College of Information Sciences and Technology

Why our graduate program is for you.
Solving society’s most challenging problems—from responding to natural disasters to improving human health and well-being, from protecting national security to making sense of big data, from exploring the connections between gender and technology to utilizing GIS for humanitarian efforts—calls for approaches that transcend traditional disciplinary boundaries. Precise computational models are needed to learn from the vast datasets available. Scientific theory needs to describe the complex relationships we encounter in the ecosystem we live in, networked with an increasing number of virtual friends, collaborators, and customers.

At Penn State’s College of Information Sciences and Technology (IST), you will receive multidisciplinary training to prepare you to address complex issues related to technology and society. Our graduate students come from a variety of backgrounds, including computer science, engineering, psychology, sociology, economics, philosophy, visual arts, and math.

College of IST’s faculty and graduate students engage in cutting-edge research in areas such as human-computer interaction, artificial intelligence and cognition, health- and bio-informatics, and psychology of terrorism, to name just a few. We excel in security informatics (or cybersecurity) research, exploring how we can better protect companies from cyber-attacks and nations from cyber war. We examine information retrieval, search engines, and big data as means to understand complex knowledge and societal and economic relationships. We study cognition and human-computer interfaces in order to comprehend how an individual’s abilities and limitations fit into a connected world full of technology. To succeed in all of these areas, as a graduate student in IST you will develop important skills in math, computer science, and social and behavioral sciences. You will learn how to analyze qualitative and quantitative effects in data; and be able to understand, test, and contribute to scientific theory.

Penn State is ranked by Times Higher Education in the top 1 percent of higher education institutions worldwide. U.S. News & World Report consistently ranks highly Penn State’s graduate schools in disciplines relevant to IST. Among iSchools, a consortium of information schools dedicated to advancing the information field in the 21st century, the College of IST at Penn State is unique in its focus on social technology, cognition, and business.

As a graduate student in the College of IST, you will gain the knowledge and skills needed for success in a career in academia, industry, or government.
Explore our Degree Programs

Ph.D. in Information Sciences and Technology

The Ph.D. program provides foundational training that will prepare you for a career in information science, related sciences, and technology research. The first-year core curriculum will give you the skills and background to conduct interdisciplinary technology research. A flexible elective structure will provide customization for your interests and needs. After the first two years of courses, you’ll engage in further research, leading to a comprehensive exam and thesis proposal, followed by a thesis defense. Typically, you will graduate 4–5 years after you enter the program.

As a Ph.D. student, you will typically work on a series of research projects, publishing work with your advisors and fellow lab members in international conferences and journals, effectively beginning a career in research while still a student. As you progress through the program, you will be advised and become self-directed, rather than managed. Given this level of autonomy, students will find the Ph.D. program particularly challenging and rewarding.

Recent Ph.D. graduates have taken faculty and postdoctoral positions at research universities including Harvard, Columbia, Carnegie Mellon and Texas A&M; they work as research scientists at laboratories such as the U.S. Army Research Laboratory, IBM Thomas J. Watson Research Center, and PARC Innovation Lab (Xerox); and have joined international software companies such as Google and Facebook.

M.S. in Information Sciences and Technology

In the M.S. program, you can engage more deeply in an intellectual conversation with research and science than an undergraduate degree allows. It typically opens up advanced career opportunities; both in industry and as a preparation for a Ph.D. As an M.S. student, you will take many of the same courses as the Ph.D. students, and should produce a thesis project worthy of publication. The M.S. program is designed to be completed in two years.

Master of Professional Studies (MPS)

IST offers three Master of Professional Studies (MPS) online degrees: Enterprise Architecture; Homeland Security, Information Security and Forensics option; and Information Sciences, Cybersecurity and Information Assurance option. In contrast to the research focus of the resident Ph.D. and M.S. programs, the MPS programs are designed for professionals working full-time but seeking advanced credentials. To learn more, visit http://www.worldcampus.psu.edu.

“My research interests span across disciplines and in my graduate studies, I seek to integrate different perspectives for a higher level understanding of real-world issues. Many programs would not enable me the flexibility that is provided by IST, which allows me to work on both basic and applied science research problems.”
—Tristan Endsley, IST Ph.D. candidate, advisor: Dr. Michael McNeese, professor of information sciences and technology
Our faculty and graduate students represent the best Penn State has to offer. Engaged in cutting-edge, multidisciplinary research, IST graduate students participate in and win awards at international conferences, are awarded national research fellowships, and graduate to find placements at top academic institutions, international technology companies, and government research labs.

