

Together Ahead

School of Computing
and Information

Fiscal Year 2022 Annual Report

BY THE NUMBERS*

64 Faculty

45 Staff

1,515 Total Student Body

1,051 Undergraduate Students

464 Graduate Students

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 for Interpersonal Behavior and Technology, Modeling and Managing Complicated Systems Institute, Professional Institute at SCI



U.S. NEWS & WORLD REPORT RANKINGS

54th Undergraduate Computer Science Program

17th Library and Information Studies Programs

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

ALUMNI

Nearly 25,000 Alumni

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

441 Number of graduates in 2020-21

CAREER PLACEMENT OF STUDENTS

Corporate partners: Eaton; UPMC; SAP; Deloitte; CGI Inc.; PPG Industries, Inc.; The PNC Financial Services Group, Inc.; Cadence Design Systems, Inc.; NetApp; Norfolk Southern Corp.; Duquesne Light Company; Aerotech, Inc.

Co-op/internship participation: approximately 200 students per year

Co-op/internship placement examples: Google, Amazon, Facebook, SAP, FedEx, U.S. Steel Corporation, PPG

Undergraduate postgraduation outcomes: 95% placement rate

Job placement location examples: PNC, University of Pittsburgh, Amazon, Deloitte, The Bank of New York Mellon Corporation, DICK's Sporting Goods, UPMC

RESEARCH

Research areas: artificial intelligence, data science, machine learning, security, networking, social computing, human-computer interaction, computer systems, data management, library and information science

\$7.68 million Research expenditures

16 New grant awards

106 projects; 34 funders

38% increase since 2019-20

GIVING

\$1.12 million (11.9% higher than FY 2021)
Total gifts and commitments

645 Total donors

Pitt Day of Giving

- 177 donors (51.3% increase in donors from 2021)
- Secured third place on the Raise the Bar Challenge leaderboard
- **Significant gifts from** Scott Thornton (BS '93); The Heinz Endowments; the Claude Worthington Benedum Foundation; Alfred Moyé, PhD; PNC; Debra King (MSIS '85); the Posner Foundation of Pittsburgh; NetApp; and Gail Austin (BS '83)

Message from the Dean

At its simplest, a journey is getting from point A to point B. Yet the word suggests more to me: great memories, going somewhere with friends, discovering something new, the excitement of the unknown. It also suggests continuing evolution.

The University of Pittsburgh School of Computing and Information (SCI) has been on a journey in librarianship, computer science, information science, and intelligent systems for more than 120 years. In its current form, SCI engages with education and research at the intersections of computing and information with the social, natural, and built worlds. Underpinning these disparate efforts is the goal of positively transforming the lives of our students, fostering an equitable society, and advancing our disciplines for the common good.

This year is a journey waypoint: It is SCI's fifth anniversary. The anniversary falls at a transformative moment in the ways that artificial intelligence, information, and data permeate and affect—whether for good or harm—nearly every facet of life. It's a chance to find new ways to encourage students with many lived experiences to be equipped to navigate, influence, and lead as citizens in a data-fueled democracy. It also is a chance to reflect on how our research may inform interdisciplinary approaches to grand challenges in education, health care, economic stability, social issues, and transportation and the built environment.

As we consider what lies ahead for SCI, there is much to celebrate. Research productivity increased 37% in two years and is at an all-time high. Multiple collaborative initiatives started, such as a National Science Foundation Innovation Center dedicated to “strategic research and workforce development projects to transform spectrum management”; a project to design a content moderation system for social media to foster positive

dialogue; and a new effort to use sports data to increase data fluency, data literacy, and data science competency. Twenty-five doctoral students graduated with placements in both academia and industry. We opened a new technology-filled facility at 130 N. Bellefield Ave. to inspire collaboration.

In fall 2022, SCI had 1,051 students pursuing undergraduate majors in computer science, computational biology, computational social science, data science, digital narrative and interactive design, and information science. The undergraduate computer science program rose six spots in the U.S. News & World Report ranking. An innovative undergraduate major is beginning at the forefront of quantum computing. Taking the next step in their career journeys, 95% of the SCI graduating class started a job, a service program, a new business, or graduate school. The median salary of graduating students was the highest ever.

At the graduate level, the Graduate Certificate in Applied Data-driven Methods (ADDM) was launched for individuals without a computing or data background to gain and apply data skills in a variety of work areas and disciplinary settings. Starting in fall 2023, SCI is poised to offer nearly 200 tuition scholarships to learners from Southwestern Pennsylvania, supported by multiple funders, to pursue the ADDM certificate to prepare for data-centric occupations. Students in the Master of Library and Information Science program may take ADDM courses to gain a powerful mix of data and librarian skills. With the easing of the pandemic, more international students started their educational journey at SCI this year than last year. Master's student enrollment was up by 22% for fall 2022.

We also forged new alumni relations with leadership from the SCI Board of Visitors and SCI Alumni Board. The mentorship program created by the alumni board aims

to connect current students and alumni to network, pursue their career paths, and find professional opportunities. These boards act as advocates for and ambassadors of the school, advancing philanthropic efforts and supporting the school's journey and mission to continually invent the future.

