get too involved with it because we were still figuring out how to get the college moving in the right direction, but we were working internally to craft some of our own online materials. We had a tremendous group, led by Cole Camplese, that was designing courses and using different technologies for

making a difference in the classroom. One of the things we were concerned about was keeping the message and content of IST consistent as we extended to the different commonwealth campuses. Those early online courses showed what we were trying to accomplish in the classroom, and most of the delivery of that material was to the campuses.

AS: We've made a significant investment in our learning design group, which is focused exclusively on assisting faculty with course design to facilitate learning by our students. That investment has made it possible for the college to offer multiple degrees online. You need to design online courses differently because some of the things that you want to do in residential courses simply don't work or work differently. We continue to look at where we can be innovative and where we can provide a more engaging experience through the online classes.

iConnect: Why is the college's relationship with industry critical to its success?

AS: It's a very synergistic relationship. Students want to work where they can have an impact and where there are interesting challenges, and employers come to us to highlight their own opportunities. For us, as a college, it's critical to listen so we can understand what's happening in industry and respond to it. The college has always been careful to balance the foundations versus the state of the art because what we teach changes so

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quickly. Our students must be able to adapt constantly, and our relationship with industry helps them prepare for that.

iConnect: How have those industry connections and faculty growth impacted the college's research agenda?

JT: When IST started, we wanted a diverse research portfolio, but we let it evolve naturally rather than trying to fit a specific agenda. If you go back to the information, people, and technology core of the college, we knew we didn't want just technology researchers. For every technology researcher we brought in, we wanted someone who could engage in the societal or organizational piece. If a faculty candidate wanted to accept the challenge to join IST, their research became part of the portfolio. It defined itself over the first five years.

AS: It's safe to say that we now have faculty who are collaborating with every other college at Penn State, and those opportunities are growing. For example, our intercollege data sciences degree provides a great opportunity to collaborate with the College of Engineering and the Eberly College of Science about how we can work in data science in ways that don't tie us to a specific college or discipline. We're incredibly well positioned to do that, and there are lots of groups that want to take advantage of our expertise through research collaboration.

iConnect: What are the college's current research priorities?

AS: Being deliberate about our research expertise is one of the things that has really changed. We have three areas right now where we're focused on hiring faculty—privacy and security, data science, and human-centered design. Each of those is so broad that they allow for a lot of opportunities and let us to build some real depth to demonstrate our expertise.

JT: The unbridled, run-wild diversity of research was great at the beginning, but we had to think about what we were going to be known for. Are we going to be known for our breadth of research, or should we focus on depth in certain areas?

AS: Even with those more focused areas, there are still a lot of perspectives to bring from that original people, information, and

technology concept. Each of those perspectives is important for all three of our core areas of research. Much like the early days, we want to make sure that if we're hiring faculty in security, for example, we need people who can think about the human side of security, the technical side of security, and how we can leverage data to help ensure security.

iConnect: Is that approach unique to IST?

AS: Everything we do is different because it has to be.

JT: Right. It's not being different for the sake of being different—it's being different because the world demands that you think about things in varied ways. If you constantly use the same lenses to understand the problems of a changing society, you will eventually fail.

AS: A lot of it comes back to the very foundational idea of the multidisciplinary perspective on these issues and how we keep that perspective as the faculty grows.

iConnect: With all that has changed, both within and outside of IST, is the college where you thought it would be when it was created?

JT: Absolutely. We didn't quite know what the timeline would look like, but I think it's gone exactly where we wanted it to go. It's expanded in concept and in form, which it needs to and should do. I'm glad to see that many of the elements that defined it at the beginning are still in play, but they have been repositioned and rethought of with respect to making a difference in a changing world.

AS: Of those basic foundational pieces, the multidisciplinary perspective—not just being about technology but being about information and solving problems—will live on forever. As technology becomes increasingly pervasive, more data is generated, and more time is spent trying to figure out how we can improve the way that we work, how we can improve the way that we communicate, and how we can change the way people entertain themselves, the things that this college is all about will become increasingly important. The great thing about this field is that you can never really know how things will develop over the long term. The next 20 years are going to be exciting!

