Connected **Together**

School of Computing and Information

Fiscal Year 2023 Annual Report

University of Pittsburgh

BY THE NUMBERS

Faculty: 65

Staff: 49

Students
(Measured using headcount, which is calculated as one full-time student and one part-time student.)

Total student body:
1,561

Undergraduates: 1,032
Graduate students: 529

Departments:
Computer Science, Informatics and Networked Systems, Information Culture and Data Stewardship

Programs:
Computational Modeling and Simulation Program, Intelligent Systems Program

Institutes:
Sara Fine Institute, Modeling and Managing Complicated Systems Institute, Professional Institute at SCI

U.S. News & World Report Rankings

Undergraduate Computer Science Program:
54th

Library and Information Studies Programs:
17th

- Archives and Preservation: 9th
- Information Systems: 11th
- Digital Librarianship: 14th

Alumni

Total number of alumni:
nearly 26,000

Top countries where alumni reside (by number of graduates):
United States, China, India, Iran, Saudi Arabia, South Korea, Taiwan

Number of graduates in 2022-23:
480

Career Placement of Students

- Corporate partners: Aerotech, BNY Mellon, CGI, Deloitte, Duquesne Light Company, NetApp, Norfolk Southern, PNC Bank, PPG Industries, Thermo Fisher Scientific, UPMC, VISIMO
- **Co-op/internship participation:** approximately 200 students per year
- Co-op/internship placement examples: Federated Hermes, Microsoft, Naval Nuclear Laboratory, National Security Administration, Sheetz, Siemens
- **Undergraduate postgraduation outcomes:** 97% placement rate
- Job placement location examples in addition to our corporate partners: ANSYS, Amazon, Eaton, FedEx, Google, Industrial Scientific, Meta, SAP

Research (FY23)

- Research areas: artificial intelligence, data science, machine learning, security, networking, social computing, human-computer interaction, computer systems, data management, library and information science
- Research expenditures: $8.2 million (projected)
- 63 proposal submissions
- 6.77% increase since FY22 ; 156% increase since FY18

Giving (FY23)

- **Total gifts and commitments:** $1,628,848 (26% increase)
- **Total donors:** 630
- New endowed funds:
  - Mary and Kenneth Antol Scholarship Fund – Kenneth "Ken" (SCI '80) and Mary C.
  - The Kim-Allen Family Women in Computing Conferences Fund – Jamie Allen (SCI '93) and Yeon Kim
  - The Rhodes Family Student Resource Fund – Andrew "Andy" R. Rhodes (SCI '87) and Karen Rhodes
- Gifts (over $20,000) from: Amazon, Meta, Google, Northeastern University, Oracle, Pittsburgh Foundation, PNC Financial Services Group, Inc., Russell Sage Foundation, NEC Laboratories America, Inc., Intel Corporation, NetApp, Inc.
- Pitt Day of Giving 2023
  - $30,290 in gifts
  - 181 donors (2.26% increase in donors from 2022)
  - Secured fourth place on the Raise the Bar Challenge leaderboard to receive an additional $15,000

**Reported data collected from the University of Pittsburgh 2023 Fact Book*

The School of Computing and Information (SCI) just celebrated its fifth anniversary. Since our founding, we've pursued a mission that integrates computing and information with diverse domains to ignite positive change. Recent advances for an array of technologies, such as digital assets and quantum computing, underscore the significance of our interdisciplinary mission.

An exciting example comes to light with the public's attention on ChatGPT. While the technology underpinning this tool is a marvel, what's truly astounding is the transformation underway across nearly every aspect of life due to artificial intelligence (AI). Decisions now unfold in real time on an unprecedented scale, with increasing autonomy, extending their reach to systems that analyze data from varied sources such as social media, historical records, and sensors.

In the AI-driven future, different domains will partner with computing and information. For instance, consider DeepMind's AlphaFold, which is revolutionizing computational biology. In healthcare, models like GPT-4 enhance bedside diagnostics. This transformation extends beyond technological innovation. It's molding a world that was once dreamed of or even feared, possibly altering human behavior, redefining societies, and influencing the dynamics of the natural world.

As we constantly enhance our academic programs to impart essential skills and equip students with the knowledge to shape the future, we emphasize that critical thinking, data analysis, AI ethics, cross-collaboration, and social responsibility are not just buzzwords but powerful tools. These tools empower our students to become architects of a more just society, bridging divides and reducing marginalization. Our commitment extends across the board, striving to ensure equitable access to knowledge inclusive of all learners, regardless of their life journey or major, to thrive in a technology and data-filled world.

In research and engagement, SCI leads the way in pioneering innovative paths, achieving research excellence with students and faculty, and fostering a portfolio of discoveries and innovations. Recent projects, spanning digital democracy accountability to STEM enhancement through natural language processing, highlight our commitment to interdisciplinary research. We collaborate closely with communities, and integrate education, research, application, and community engagement.

As we reflect on the past year, we extend our heartfelt gratitude to our generous donors, dedicated volunteers, valued corporate partners, and incredible alumni for their unwavering support. Our remarkable students, alongside our dedicated staff and faculty, are the backbone of SCI. As we continue our journey together, we not only reaffirm our mission – we proudly proclaim it! Join us on this journey toward a brighter, more inclusive future as we illuminate the path ahead.