Every year, our graduate program welcomes impressive graduate students funded by the National Science Foundation as NSF graduate research fellows, Penn State’s Big Data Social Science Integrative Graduate Education and Research Traineeship Program (IGERT), and other prestigious organizations.

Recent best-paper awards and honorable mentions of papers by IST graduate students and their faculty include ACM and IEEE conferences UbiComp, Human Factors (CHI), and Information Privacy, Security, Risk, and Trust (PASSAT). Faculty regularly publish in high-profile venues, author books, and edit journal issues. Both software and web services with large, world-wide user bases come from IST faculty.

**Our faculty include:**

- 1 ACM CHI Lifetime Achievement recipient
- 4 IEEE Fellows
- 2 ACM Fellows
- 8 NSF Presidential/Young Investigators/CAREER recipients
- 3 Fulbright Scholars

In addition to the strengths of the IST community, you will benefit from the broader research infrastructure and support of Penn State, a Research I University that obtains and expends over $750 million in research funding annually. The breadth and excellence of other academic programs at Penn State offers you the unique opportunity to learn from and collaborate with top scholars in allied fields such as psychology, computer science and engineering, women's studies, international affairs, homeland security, electrical engineering, industrial and manufacturing engineering, education,

“**My research combines the fields of education and human-computer interaction. Currently, I am gathering information on instructors across Penn State using a non-traditional approach in their courses called the inverted classroom. My focus is to better understand their use of technology to support this approach. After data collection, I will use the information to design a tool that will better aid instructors in the classroom, ultimately, improving student and instructor experiences with the inverted model.**”

—Joslenne Peña, IST M.S. student. Joslenne works in the Laboratory for Computer-supported Cooperative Learning. Peña’s research focuses on improving online learning experiences
Experience a Diverse and Welcoming Community

Today’s users and creators of technology come from all corners of the globe, and have a broad range of cultural and intellectual backgrounds. At IST, we embrace diversity across many dimensions, including culture, gender, ethnicity, and scientific disciplines. We believe that the best problem solving arises out a diverse population whose experiences shape creativity and innovation. Our graduate population is 40 percent female. Students come from countries such as Brazil, China, India, Iran, Korea, Saudi Arabia, South Africa, Thailand, and Vietnam. Our program is family friendly, offering graduate students new parent accommodations and a college town environment with a variety of educational and extracurricular activities for youth.

“I chose Penn State over other universities because the school seemed to have a genuine desire in the success and wellbeing of their students. Too often in large universities faculty don’t make the time to meet with students. This is far from the truth in IST.”
—Jake Weidman, IST Ph.D. student, adviser: Dr. John Carroll, Distinguished Professor of Information Sciences and Technology

“I've found it interesting, rewarding, and challenging working with people who think very differently from me. The faculty are all very approachable, friendly, and willing to advise or just sit down for a chat.”
—Kyle Williams, IST Ph.D. student, adviser: Dr. Giles

"Many IST professors have open-door policies, which helped me build relationships that would form my first community of scholars."
—Alex Ororbia, IST Ph.D. student, co-advisers: Dr. Giles and Dr. David Reitter, assistant professor of information sciences and technology
Penn State and the College of IST offer generous graduate support in the form of assistantships, fellowships, and scholarships. Many of these awards cover the cost of tuition and stipends, and provide health and dental care coverage. In addition, you could receive support for conference travel, assistance for summer tuition, and new parent accommodations.

Ph.D. students at IST typically are fully funded through research or teaching assistantships throughout the course of their studies, assuming satisfactory progress in the program. Ph.D. students are also normally supported for travel to international research conferences.

“The faculty and staff at IST not only allow graduate students to publish their work and present it at conferences, they encourage it. While I completed my Ph.D., I got the opportunity to publish several papers to journals and conference proceedings, and I was able to present much of this work. I was even able to take advantage of the IST travel award and present some of my work at a conference that was held in Kiev, Ukraine.” —Chris Dancy, Ph.D. IST ’14

External Fellowships and Awards Programs Available
- NSF Graduate Research Fellowship
- Big Data Social Science IGERT Traineeship
- Boren Fellowships
- Smithsonian Fellowship
- Ford Foundation Fellowships

Ph.D. Placement
- Academic: 50%
- Business/Industry: 33%
- Other: 17%

University placement includes:
- Carnegie Mellon University, Chinese Academy of Sciences, Copenhagen Business School,
- Florida Institute of Technology, Harvard University, Michigan State University, Penn State University,
- Texas A&M University, University of Iowa, University of Kansas