Deans of the College of IST



James Thomas
(1999-2006)



Henry Foley
(2006-2009)



David Hall
(2009-2014)



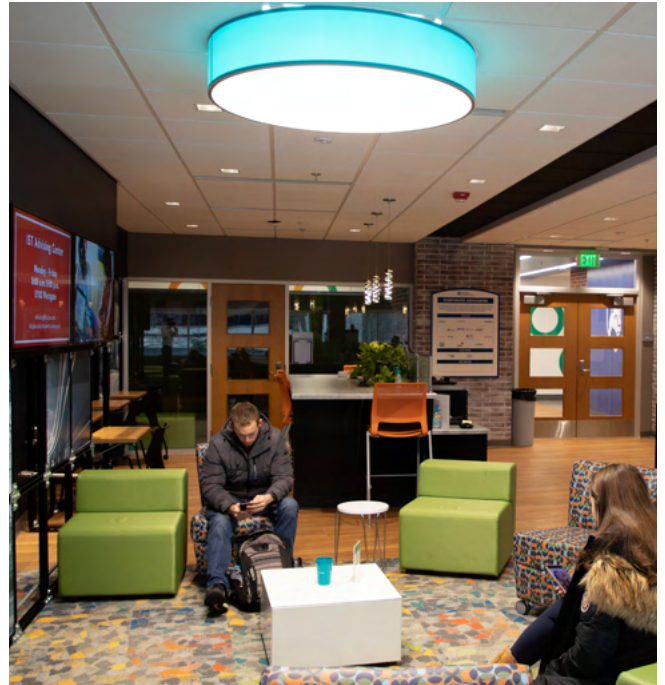
Mary Beth Rosson
(Interim, 2014-2015)



Andrew Sears
(2015-Present)

EXTREME MAKEOVER: 1ST EDITION

Since it opened in 2004, the 900-foot building spanning Atherton Street has been the College of IST's home at University Park. Though returning alumni will immediately recognize the building's exterior, visitors walking its first-floor halls may be surprised by its renewed interior, as recent renovations have provided a functional and cosmetic makeover to the space.



Natural light, bright colors, and work stations create a more welcoming reception area for students awaiting their appointments with Academic Services staff and for guests accessing information about the college's programs.

A colorful graphic brings energy and light to the main hallway while reinforcing the core concepts that students learn in the classroom. The graphic, which extends down the 300-foot corridor, represents a computer network and the flow of information.





An improved working area helps students stay on top of assignments—great for both a collaborative group meeting and a quiet study session. (LEFT)

Additional work stations and soft seating let students relax and socialize between classes in a more open and collaborative space. (CENTER)



Meeting rooms give students private space to interview with recruiters, work together on class projects, or just steal a few minutes of uninterrupted study time. (RIGHT)

Renovations were led by Hoffman Leakey Architects (Boalsburg, PA), Blair Companies (Altoona, PA), CFI: The Knoll Source (Philadelphia, PA), and Penn State's Office of Physical Plant.





BACK TO SCHOOL

IST alumni return to the classroom to teach the next generation of leaders

BY JESSICA HALLMAN

Many College of IST graduates go on to make a major impact through their careers in government and all sectors of industry. A few, however, come back to the classroom to influence the next generation of leaders. There are currently 18 faculty members teaching IST at University Park or through Penn State World Campus who have earned or are pursuing at least one degree from the College of IST. Here, four of them share the reasons they came back to Penn State, bringing their professional experience to the classroom to prepare students for an ever-changing workplace.

Alison Murphy '04 blends a rewarding student experience with industry background



Alison Murphy has been deeply involved with College of IST activities for nearly two decades.

As a 2004 alumna and a member of the college's second graduating class, Murphy was instrumental in establishing a number of IST's clubs. She is one of the original founders of Women in IST and IST Student Government, served as chair for the IST Social Committee, and was involved with getting the college representation in Penn State's Dance Marathon.

Today, as an assistant teaching professor, Murphy continues to add value to the organizations that enrich the student experience. She serves as adviser to the IST Special Living Option, where she lived as a student when it was known as the IST Interest

House. She also holds a leadership role with Penn State Startup Week, recruiting keynote speakers for the college and leading the IdeaMakers Challenge.