Sincerely,

Bruce R. Childers

Bruce R. Childers
Dean and Professor
School of Computing and Information

In the spirit of this message, I collaborated with ChatGPT to write it. It took quite a lot of coaxing through prompt engineering!

THE SCI LEARNING ACADEMY

The computing and information fields move faster every day, and acquiring new knowledge and skills is essential to the work done at SCI. That's why **SCI began planning a new initiative, the SCI Learning Academy**, during the 2021–22 academic year. This program was tailored for SCI's faculty and staff, and will foster leadership in research, education, and operations. Overall, the mission of SCI's Learning Academy is to emphasize SCI's developmental growth and leadership as a school.

Everyone at SCI can be a leader in their fields, and the Learning Academy aims to guide faculty and staff on professional growth and leadership development. Those interested in participating in the first cohort of the Learning Academy had the opportunity to apply or were nominated by a colleague's endorsement. Upon selection, participants were grouped into cohorts that will focus on team projects. All cohorts will attend three part-day group sessions and monthly "Hot Topic" discussions which are also open to all SCI faculty and staff members. An expert in higher education leadership and administration will facilitate the sessions, and corporate advisors, similar to the experts on the "Shark Tank" television show, will assist the groups in planning their projects. At the first session, participants used the DiSC framework to explore communication and work styles. During the final session, teams will present their projects to the "Shark Tank" advisors to receive support for implementation akin to SCI's small grants program. Each team is encouraged to involve outside help, like that of SCI's Board of Visitors or other experts.

Throughout their time in the Learning Academy, cohort members will strengthen their ability to design and plan at both micro and macro levels. At the end of the program, participants will have the opportunity to continue their projects.

This is an opportunity for faculty and staff to participate in building a resource that will be beneficial to the SCI community. Although the inaugural cohort will be selected through nominations, all faculty and staff members will have the opportunity to participate in a future cohort in the academy.

LOOKING BACK ON FIVE YEARS OF DEFENSES: EXPLORING SCI'S RESEARCH INTERESTS THROUGH PATTERNS IN DISSERTATION TITLES

Last year, SCI marked its fifth anniversary. The creation of SCI led to departments formerly housed across several schools becoming integrated into a single school within Pitt. Part of the rationale underlying the formation of SCI was encouraging collaboration and risk-taking in the research that students and faculty pursue.

One area in which some of the practical effects of this change have been registered is in the dissertations that students have defended as they complete their doctoral programs. These titles not only record changes in the various fields of which they are a part, but also the emergent interests within SCI.

Students graduating with their doctorate from the Department of Computer Science have explored a wide range of technical subject matters to complete their doctoral research. In 2022, Tahereh Arabghalizi's "Data-Driven Predictive Modeling and Multi Stakeholder Recommender Systems for the Public Good" and Salim Malakouti's "Hierarchical Multi-Task Learning" were successfully defended during the academic year.

Dissertations from the Department of Informatics and Networked Systems exhibit a similar interest in machine learning and learning sciences. In 2019, students began defending dissertations focused on Bayesian networks. Marcin Kozniewski's "Self-Confidence Measures of a Decision Support System Based on Bayesian Networks" and Jidapa Kraisangka's "Application of Bayesian Networks to Risk Assessment" are both representative of this focus. In more recent years, this interest has manifested itself through works focused on deep learning, as seen in Sara Darei's "Deep Learning for Motion Recognition" and Zhao Sanqiang's "Constructing Tunable Sentence Simplification Models Using Deep Learning," both completed in 2021.

The dissertations completed in fulfillment of the Intelligent Systems doctoral degree evidence a robust engagement with natural language processing (NLP) technology, like Jaromir Savelka's "Discovering Sentences for Argumentation About the Meaning of Statutory Terms" representing NLP-focused work. Over recent years, one can observe a gradual shift toward investigating applications of that technology in the medical field, notably with Jonathan Young's "Deep Learning for Causal Structure Learning Applied to Cancer Pathway Discovery" and Jeya Balaji Balasubramanian's "Knowledge Discovery with Bayesian Rule Learning Methods for Actionable Biomedicine," two additional medically oriented works completed in 2020.

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The Library and Information Science doctoral program values an interdisciplinary orientation, as can be observed in the titles of the dissertations defended during this period. The dissertations that appeared in 2018 and 2019, James King's "The Struggle Continues: Archival Approaches to Civil Rights in Northern Ireland and the American South" and Aisling Quigley's "Striving to Persist: Museum Digital Exhibition and Digital Catalogue Production," both considered the stakes of archival materials, as well as the means used to locate particular items within archives. In 2020, Chelsea Gunn's "Unruly Records: Personal Archives, Sociotechnical Infrastructure, and Archival Practice," continued to theorize the role of archives, while also implicating the broader technical milieu out of which such archives emerge. The dissertations defended in 2022 continued this trend, as demonstrated by Jane Thaler's "Activating Materialities: Identifying Strategies of Acceptable Loss When Remediating Museum Objects Online" and Zoë Faye Pickard's "Representing Difficult Histories in the Museum: Virtual and Augmented Reality as Tools for Communicating Difficult and Dissonant Histories." Analysis of technical developments outside of archives can also be found in Rongqian Ma's "Bridging Sight and Insight: Visualization in Action Among Digital Humanists" and S.E. Hackney's "Between Text and Language: Unicode and the Rise of Emojis," both defended in 2022.