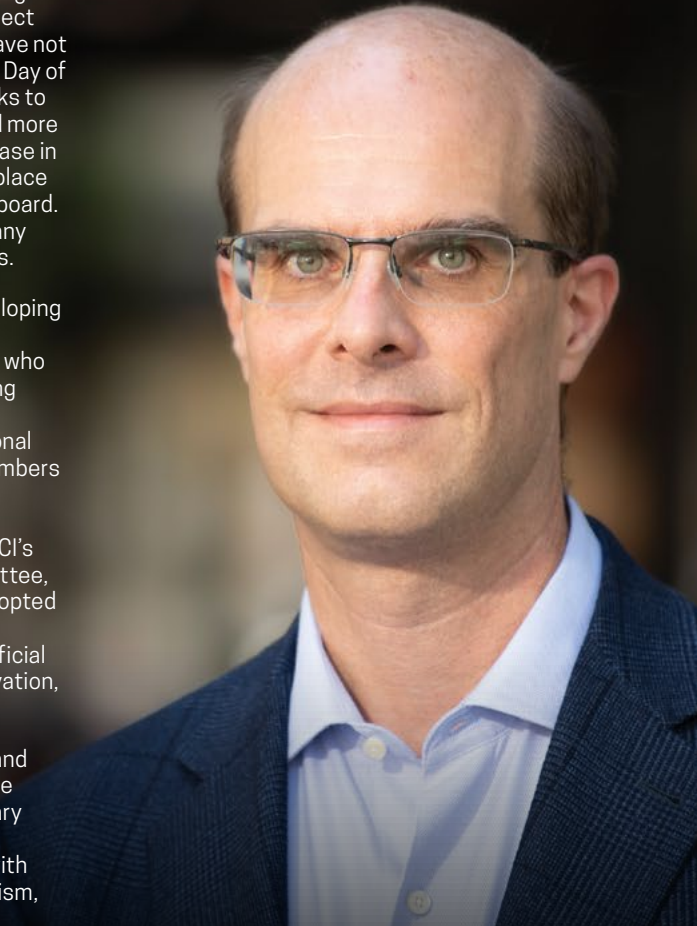
As SCI's journey unfolds, we are learning from one another. Our efforts to connect students, faculty, staff, and alumni have not gone unnoticed. During the 2022 Pitt Day of Giving, SCI reached new heights thanks to more than 170 supporters who raised more than \$43,000. SCI saw a 51.3% increase in donors from 2021 and secured third place on the Raise the Bar challenge leaderboard. These contributions benefit SCI in many ways and directly impact our students.

SCI also was busy recruiting and developing staff and faculty. Critical to SCI's accomplishments are staff members who galvanized student outcomes, learning opportunities, business operations, research administration, and operational agility. SCI recruited 12 new staff members in undergraduate programs, student advising, records management, and administration. With guidance from SCI's Diversity, Equity and Inclusion Committee, active recruitment practices were adopted that led to the hiring of seven faculty members in 2021-22 in areas like artificial intelligence, networks, digital preservation, and educational technology.

SCI accomplished much in 2021-22, and we take bigger steps every year. As we celebrate the school's fifth anniversary in 2022-23, achieving our goals and undoubtedly facing new challenges with characteristic pragmatism and optimism, I am excited to forge ahead together.

Sincerely,
Bruce Childers
Dean and Professor

As we consider what lies ahead for SCI, there is much to celebrate.



On May 1, 2022, Bruce R. Childers was named dean of the School of Computing and Information. He had served as interim dean of the school since 2020.

Connecting Across Disciplines: Joint Majors at SCI

From storytelling to public health, computing and information disciplines now play integral roles across countless facets of society. To this end, a key goal in the formation of the School of Computing and Information was increasing the connectedness of our curriculum to the broader campus community and to increasingly diverse audiences.

One approach that our faculty have taken to accomplish this goal is to pursue the establishment of joint majors that combine the scholarly expertise of SCI faculty with faculty from other schools and departments within the University of Pittsburgh. The 2021-22 academic year marked an important milestone for our first two joint majors in computational biology and digital narrative and interactive design (DNID), both of which were first launched in fall 2019. As of the spring 2022 term, each of these majors exceeded 100 declared majors across the two participating schools—116 in computational biology and 130 in DNID—far exceeding the demand that many expected when these majors were launched.



“The DNID major has been one of the most exciting collaborations that our department has created, precisely because the constituent parts that compose it—[computer science, information science], English literature, English composition, and more—draw from such different domains of knowledge and skill building. Students have jumped at the chance to bring together these worlds of creativity and technological innovation, diving into project building, game jams, internships, showcases, and groundbreaking classroom work.”

Gayle Rogers, chair of the Kenneth P. Dietrich School of Arts and Sciences Department of English

For SCI Teaching Professor John Ramirez, director of the undergraduate program in computer science and SCI’s lead for computational biology, a key part of these joint majors is the creativity and opportunity that exists at the intersection of disciplines.

“After three years, the computational biology program, which brings together computer science and biological sciences, has more than 10 declared majors and is expected to grow,” he says. “Computational biology is still a relatively new discipline but is expected to grow in the areas of medicine, pharmaceutical research, public health, and beyond.”