While her involvement undoubtedly makes an impact on the students she reaches, she says that the benefits are twofold.

"It keeps me on the pulse of what's important to students, and helps me connect more closely with them," she said.

That drive to connect began even before she enrolled in the College of IST. When she discovered the program at Penn State, she was excited to find a place where she could combine her passion for technology with her knack for solving problems.

"Dean [Jim] Thomas was talking about the connection to industry partners and connections in classrooms," said Murphy. "That impact piece is at the heart of IST and what sets it apart from other colleges."

Her decision to enroll in the college was further justified soon after she started classes. The college's emphasis on problem solving became strongly apparent to her once she completed her first internship at GlaxoSmithKline.

In that role, she was tasked with learning Visual Basic to create an application that helped scientists log experiments. The project was intended to take the entire summer, but Murphy completed it in two weeks. She credits the College of IST with giving her the skills to achieve that feat.

"CONNECTION TO INDUSTRY PARTNERS AND CONNECTIONS IN CLASSROOMS...IS AT THE HEART OF IST AND WHAT SETS IT APART FROM OTHER COLLEGES."

"One thing that IST taught me is that they don't always give you answers, but they encourage you to troubleshoot it on your own," she said. "[My work on that project] was a reflection of what IST instills in students."

Those traits further benefited Murphy after graduation, when she was one of 60 students worldwide accepted into Johnson & Johnson's leadership development program. She was then hired by the company full time, where she managed projects across a number of industries. In that role, she sometimes encountered frustrated technology users. That motivated Murphy to think about furthering her education so she could explore ways to improve systems for the end users.

She initially looked into MBA programs, but ultimately decided to go in a different direction—one that led her back to IST.

"I decided it was time to go back and explore this whole area of research," she said. "Lack of usability is what motivated me."

In 2010, she returned to Penn State to pursue her doctorate. Upon completing her degree in 2015, she applied for a fellowship and began teaching in the College of IST soon after.

"I wasn't sure if I wanted to teach," said Murphy. "But I talked to my mentor, who said that I would know after my first lecture. She was right. This is exactly where I want to be."

Today, in her classroom, Murphy leverages the best practices of the instructors who made an impact on her. She also connects her industry experience with her instruction in technology, helping students to understand the bridge between the two.

"Even if you just impact one student, or find that they are a little more prepared for the real world, it is really rewarding," she said.

Jamie Reep '13 '17g simultaneously teaches, pursues third degree in the College of IST



Jamie Reep may be one of the only individuals who can say he is a current student, alumnus, faculty member, and former staff member in the College of IST.

While he proudly holds this distinction, his path to Penn State was somewhat of an unconventional one.

In his home state of North Carolina, Reep had worked his way up the ranks of a small company where he ultimately assumed the role of vice president of technology. He had established himself in an executive management role without a college degree, crediting a little luck and a lot of hard work.

Ten years later, when he got wind that the company was planning a round of layoffs, Reep was concerned. He knew he wouldn't land a similar job elsewhere without a bachelor's degree, so he turned to Penn State World Campus.

"Penn State is world renowned," he said. "I applied the very next day."

Still working 80 hours a week and balancing his family life, Reep was thrilled to be able to pursue his IST degree online.

And as he'd feared, he got laid off during his final semester of classes. He applied to numerous jobs with no luck.

"One day, I had an epiphany," he said. "I thought, 'Hey, I'm part of World Campus. We have such a strong network. I should see what is available at Penn State'."

He applied for a web developer position in the Eberly College of Science and got an immediate callback. The rest, he said, is history.

Reep moved his family to Pennsylvania, settled into his new position, and earned his bachelor's degree two months later. While things were going smoothly, deep down he had the desire to continue his education.

"I thought that the school thing wasn't too bad," he said. "I really liked learning."

That's when his pursuit of a doctorate began. During his studies, he volunteered in then-Associate Dean Mike McNeese's lab because, as a University employee, he wasn't eligible to work in a wage payroll research position. After a year of graduate courses, Reep was offered a full-time position to manage the lab. He left his role at Eberly and began working in the College of IST in August 2014, during which time his doctoral cohort started.