The dissertations that have emerged from the telecommunications program are indicative of the field's hybrid nature, focusing on technical achievements as well as interventions in the policy arena. A research focus on the practical implications of technical developments continued to unfold in 2022 and 2023, with work like Stephanie Rose Jaumarro's "Telecommunications Policy, Regulation, & Enforcement: A Retrospective of FCC Adjudication" and Xin Liu's "Models for Excess Demand in Urban Environments."

As students continue to earn their doctorates from SCI, their dissertation work will continue to innovate the fields to which they contribute. Another look back in 10 years will surely reveal how SCI students have continued to extend these lines of research in novel and unexpected ways.

BRIDGING GAPS, BUILDING COMMUNITY AND CAREERS: WOMEN IN TECH INITIATIVES AT SCI

According to the National Center for Women & Information Technology (NCWIT), **women made up less than a third (27%) of the U.S. professional computing workforce** in 2022. On a collegiate level, women made up 23% of those who earned a bachelor's degree in computer and information sciences nationally in 2021.

SCI has been working to bridge these gaps by offering and supporting programs and organizations for female students going into tech fields.

"SCI supports women in tech from the moment they come in as first-year students all the way through their college career," Mackenzie Ball, the school's Director of Outreach and Alumni Engagement, said. "We really need women to be more represented in the technical field, and in order to do that, it starts with getting technical degrees."

SCI's initiatives for women in tech cover professional development as well as community and confidence building through sponsorships, hackathons, student organizations, and more.

Allison Briggs (SCI '25), a student majoring in computer science, is one of the many students who have benefited from SCI's women in tech initiatives throughout her time at Pitt. Starting involvement with these initiatives before her classes at Pitt started, she is now the Women in Computer Science (WiCS) president for the 2023-2024 academic year.

Briggs began her time at Pitt with one of SCI's annual events, WiCStart. WiCStart is a week-long program that introduces incoming first-year female students to computer science, information science, and SCI in a no-pressure environment. With WiCStart taking place the week before classes begin in the fall term, students who participate are permitted to move into their residence halls early. During the week, students hear from current students, faculty, and industry speakers as they learn about various topics.

"It was such an inclusive environment," Briggs recalled about joining WiCS in her first year. "I wasn't scared to be like 'I have no idea what to put on my resume.' They helped me so much with professional development – my resume and LinkedIn – that I wouldn't have known about alone. I credit a lot to them."

WiCS organizes industry experience, networking, and social events throughout the year, as well as advocacy and outreach events. During SCI Week 2022, WiCS hosted the "Navigating Your Journey in Tech" panel, which included participants from CGI, Deloitte Digital, PNC Bank, and Aerotech. The organization also holds a mentorship dinner each April, where members meet, mingle, and build mentorship relationships with upperclass students and technical professionals.

"SCI supports women in tech from the moment they come in as first-year students all the way through their college career."

- Mackenzie Ball

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Because of the help she received from the organization, Briggs served as business manager for WiCS in her second year before serving in her current role.

"I wanted to give back what I had learned from them, and at that point, I had already gone through and really had built up my confidence because of WiCS," Briggs said. "I wanted to help build up other girls' confidence and be like 'I've gotten this far, you can too.'"

WiCS is far from the only way SCI supports female students pursuing tech. The school sponsors the National Center for Women & Information Technology's Aspirations in Computing for High School Award. The award is for women in grades 9 through 12 who demonstrate interest and achievements in computing, excellent academic performance, and leadership skills.

SCI has also hosted She Innovates, the university's only women-centered hackathon, since 2015. A weekend-long event, students design, bond, and create projects with mentors from academia and industry. She Innovates 2023 took place Feb. 3-5, with 94 students attending and splitting into 25 teams. Sponsors included PNC Bank, NetApp, CGI, and Naval Nuclear Laboratories.

The event "Women in Tech Networking" takes place prior to Pitt's spring career fair. While all students are invited to the networking breakfast, its emphasis is on supporting women and non-binary students. In 2022, more than 60 students participated, with companies including BNY Mellon, UPMC, PPG, SAP, and more attending.

In 2022, SCI funded 20 students to attend the Grace Hopper Celebration, the world's largest gathering of technical women in computing each year. At this conference, technical women gather to network, find or be mentors, create collaborative proposals, and increase the visibility of women's contributions to computing.

These initiatives, events, and organizations centered on women in tech have continued to grow over the years. The first WiCStart had around eight students participate. Now, about 30 to 35 incoming students participate each year. WiCS itself has grown just in the past few years; when Briggs began attending WiCS meetings, only four to five students would go to every meeting. Now attendance has significantly increased with 50 or more students attending each meeting.

"I hope that by doing these programs, events, and initiatives that we've actually created a sense of belonging for those students in SCI," Ball said. "It's important because we need to create that sense of belonging so that they feel like they belong in SCI, complete their major and go out to be awesome rock star CEOs and chief technology officers at all the big tech companies out there."

SCI CELEBRATES ITS PAST, PRESENT AND FUTURE FOR ITS FIFTH ANNIVERSARY

In 2016, members of the University of Pittsburgh's leadership, the Department of Computer Science, and the School of Information Science set out to create a new school at Pitt for the first time in more than 20 years, one that brought together computer science, information science, library information science, and intelligent systems under one roof. **SCI officially launched in July 2017, celebrating its fifth anniversary during the 2022–2023 academic year.**

"Looking back now, we've not only established SCI as a vital hub for education, research, engagement, and service, but also created a vibrant interdisciplinary community, one that is exemplary in its support, collaboration, and impact for its members."