Business/Industry placement includes:
- Amazon, AOL, Cisco Research, Facebook, GE labs, Google, IBM Thomas J. Watson Research Center, Microsoft,
- PARC Innovation Lab (Xerox), Raytheon, Samsung R&D, U.S. Army Research Laboratory

The University is committed to equal access to programs, facilities, admission, and employment for all persons. It is the policy of the University to maintain an environment free of harassment and free of discrimination against any person because of age, race, color, ancestry, national origin, religion, creed, service in the uniformed services (as defined in state and federal law), veteran status, sex, sexual orientation, marital or family status, pregnancy, pregnancy-related conditions, physical or mental disability, gender, perceived gender, gender identity, genetic information, or political ideas. Discriminatory conduct and harassment, as well as sexual misconduct and relationship violence, violates the dignity of individuals, impedes the realization of the University’s educational mission, and will not be tolerated. Direct all inquiries regarding the nondiscrimination policy to Dr. Kenneth Lehman III, Vice Provost for Affirmative Action, Affirmative Action Office, The Pennsylvania State University, 328 Boushke Building, University Park, PA 16802-5901; Email: kfl2@psu.edu; Tel 814-863-0471. U.Ed. IST 15-05
IST Ph.D. student Elizabeth Eikey, co-advised by Dr. Reddy and Dr. Erika Poole, assistant professor of information sciences and technology, is a recipient of an NSF Graduate Research Fellowship. Holding a bachelor’s degree in psychology, Eikey’s focus is on using technology to advance research and the understanding of medical conditions, from dyslexia to eating disorders.

Alex Ororbia, IST Ph.D. student advised by Drs. Giles and Reitter, holds a traineeship with the Big Data Social Science IGERT program. Ororbia focuses on artificial neural network models. These models are capable of deep learning from digital, scholarly text. “Nothing is more satisfying than seeing the answers to your questions take the form of tools that can directly impact people,” Ororbia says.

Chris Dancy, Ph.D., who is a former Sloan Scholar graduate of IST’s Ph.D. program and was advised by Dr. McNeese and Dr. Frank Ritter, professor of information sciences and technology, now works as a computer scientist in the U.S. Department of Defense. He describes his research as broadly involving understanding how physiology, emotion, and cognition interact to affect the way we think and behave.

Dancy says, “I’ve used cognitive architectures as a basis for developing computational process models of behavior and also have developed a novel hybrid architecture that adds emotions and a body to the cognition. This allows the development of more tractable models of human behavior that provide an account for and operationalize not only cognitive processes (e.g., declarative memory), but also physiological and affective processes (e.g., stress effects on cognition). I’ve also had the opportunity to work with cyber security and tutoring systems within IST labs as well as brain imaging within a clinical neuropsychology lab. Learning from the multidisciplinary professors in IST really gave me an opportunity to take a unique perspective on my research interests.”

How to Apply

Please prepare early and see our website to plan your application:
http://ist.psu.edu/grad-programs/apply

GraduatePrograms@ist.psu.edu
Research Centers and Labs at IST

IST Research Centers

• Center for Cyber-Security, Information Privacy, and Trust
• Center for Enterprise Architecture
• Center for Human-Computer Interaction
• Center for Network-Centric Cognition and Information Fusion
• Center for Online Innovation in Learning

Related Institutes and Centers at Penn State

• Applied Research Laboratory
• Center for Healthcare Delivery Systems
• Center for Language Science
• Huck Institute of the Life Sciences
• Institute for Computational Science
• Institutes of Energy and the Environment
• Social Science Research Institute

IST Laboratories and Research Groups

• Applied Cognitive Science Laboratory
• Artificial Intelligence Research Laboratory
• Collaboratory for Socio-Technical Scientists
• Computer Supported Collaboration and Learning Laboratory
• Cyber Infrastructure Laboratory
• Cyber Security Laboratory
• Extreme Events Laboratory
• Health Information Technologies Laboratory
• Information Knowledge and Web Research Group
• Information Sciences & Learning Laboratory
• Intelligence Information Systems Research Laboratory
• Knowledge Visualization Laboratory
• Laboratory for Computer-supported Collaboration and Learning
• Laboratory for Intelligent Agents
• Privacy Assurance Laboratory
• Red Cell Analytics Laboratory
• Security, Privacy and Information Economics Laboratory
• Smart Sensing Laboratory
• Spatial Information Laboratory
• User Science and Engineering Laboratory