"Not only was I here in the college getting my Ph.D., but I was an employee at the same time," he said. "It moved all of my bases closer together. I pretty much lived in the building."

Soon after, Reep was offered another opportunity—teaching IST 110 online part time. His lab simultaneously disbanded, and

Reep again found himself looking for a full-time position. He enjoyed teaching and wanted to continue, but learned that the college requires full-time faculty to hold at least a master's degree.

"I put my Ph.D. on hold and got a master's degree and applied as a faculty member," he said. "Here I am. I ended up getting my master's and am five years into my Ph.D. program, which I should be finishing next year. It has been such a long, protracted journey to get here."

It is becoming more common for students to earn their bachelor's degrees in residence, then earn master's degrees online. Reep did the opposite, which he says has given him a unique perspective.

"It's changed the way I approach some topics in introductory courses because I see how they tie into the overall degree progression," he said.

He also said that his experience of online learning and the support he had from his professors carries over into his role as an instructor today. Since he teaches many first-year students, he makes a point to encourage them to seek out their professors to get the help they need.

"I offer them extra credit to come talk to me in my office about whatever they want," he said. "I hope it gets them out of their shells and shows that professors are real people."

"Many of us are teaching because we have a passion to prepare students for their careers after they leave here," he added. "I'm trying to foster that real relationship with my students, and let them know that I'm as invested in their education as they are."

After helping build the college as a student, Marc Friedenberg '06 now prepares students for the fast-changing information age



Marc Friedenberg's interest in the College of IST began during a three-week residential college experience for rising high school seniors. Through that program, Friedenberg had the chance to visit Penn State during a field trip.

"I learned a lot from what I got during that trip in 2001," he said. "It felt like anything was possible. Anything that you could imagine doing or being interested in, there's a spot for it in IST. That was really appealing to me."

Fast forward to the following year, when Friedenberg enrolled in one of the first classes to go through Penn State's then-School of Information Sciences and Technology. He earned both his bachelor's and master's degrees simultaneously in 2006 through the college's integrated undergraduate/graduate program.

"It was an exciting time," he said. "We were building the school, even as students."

During his college years, Friedenberg served in IST Student Government and as the student chairman of the school's first Future Forum career fair. That year, he was among the first students to move into the college's new building after two years of classes in Boucke Building.

"It was like coming home," he said. "It was, and still is, nice to have everybody in one place."

Friedenberg said that the community feel is the main reason that he is back at the College of IST today. Following a career as a lawyer in New York City, he returned to IST in 2012 as an assistant teaching professor.

"The reason I went to law school is because of what I learned in IST 442 with Professor [John] Bagby," Friedenberg said of the course, which focuses on intellectual property, patents, and

"ANYTHING THAT YOU COULD IMAGINE DOING OR BEING INTERESTED IN, THERE'S A SPOT FOR IT IN IST."

copyrights. "That class is what made me interested in the law in the first place. Now it's a class that I teach at IST."

"It's pretty rewarding to be teaching that class," he added. "It's a way to honor the legacy of Professor Bagby. I really respect him."

Now, Friedenberg is one of many College of IST professors making an impact on the next generation.

"Learning networking from Marc Friedenberg was the most useful class I ever took," said James Hatzell '15. "I learned so much, and it helped me break through and teach myself a lot more once I understood how the internet really worked."

Information literacy is something that Friedenberg strives to instill in his students, acknowledging that with smart devices and social media, students are exposed to significantly more material on a daily basis compared to when he was in college.

"There's so much more information and data, and it's important for students to have the ability to distinguish reliable versus unreliable sources," he said. "IST is really well positioned to help students grow the skills to make that determination. That's something that crosses all of our majors. It's a timeless skill."

He put many of the skills that he learned as a student to use during his career as a lawyer, when he worked to solve clients' problems, and also in his 2018 run for Congress, when he utilized sophisticated techniques to analyze voter data in his high-tech campaign.

While that campaign did not yield the results he'd hoped for, he aims to continue his civic engagement while also passing his knowledge and experiences on to future students.