"Looking back now, we've not only established SCI as a vital hub for education, research, engagement, and service, but also created a vibrant interdisciplinary community, one that is exemplary in its support, collaboration, and impact for its members," Dean Bruce Childers said.

SCI hosted events throughout the year which highlighted SCI's community, progress, and commitment to building a bright future. Starting at the end of August 2022 and culminating in May 2023, members of SCI's community gathered at events big and small to celebrate the school's fifth anniversary.

Mini-bashes greeted faculty, staff, and students in the Information Sciences Building and Sennott Square throughout the year. The December mini-bash featured "Pittsburgh Cookie Tables," with cookies made by SCI faculty, staff, and friends.

The school highlighted its departments and the Intelligent Systems Program through the Dean's Spotlight series, featuring faculty, students, and notable alumni sharing their stories and research:

- Department of Information Culture and Data Stewardship: Kelly Richards (SCI '93G), President of The Free Library of Philadelphia – "From Squad Car to Story Time: My Journey through Librarianship"
- Department of Computer Science: Jacob Biehl (Associate Professor, Department of Computer Science & Department of Information Culture and Data Stewardship) and Edward Andrews, MD (Chief Resident, Department of Neurological Surgery, University of Pittsburgh School of Medicine) – "AR in the OR: An Interdisciplinary Journey Towards the Holographic Operating Room"
- Department of Informatics and Networked Systems: Nathalie Baracaldo (SCI '16), Manager AI Security and Privacy Solutions and Research Staff Member, IBM Master Inventor, IBM Almaden Research Center – "Can We Make AI Foundation Models Secure, Private and Trustworthy?"
- Intelligent Systems Program: Vincent Aleven (SCI '92G, '97G), Professor, Human-Computer Interaction Institute, Carnegie Mellon University – "Harnessing Human-AI Synergy to Make the Smart Classroom More Human and Effective"

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The SheLeads Women's Forum kicked off SCI's "Big Bash Weekend" on March 30. The forum spotlighted women in technology with a keynote speaker, panel discussion and reception. Keynote speaker Dr. Catherine Cotell, Technical Director for NSA's Laboratory for Physical Sciences (LPS), R3, shared her career journey.

Provost Ann E. Cudd moderated a panel of distinguished alumni, faculty, and other friends of SCI who shared their lived experiences as women leaders in technology at different points in their careers. Anita Kaul, a sophomore student and President of Women in Computer Science (WiCS) at Pitt during the 2022-23 academic year, introduced Provost Cudd at the start of the panel.

Panelists included:

- Illana Diamond, Managing Partner at 412 Venture Fund LP
- Birizibe Gnassingbe, Senior, School of Computing and Information, University of Pittsburgh & President, Minority Association in Computing (MAC) at Pitt
- Angela Kennedy, President and CEO, Carnegie Speech
- Diane Litman, SCI Professor of Computer Science & Senior Scientist, Learning Research and Development Center
- Audrey Russo, President and CEO, Pittsburgh Technology Council

SCI faculty, staff, and friends gathered in the William Pitt Union on March 31 for the largest fifth anniversary event of the year, the Big Bash reception. Fred Brown (SOC WK MSW '98), President & CEO of The Forbes Funds and member of SCI's Board of Visitors, was the celebration's featured speaker. As an alum who is deeply involved across campus, he spoke about his initiative to create better collaborations between funders, nonprofits, and community leaders by utilizing a scorecard developed in partnership with Pitt and a regional dashboard to ensure inclusion and equity keep pace with innovation and growth in our region. The City of Pittsburgh presented SCI with a proclamation naming March 31 "SCI Day." The school also honored emeritus faculty and former staff and shared memories made over the years.

On April 1, SCI celebrated its students at Phipps Conservatory and Botanical Gardens. Students, faculty, and staff enjoyed lunch as they mingled and walked through the conservatory's exhibits.

The fifth anniversary celebrations wrapped up in May with a final mini-bash and a PNC Family Night, where SCI faculty, staff, and their families enjoyed a Pittsburgh Pirates game followed by fireworks.

"All of these events have helped remind us of just how much we accomplished in five short years," Childers said. "Our fifth anniversary was a tremendous success, and I look forward to what the future holds for us."

SCI STUDENTS ENGAGE IN HANDS-ON LEARNING IN PITTSBURGH AND ABROAD

Students within SCI are getting involved in the wider community, taking on important work that not only provides service to others, but also helps them master the skills they are acquiring in class. Through giving back to the community around them, **SCI students can apply the skills they gain in class to real-world problems, as well as gain a sense of purpose and belonging**. These experiential learning opportunities are more than occasions for SCI students to volunteer. They also expose students to aspects of Pittsburgh and the wider world that they may not have encountered otherwise.

One avenue for helping students gain access to hands-on learning is iServe. Run in collaboration with the Office of PittServes, iServe is a program that pairs SCI students with nonprofit organizations and government agencies. Students' service assignments span anywhere from eight to 10 weeks. Students attend a matching event, during which they can learn about the various opportunities for service available to them. They work diligently with their partner organizations to apply their technical expertise to help address the problems that their organizations want to solve.