"We are the stewards of Penn State for however many years we're here, then we pass it on to the next generation," he concluded.

A strong community draws attorney Megan Costello '08 back to IST



For Megan Costello, a 2008 alumna, the strong community feel is what initially drew her to the College of IST. Like Marc Friedenberg and Alison Murphy, it is also what drew her back



to become an assistant teaching professor seven years after she graduated.

“Ultimately, I’m comfortable because this is where I spent my undergraduate years, and I just really love it here,” said Costello. “It was nice to be able to come back and be a part of that community again.”

The strong community stems from IST’s small-college atmosphere, which Costello first experienced as a student. She recalls working on group assignments with classmates who became close lifelong friends.

“You stayed with these same individuals and had many of your classes together,” she said. “It was interesting to see the friendships grow out of that, [and see] all these people learning all these things at the same time and getting used to this community for the first time. And then they ultimately stayed friends long after those classes ended.”

As an instructor, Costello now invites some of those former classmates back to speak to her students.

“I want to show students where their education can take them, and what opportunities are out there if you really put your mind to it,” she said.

She was one of the students who took advantage of those opportunities while she was in college. Her childhood dream was to become a lawyer—a career that she pursued after building a solid foundation in the College of IST.

“As somebody who climbed the ranks in IST with a minor in Security and Risk Analysis, it was interesting to be able to leverage my technical background in IST when applying to law school,” she said.

She attended what is now the University of New Hampshire School of Law, then landed a job as a lawyer with a firm in Pittsburgh that ultimately led to a solo career as an attorney. As she further advanced her career, she recognized the unique skillset that she had developed over the course of her academic and professional journey.

“When I graduated law school with a background in IST, law, and cybersecurity, it led me down a path to work with emerging businesses,” she said. “A traditional IST career path would usually lead to being a consultant where you would act as a ‘translator’ between technologists and business people. It was amazing to see how naturally this foundation in IST fit in with a career in law. Whether I discussed the laws surrounding launching a business or protecting intellectual property, my training in IST combined with my Juris Doctorate degree helped me to become a better communicator.”

In addition to counseling clients one-on-one, Costello also took part in several technology law speaking events for groups of lawyers, technologists, and even hackers in the community. It was in these larger events where she discovered her passion for teaching.

Because she had maintained relationships with professors in the College of IST, Costello learned about the opportunity to leverage those skills by teaching a class through Penn State World Campus. After successfully teaching a number of classes online, a full-time, in-residence opportunity arose.

“I had such a great experience reconnecting with people I had worked with as a student that I wanted to come back and be a part of the community again,” she said.

As an instructor, Costello draws on her unique background to help guide students toward the paths they’ll follow after graduation.

“I carved out a different career path than most people from IST or SRA might have,” she said. “It’s interesting to just be a part of this community and to lend a different flavor of expertise to the mix.”

“I’m able to come back and do my part to show them that there are a lot of different opportunities in all these different spaces,” she added. “That’s what keeps me going day to day and year to year.”

VOICES OF IST

We asked our alumni to recount their most memorable experiences and lessons learned as IST students. Here is what a few of them said.



“Colin Murphy and I met in our junior year. We quickly became friends, and although work took us to opposite ends of the country after graduation, it turns out that we both married women from Queens and now live just a few streets away from each other in Connecticut. We’re also both currently serving on the IST Alumni Society Board.”

Mike Eisenreich '03
Global Head of Bloomberg
Marketing Studio,
Bloomberg

“I was alphabetically seated next to a student in the spring of sophomore year. Now, we’re married. So, that’s pretty memorable! During my college years I was heavily involved in the Women of IST program. I was particularly close to my fellow WIST member, Caitlin Doyle, our moderator, Madhavi Kari, and staff member Julie Coughlin. This friendship is important to me because it started almost a decade ago and is still in full force today.”