One student, Sarina Saran, participated in an internship with a company called re:Bloom, a nonprofit digital agency that helps women and minority-owned businesses share their message with a wider audience. Saran operated re:Bloom's social media accounts, helping to grow the organization's online presence. She said that she would create seasonally themed content, such as publishing a December gift guide. Saran also created content that promoted re:Bloom's customers and the business itself. While much of the internship was focused around creating social media content, Saran was also able to utilize some of the technical knowledge she acquired while studying at SCI.

"I did a presentation for their board of directors at the end of the semester," Saran said. "And that had a lot more focus on their analytics and what actually worked on their Instagram. I was analyzing and noticing which kind of posts drove the most engagement."

Saran reported that the posts that received the most engagement were posts about re:Bloom itself, theorizing that they were most successful because "it's a nonprofit getting its name out there and letting people know what they do." She said that she also used her knowledge of web design to advise re:Bloom on how to improve the user experience on their website. Saran said that it was great to work on behalf of an organization that supports women- and minority-owned businesses.

"It felt really cool to represent Pitt for a professional organization like that," she said.

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Another student who volunteered through iServe, Ly Nguyen, worked with an organization called Friends of South Side Park (FOSS), "a volunteer grassroots organization dedicated to the ecological restoration and improvement of South Side Park's native wildlife, while preserving and promoting its rich history of an industrial past." Nguyen said that her role primarily consisted of running FOSS's social media accounts as well as crafting engaging content, such as interactive quizzes and "informative posts about the biodiversity of the park."

"I'm grateful for the opportunity to assist an underrated organization so vital in creating a safe, healthy environment and community among Pittsburgh's residents in the South Side," Nguyen said.

Though not conducted under the auspices of iServe, another pair of students have engaged in remarkable international service work. Luke Charlesworth, a computer science major, and Christopher Kefalos, a student from the Swanson School of Engineering, collaborated to share their expertise abroad, traveling to Sierra Leone to help expand educational access in the country. Charlesworth and Kefalos spent five weeks working directly with the District Education Committee (DEC) Kabala Primary School. During this period, they installed a solar system on the school's roof and distributed virtual databases of academic materials to classrooms.

"Last May, we embarked on an epic adventure to Sierra Leone's northern district of Koinadugu, intent on piloting a remote-learning system that we believe can empower marginalized students across West Africa," Charlesworth said. "Our intention was to teach the students and teachers on how to utilize and benefit from this technology now at their disposal, but it was us who ended up doing most of the learning about a culture, environment, and way of life so vastly different from our own."

Charlesworth said that they plan to continue working with DEC Kabala in the future.

"Looking ahead, the Virtual Learning Center we implemented in DEC Kabala will start off hosting 60 classes of six students each on a tri-weekly basis throughout the 2023-2024 school year, hopefully resulting in educational improvements across STEM subject areas; further data validation and funding will provide these students with more opportunities for academic growth," he said.

SCI is committed to preparing students to make an impact in their communities and the wider world. Through entering the field and applying their technical skills to real-world problems, they not only reinforce the knowledge they have acquired in the classroom, but also give back to important causes.

"At the end of my first year back in the chair's office, I'm very excited about the future of our department. All new faculty members are excelling in grants, teaching, publications, and student advising. The number and variety of joint programs we offer keeps increasing, from quantum computing to computational biology and many others in between. The future is bright after almost six decades of excellence."

Department of Computer Science

Daniel Mossé, interim chair

Department of Computer Science

The Department of Computer Science celebrated 57 years of teaching and research excellence in 2023. Our alumni can be found around the globe, making changes to the ways we administer healthcare, conduct business, provide education and more in startups and small and large companies. Four new faculty were hired. Our research is supported by a growing number of internal and external grants and faculty continue to receive best paper awards at various conferences.

Research Highlights

Assistant Professor awarded NSF CAREER Award for Machine Learning Research

In June 2023, Assistant Professor Xiaowei Jia received the National Science Foundation (NSF) CAREER Award for his work on the project titled "Combining Machine Learning and Physics-based Modeling Approaches for Accelerating Scientific Discovery." This research is about knowledge-guided machine learning (ML), and the growing interest in using ML to help solve many real-world problems, like ensuring food and water security or simulating fluid dynamics.

“Much like technology itself, the Information Science discipline evolves at a rapid – almost dizzying – pace. The Department of Informatics and Networked Systems (DINS) strives to ensure that our academic programs and research are at the forefront of that evolution.”

Department of Informatics and Networked Systems
Daqing He, chair

Department of Informatics and Networked Systems

A signature aspect of DINS is the breadth of topics covered in our coursework and research portfolio, which are considered from both a focus on systems and on people. DINS faculty have garnered national and international recognition for their work on exploring more sophisticated intelligent systems, misinformation on the Web, supportive learning environments for underrepresented groups, the safety of critical infrastructure from cyberattacks, innovative technologies to support chronic illnesses or physical impairments, and quantum computing.

Research Highlights

Assistant Professor earns NSF Career Award

Lingfei Wu, an assistant professor in the Department of Informatics and Networked Systems, has earned the prestigious National Science Foundation CAREER Award for probing into the distinct roles research teams play in unfolding the advance of science and technology. Dr. Wu’s project, “How Does Core Scientific Knowledge Advance Understanding Team Innovation at the Foundations of Sciences,” was funded for $565,087 for a five-year period, beginning in March 2023.

Pitt redesignated as a National Center of Academic Excellence in Cyber Defense

The University of Pittsburgh, through SCI’s Laboratory of Education and Research on Security Assured Information Systems (LERSAIS), has been redesignated as a National Center of Academic Excellence in Cyber Defense (NCAE-CD).

The NCAE designations are awarded by the National Security Agency (NSA) and Department of Homeland Security (DHS) to regionally accredited academic institutions offering cybersecurity-related degrees. Our redesignation comes after successfully revalidating the MSIS “Security Assured Information Systems” specialization in the Department of Informatics and Networked Systems in March. The University of Pittsburgh continues to be one of 17 institutions in Pennsylvania designated as an NCAE-CD with graduating students ready to join the cybersecurity workforce.

"The 2022–2023 academic year was a collaborative and successful year for ICDS faculty, students, and alumni. Together they created greater awareness of our two degree programs – MLIS and PhD LIS – within SCI, within Pitt, and within the greater professional community through their innovative online pedagogy, research, and scholarship; presentations at conferences; and leadership in service to communities and professional organizations."

Department of Information Culture and Data Stewardship

Mary Kay Biagini, chair

Department of Information Culture and Data Stewardship

Supporting the University mission of teaching, research, and service for society's gain, the Department of Information Culture and Data Stewardship faculty focus on instruction and socially embedded research. This scholarship in computing and information is built on over 100 years of scholarly and pedagogical leadership at the intersection of information, human needs, ethics, and communities.

Research Highlights

New Course Developments and Publications

Matthew Burton, teaching assistant professor, was named a Fellow of the University of Pittsburgh Center for the Humanities and is developing and will teach a new course Writing Machines with Dr. Annette Vee of the English Department. He also carried out a Pitt Seed Grant, "Creating a Data Science Community," in collaboration with Gesina Phillips of the University Library System. Additionally, Nora Mattern, the director of the Sara Fine Institute, completed work on a National Science Foundation grant, "Building an Open-Source Civic Data Ecosystem," and was awarded a new IMLS-funded grant, "Civic Data Literacy for Libraries: A Civic Switchboard Institute." Mattern also developed a new course for DINS undergraduates titled Curating Digital Data. Marcia Rapchak, teaching assistant professor, led collaborative efforts with the School of Education on the newly approved 12-credit Instructional Design Certificate.

“Last year, following a rapidly rising number of applications to the master’s program in Intelligent Systems, we expanded the capacity of the master’s program and better oriented it to the expectations of the current round of applicants. In the past, coursework was mostly focused on master’s students who would like to follow it with a doctoral program. Since the majority of applicants now want to go to AI and data science industries, we updated the coursework to better address the needs of these students. We will now be able to admit more students and welcome prospective applicants.”

Intelligent Systems Program
Peter Brusilovsky, director

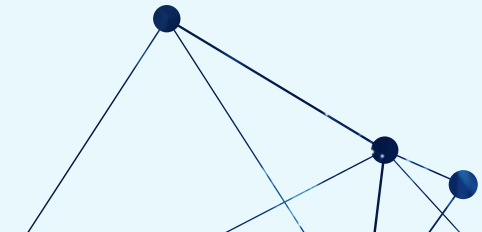
Intelligent Systems Program

The Intelligent Systems Program (ISP) has been a premier multidisciplinary graduate program at the University of Pittsburgh dedicated to applied artificial intelligence (AI) for more than 30 years. Many of Pitt’s acclaimed schools are represented through its associated faculty, including the School of Health and Rehabilitation Sciences, School of Medicine, School of Law, School of Education, School of Computing and Information, Swanson School of Engineering, and Kenneth P. Dietrich School of Arts and Sciences. ISP offers a well-balanced foundation in the fundamentals of AI with advanced research and training in many disciplines, including computer science, biomedical informatics, cognitive psychology, information science, education, and law.

Research Highlights

Professor Diane Litman Receives NSF Grant for Reflection-Informed STEM Learning and Instruction

Diane Litman, professor in the Department of Computer Science, received a research grant from the National Science Foundation for her project “Developing and Optimizing Reflection-Informed STEM Learning and Instruction by Integrating Learning Technologies with Natural Language Processing.” This project aims to enhance student learning and engagement in large lecture STEM courses by developing, optimizing, and evaluating a digital learning environment called CourseMIRROR.



FACULTY AND STAFF

Unit-Level Accolades and Recognitions

- Led by **Ahmed Ibrahim**, a teaching assistant professor in the Department of Informatics and Networked Systems, Pitt was redesignated as a National Center of Academic Excellence in Cyber Defense by the National Security Agency and Department of Homeland Security through the revalidation of the security-assured information systems specialization in the Master of Science in Information Science program.
- SCI was designated as part of the United States Army War College Fellows program; two Army fellows joined SCI in fall 2023.
- SCI received six Pitt Momentum Awards, the largest number of Momentum Awards across Pitt.