Colleen (Cwenar) Csech '12
Vulnerability Analysis and
Remediation Manager,
Capital One



I was randomly paired with Caroline McKenna '12 to be a teaching assistant in Jake Graham’s SRA 231 class. We became friends—helping students, grading assignments, and studying for other classes we happened to be taking together. We both pursued careers in cybersecurity after college. She referred me to my current position, and we work a few seats away from each other today! She has been a mentor, friend, and someone I can reach out to for career and life advice. Who knows where I would be without her!”

William “Hoss” Hewitt '13
Information Security Manager,
Capital One

“Technical skills are one piece, but the ability to work successfully in a group and communicate with impact helped me stand out as I prepared myself for my career.”



Ray Mastre '04
Director of IT Consulting, PwC



While I learned a lot about various technology topics in the College of IST, the things I learned that have helped me most in my career have little to do with technology: teamwork and writing/presenting technical topics for technical and non-technical people.”

Damien DeAntonio '06
Senior Computer System Architect

“The dorms with fast networks were on the leading edge of music consumption in 1999. Moving from CDs to MP3s was a huge change in life for everyone. I’m jealous of the students today that can stream any song ever made and don’t know the agony of alphabetizing their CD cases after lugging them back to Penn State each fall.”

Mark Ruzomberka '03
Director of Business Operations,
NBC Sports

“I got a D in IST 297D, and I had to retake that class. When I retook it the following semester I was nervous, but the instructor, John Daughtry, made me feel very comfortable. His coaching allowed me to go out of my comfort zone. I got an A- the second time, and I was a learning assistant for that class for six semesters after that! I learned that failing at something is not a bad thing; it’s a chance to understand something better.”

Sujay Patel '14
IT Risk Senior,
EY

“I learned in the College of IST that you get ahead by teaching yourself. Knowledge is the most powerful tool and once a person understands that and puts their knowledge to practice, it will lead them to success.”

Devin Victory '18
IT Analyst, Technology Leadership
Development Program,
Johnson & Johnson

“I LEARNED HOW TO TALK TO BUSINESS PEOPLE ABOUT TECH. IT’S HARD TO FIND PEOPLE WHO CAN SPEAK BOTH, AND IST REALLY FOCUSED ON TEACHING US THAT.”

James Hatzell '15
Sales Representative,
Skout Secure Intelligence

“While a student at the College of IST, one of the best resources provided was the computer lab. Although not necessarily revolutionary, I had roommates and friends in other majors who wanted to use the IST labs because they were the best on campus. In a more general sense, social media was truly taking off when I was a student, which was a great communication method as well as a revolution of social engagement.”

Ryan Ward '10
Senior Manager, Technology Risk,
EY

“Jan Mahar Sturdevant’s project management class had the single greatest impact on my career. Without her class, I truly believe that I would not have been as successful and ahead of my peers when starting out in consulting after college. Because of IST, I have the confidence to join any project, regardless of its stage in development, and ask the right questions to get up to speed quickly and start contributing meaningfully. The interactions with real companies for our group projects were the greatest experiences that I grew from.”

Caitlin (Doyle) Weiss '12
Manager, Emerging Technology
and Risk, GSK

“I’M SO THANKFUL FOR THE EDUCATION I RECEIVED THROUGH THIS PROGRAM. IT’S HELPED ME THROUGHOUT MY CAREER, AND I COULDN’T BE MORE PROUD TO BE AN ALUMNA.”

Lindsay (Graffius) Langley '13
Product Manager,
Boeing





Scholarships help student get from the hospital to Happy Valley

When he began his freshman year at Penn State Lehigh Valley, Jaskaran Singh was just like any other college student.

Then, in October of his first semester, he was diagnosed with Stage 4 B Cell Non-Hodgkin's Lymphoma.

"It was bad," said Singh. "They said the tumor was the size of a lemon."

With Singh undergoing chemotherapy and spinal taps, and having multiple extended hospital stays, his doctors, professors, and family members suggested that he take time off from his studies.

But Singh was determined. Not only did he complete that first year of college studying IST online through Penn State World Campus, he maintained a perfect GPA.

"The thought of quitting school never crossed my mind," he said. "I was told I should, but I kept telling everyone 'no'."

In addition to his personal determination to continue his education, he credits the flexibility of his professors with helping him to achieve this goal.

"They really went out of their way to make it easy for me," he said.