Recent Faculty Additions (started in 2022-23)

- **Jonathan Misurda**, assistant teaching professor, Department of Computer Science
- **Longfei Shangguan**, assistant professor, Department of Computer Science
- **Angela Stewart**, assistant professor, Department of Informatics and Networked Systems
- **Pengfei Zhou**, assistant professor, Department of Informatics and Networked Systems

Recent Faculty Additions (starting in 2023-24)

- **Marina Barsky**, teaching assistant professor, Department of Computer Science
- **Frances Corry**, assistant professor, Department of Information Culture and Data Stewardship
- **Nadine von Frankenberg**, teaching assistant professor, Department of Computer Science
- **Aakash Gautam**, assistant professor, Department of Computer Science and Department of Information Culture and Data Stewardship
- **Lorraine (Xiang) Li**, assistant professor, Department of Computer Science
- **Ryan Shi**, assistant professor, Department of Computer Science

Faculty Departures

- **Malihe Alikhani**, assistant professor, Department of Computer Science
- **Rebecca Hwa**, professor, Department of Computer Science

Faculty Promotions, Appointments, and Reappointments

- **Wonsun (Daniel) Ahn** was reappointed as teaching assistant professor in the Department of Computer Science.
- **Amy Babay** was reappointed as assistant professor in the Department of Informatics and Networked Systems.
- **Mary Kay Biagini** was reappointed as chair in the Department of Information Culture and Data Stewardship.
- **Jacob Biehl** was promoted to associate professor with tenure in the Department of Information Culture and Data Stewardship and the Department of Computer Science.
- **William Garrison** was reappointed as teaching assistant professor in the Department of Computer Science and as assistant dean for the School of Computing and Information.
- **Chelsea Gunn** was reappointed as teaching assistant professor in the Department of Information Culture and Data Stewardship.
- **Ahmed Ibrahim** was promoted to teaching associate professor in the Department of Informatics and Networked Systems.
- **Xiaowei Jia** was reappointed as assistant professor in the Department of Computer Science.
- **Sherif Khattab** was reappointed as teaching assistant professor in the Department of Computer Science and as associate chair for the Department of Computer Science.

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FACULTY AND STAFF

Faculty Promotions, Appointments, and Reappointments *(continued)*

- **Stephen Lee** was reappointed as assistant professor in the Department of Computer Science.
- **Leona Mitchell** was appointed as director of undergraduate programs in the Department of Informatics and Networked Systems.
- **Luis de Oliveira** was reappointed as teaching assistant professor in the Department of Computer Science.
- **Balaji Palanisamy** was reappointed as associate chair in the Department of Informatics and Networked Systems.
- **Robert Perkoski** was reappointed as teaching assistant professor in the Department of Informatics and Networked Systems.
- **John Ramirez** was reappointed as director of undergraduate programs in the Department of Computer Science.
- **Xulong Tang** was reappointed as assistant professor in the Department of Computer Science.
- **Lingfei Wu** was reappointed as assistant professor in the Department of Informatics and Networked Systems.
- **Joseph Yurko** was reappointed as director of undergraduate data science education in the School of Computing and Information.

New Staff Hires

- **Miranda Acosta**, department coordinator, Department of Computer Science
- **Thais Dias Safe Carneiro**, director of professional graduate programs
- **Becky DiPerna**, faculty affairs manager
- **Lynnsey Doane**, student success coordinator
- **Laura Finkle**, academic records specialist
- **Anna Hermann**, undergraduate academic advisor
- **Susan Orr**, director of communications and media
- **Emily Park**, undergraduate academic advisor
- **James Petraglia**, department coordinator, Department of Informatics and Networked Systems
- **Lesley Smith**, financial assistant, research

Staff Promotions, Appointments, and Recognitions

- **Mackenzie Ball**, director of outreach and alumni engagement, was named senior personnel on a National Science Foundation grant for the STEM PUSH Network project.
- **Brandi Belleau**, director of academic records, was awarded the 2023 Pitt Sustainability Award.
- **Trudy Newring-Evans**, budget and payroll specialist, was named Alumna of the Decade at NEED's Diamond Jubilee, representing the 1970s as she received the Negro Emergency Education Drive Scholarship in 1975.

Staff Departures

- **Elly Bresz**, research administration manager
- **Patrick Martyn**, academic records specialist

Selected Faculty Awards, Recognition, and Accolades

- **Dmitriy Babichenko**, clinical associate professor, Department of Informatics and Networked Systems, received the 2023 Innovation in Education award for "Interactive Python Assignment Designer and Autograder."
- **Mary Kay Biagini**, chair and associate professor, Department of Information Culture and Data Stewardship, received a $99,999 grant from the PA House of Representatives and Senate through the PA Department of Education to determine whether all Pennsylvania children have access to a school library and librarian regardless of zip code.
- **Matthew Burton**, teaching assistant professor, Department of Information Culture and Data Stewardship, was named a Fellow of the University of Pittsburgh Center for the Humanities and is developing a new course called "Writing Machines."