He also acknowledges that his schooling would not have been possible without the generosity of donors, who created and contributed to scholarships that he earned as an outstanding IST student. With treatment costs totaling hundreds of thousands of dollars, his family had to make significant financial sacrifices. Scholarships were crucial to Singh's ability to remain a student at Penn State.

"My parents stopped working to care for me while I was going through treatment," he said. "It would have come to a choice between school or medical bills if it wouldn't have been for the generosity of others."

Now, as a junior at University Park, Singh has been in remission for nearly two years. With his cancer gone, his outlook on life has changed.

"This whole experience has been a blessing in disguise," he said. "I have learned so much about my friends, my family, and life."

Singh notes two main takeaways that he gained from his illness and recovery. The first is that he can do whatever he sets his mind to, citing his determination to continue college throughout his cancer treatments. The second lesson is to appreciate the little things in life, because he knows how quickly they can be taken away.

"There were days in the hospital where I would lay against the glass window wanting to take a walk outside, but wasn't able to because I was hooked up to medicine for hours," he said. "I took my precious life for granted, but I see it all differently now."

"IT WOULD HAVE COME TO A CHOICE BETWEEN SCHOOL OR MEDICAL BILLS IF IT WOULDN'T HAVE BEEN FOR THE GENEROSITY OF OTHERS."

WANTED: A FEW GOOD MENTORS

The College of IST Alumni Mentor Program matches current IST students with IST alumni from the University Park campus who are leading careers in the students' areas of interest. Alumni mentors provide guidance to students and help them learn about different industries, explore career interests and educational opportunities, and build their professional network. Mentors and students communicate regularly throughout the year in ways that are mutually convenient and beneficial.

Interested in becoming an Alumni Mentor?

- 1** Submit your information to ist.psu.edu/alumni/update.
- 2** Note that you are interested in serving as a mentor.
- 3** A member of IST's Alumni Relations team will contact you to discuss the program.

PAYING IT FORWARD

Once they graduate, IST alumni don't just make an impact in their careers. They also use their professional experiences and industry insights to influence the next generation of students.

This past fall, a group of graduates including (below, left to right) Sujay Patel '14, Georges Nkamaniye '06, Shelly Gasperine '06, and Nicholas Stannard '06 led a panel discussion for IST students in New York City. The trip, organized by the college's Office of Career Solutions and Corporate Engagement and supported through private gifts from IST's alumni and friends, gave students the opportunity to gain insight into the workforce from graduates who were once in their shoes.

"As an alumni group, we care deeply about Penn State and the College of IST," said Stannard, manager of customer success at LinkedIn. "We want students to know that they have an alumni group behind them cheerleading and supporting them to be successful."

Also last fall, EY hosted a professional development series, created exclusively for students in the College of IST. The three-part series consisted of workshops in executive presence, teamwork, and global mindset.

"As an alumni group, we care deeply about Penn State and the College of IST."

"[The purpose of the series] is to help students understand their path and refine their skillset," said Ryan Ward '10, a certified information systems auditor for EY who helped develop the program. "When they go out into the workforce, hopefully they'll be better workers, colleagues, and community members, and that benefits all of us."



BRIANNE LIPPETT/PENN STATE



SAVE THE DATES

Blue-White Game Tailgate

Saturday, April 13, 2019
Westgate Building
University Park Campus
RSVP at ist.psu.edu/20tailgate

IST Alumni and Friends Open House

Saturday, September 14, 2019
Westgate Building
University Park Campus
Invitation to follow

BUILD YOUR IST NETWORK

There are more than 4,500 alumni from the College of IST. Connect with them on LinkedIn by adding the College of IST to your education profile using the instructions below:

1. Log in to LinkedIn.
2. Click on the "Me" dropdown in the top navigation.
3. Click "View profile."
4. Click on the pencil icon to edit your bio.
5. Under the Education section, click "Add new education."
6. Type "Penn State College of Information Sciences and Technology" in the "School" field, and fill out any additional information you wish to share about your time at IST.
7. Click "Save."



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College of Information Sciences and Technology
The Pennsylvania State University
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University Park, PA 16802-6823



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