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FACULTY AND STAFF

Selected Faculty Awards, Recognition, and Accolades *(continued)*

- **Peter Brusilovsky**, director, Intelligent Systems program and professor, Department of Informatics and Networked Systems, received the Chancellor's Distinguished Research Award for a collected body of internationally acclaimed research, as well as a 2023 Innovation in Education award for "An Interactive Electronic Textbook for Python Programming and Data Science Courses."
- **Bruce Childers**, dean and professor, was nominated, selected for, and graduated from Leadership Pittsburgh XXXIX, a nine-month community program for regional leaders.
- **Morgan Frank**, assistant professor, Department of Informatics and Networked Systems, was published in Nature Communications for a paper titled, "Location is a Major Barrier for Transferring U.S. Fossil Fuel Employment to Green Jobs."
- **Xiaowei Jia**, assistant professor, Department of Computer Science, received a Pitt Momentum Award for the project titled, "Preserving Fairness of Deep Learning Under Environmental Changes."
- **James Joshi**, professor, Department of Informatics and Networked Systems, was named a Fellow of the Institute of Electrical and Electronics Engineers.
- **Stephen Lee**, assistant professor, Department of Computer Science, received a Pitt Momentum Award for the project titled, "Emission-Management for Sustainable Computing Systems."
- **Yu-Ru Lin**, associate professor, Department of Informatics and Networked Systems, and her team were selected as one of six U.S. Department of Defense and university teams to pursue fundamental social science research through a unique program under the DoD's Minerva Research Initiative. Lin's team will explore "Characterizing and Countering the Normalization of Extremism and Communal Violence in Cyber-Social Space."
- **Rebecca Morris**, teaching associate professor, Department of Information Culture and Data Stewardship, published her book "The School Librarian's Compass: Stories and Reflections to Help You Find Your Way."
- **Daniel Mossé**, professor, Department of Computer Science, won the Provost's Excellence in Doctoral Mentoring Award.
- **Kaushik Seshadreesan**, assistant professor, Department of Informatics and Networked Systems, received a Pitt Momentum Award for the project titled, "Improving Quantum Sensing Using Variational Quantum Optimization Algorithms."
- **Longfei Shangguan**, assistant professor, Department of Computer Science, received a Pitt Momentum Award for the project titled, "Bringing Mobile Health to the Underdeveloped World."
- **Xulong Tang**, assistant professor, Department of Computer Science, and collaborators from Pitt and NVIDIA, had three papers accepted to the 29th International Symposium on High-Performance Computer Architecture (HPCA-2023).
- **Pengfei Zhou**, assistant professor, Department of Informatics and Networked Systems, won the 2022 Test of Time Award at the ACM Conference on Embedded Networked Sensor Systems (SenSys).

FACULTY AND STAFF

Selected Faculty Grants

- **Malihe Alikhani**, assistant professor, Department of Computer Science

Amazon; National Science Foundation

Studying inclusive conversational artificial intelligence; hosting a dialogue with robots workshop

- **Peter Brusilovsky**, director, Intelligent Systems Program

National Science Foundation

Supporting the work of the Computer Science Education Hub's social and technical infrastructure to accelerate research on teaching and learning of computing disciplines. This research is in collaboration with Carnegie Mellon University, North Carolina State University, and Virginia Tech.

- **Yu-Ru Lin**, associate professor, Department of Informatics and Networked Systems

Air Force Office of Scientific Research

Developing a 'network theory of distrust' that will expand upon Lin's research into the roles and impact of biases in information ecosystems.

- **Kaushik Seshadreesan**, assistant professor, Department of Informatics and Networked Systems

Cisco Systems

Studying continuous variable entanglement switching, which could be used to help realize a quantum internet.

- **Angela Stewart**, assistant professor, Department of Informatics and Networked Systems

National Science Foundation Racial Equity in STEM Grant

Researching how to position Black girls as artificial intelligence creators in out-of-school learning environments.

- **Lingfei Wu**, assistant professor, Department of Informatics and Networked Systems

National Science Foundation CAREER Grant

Addressing the urgent need to understand how individual scientists can learn, progress, and effectively innovate in teams.

Priming Grant Recipients

- **Hassan Karimi,** professor, Department of Informatics and Networked Systems
- **Luís de Oliveira**, teaching assistant professor, Department of Computer Science

STUDENTS AND ALUMNI

Selected Student Awards, Recognition, and Accolades

- **Luke Charlesworth (BS ’24)** was a Priming Grant Recipient.
- **César Guerra-Solano (BS ’26)** received a Stamps Scholarship, an internationally prestigious honor.
- **Emma Kagan (MLIS ’23)** received the University of Pittsburgh Outstanding School Library Certification Program Student Award at the 2023 Pennsylvania School Librarians Association Conference.
- PhD students **Shalani Dilinika Jayamanne Mohottige** and **Sneha Anil Kumar Vaidhyam** presented posters at the Association of Library and Information Science Education Conference in 2022.
- PhD student **Ning Zou** and **Daqing He** (professor, Department of Informatics and Networked Systems) won a Best Short Paper Award at the 2023 Conference on Human Information Interaction and Retrieval.

Selected Alumni Awards, Recognition, and Accolades

- **Charlotte Chung (MLIS ’21)** was awarded the Innovative Reading Grant from the American Association of School Librarians, a division of the American Library Association to purchase books in languages other than English to serve her growing population of English Language Learning students in Morgantown, WV.
- Two MLIS alumni have been recently appointed as directors of public libraries: **Vincent D’Alesio**, director, Carnegie Library of McKeesport; **Ruth Neely**, director of libraries, Sewickley Academy.
- **Steven Haines (A&S ’20, MLIS ’24)** continued his media archaeological specialization to ensure the survival of rare films and Pittsburgh’s cultural heritage.
- **Maria Harrington (MSIS ’90, PhD ’08)** published her paper, “Virtual Nature Makes Knowledge Beautiful” in the Frontiers in Virtual Reality journal.
- **Jennifer Moon-Chung (MLIS ’23**) was awarded a Data Librarianship Internship in the Ecology of Infectious Disease at the National Center for Data Services funded by the National Library of Medicine.
- **Bea Saba (MLIS ’98)** received the 2023 Texas Library Association Outstanding Services to Libraries Award.

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