The uniqueness of these majors also is attractive to our students. As DNID student Lynn Priestley notes, “Before [coming to] Pitt, I assumed I had to pick between a STEM-aligned major if I wanted to do something like code or I’d have to go into graphic design or creative writing to fit the creative side of my brain. DNID doesn’t make you choose. I love the creative freedom that we get with many DNID projects because it’s allowed me to build a portfolio of work that represents me and what I care about.”

Additionally, the 2021-22 academic year also saw the launch of two new joint majors across SCI and the Kenneth P. Dietrich School of Arts and Sciences: a BS in computational social science, which brings together our Department of Informatics and Networked Systems with the Department of Political Science, and a BS in data science, which brings together SCI’s Departments of Computer Science and Informatics and Networked Systems with the Dietrich School’s Departments of Mathematics and Statistics. These launches fit well with SCI’s leadership roles in the University’s Data Science Task Force (chaired by Dean Bruce Childers) and Year of Data and Society (steering committee chaired by Teaching Assistant Professor Nora Mattern).



SCI is forging ahead into the future, continuing to use the power of innovations in computing and information to improve lives, particularly the lives of those who have traditionally been excluded.

Building a Path for Those Without One: Technology for Social Change

Disagreements, arguments, and discussions are fundamental aspects of the fabric of any academic institution. They are the processes through which we learn and grow. Our school, however, has shown that there could be an exception even to this fundamental rule. Since the formation of the School of Computing and Information, there has been one issue that continuously has been agreed upon; has been highlighted in many presentations by the school's leadership; and has attracted brilliant students, staff, and faculty as new members of the school: the societal impact of computing and information. The fields of computing and information play critical roles in addressing many societal issues and amplifying and fighting existing inequalities to create positive societal changes.

At SCI, we aim to build a community that cares about the relationship between technology and the alteration of mechanisms within the social structure, characterized by changes in cultural symbols, rules of behavior, social organizations, or value systems.

Toward this goal, SCI has been developing a strong focus on technology for social change, which includes organizing a series of regular speakers in this area and hiring distinguished transdisciplinary researchers whose work has been dedicated to social justice.

By organizing a speaker series on the topic of technology for social change, SCI is highlighting the importance of understanding how computing and information technologies can be designed, implemented, and incorporated to support positive changes in our communities. With thought-provoking talks and open conversations, SCI welcomes new ways to challenge our scholarly efforts to embrace positive changes around us. The first iteration of the speaker series, held in fall 2021, brought together young leading scholars who have instituted justice, equity, and social impact as the foundation of their work in computing and information fields. Angela Stewart, then a postdoctoral fellow at the Human-Computer Interaction

Institute at Carnegie Mellon University, spoke at the third event in this series about designing an informal robotics camp for girls of color before eventually joining SCI as a faculty member in the fall 2022 term. The talks covered critical topics in the area of technology for social change, including how the participation of marginalized groups from the outset is essential to building technologies that are inclusive and accessible for everyone and how computing education technologies and practices that center learner identities as assets in their design have been successful in engaging learners from marginalized groups and increasing their success.

Eyes on the Horizon: Preparing Students for Their Future Starting Their First Year

Higher education often recalls traditional activities such as sitting through lectures and taking quizzes and tests. Here at the School of Computing and Information, we understand that a well-rounded education extends beyond the classroom. Experiential learning—such as student projects, workshops, and internships—plays a key role in student professional development and career readiness.

As an urban institution, the University of Pittsburgh benefits from the proximity of leading corporations, health care providers, and national laboratories. SCI has leveraged this connection by engaging employers as active partners in the many experiential learning programs available to our students.

Employers benefit from this engagement by enhancing their on-campus visibility for recruiting purposes, and SCI benefits in numerous ways. The school leverages the expertise of our corporate partners on behalf of our students. Our students can begin participating as early as their first year, becoming more well-rounded and prepared for successful careers.

PPG Industries, Inc., a Pittsburgh-based leader in the development and manufacturing of paints, coatings, and specialty materials, engages and recruits our first-year students into the company's Primers internship program. Having this real-world experience helps students as they return to the classroom by reinforcing the importance and applicability of the concepts that their professors are teaching them.

"PPG is among the most active corporate partners we have," says Jennifer Welton, SCI's director of corporate relations. "They are strategic in their approach, focusing on students early on in their academic careers. This has been particularly valuable for our students." PPG sponsors numerous executive engagement sessions and participates in the annual SCI Week, a series of student professional development activities culminating in the University's Fall Career Fair.

In recent years, hackathons have become a popular experiential learning opportunity, and SCI organizes a number of these events with impressive scale and scope. These events (often presented by a corporate partner) typically bring together a team of students to work on a particular real-world challenge or a topic related to a student affinity group.

The PNC Financial Services Group, Inc., one of the largest diversified financial services institutions in the United States and based locally, is among the most actively engaged sponsors of SCI hackathons. "PNC and other companies are attracted to the hackathons, as they give our students the opportunity to work in a team setting on a relevant problem, which is what our students will be doing as they leave SCI and enter the workforce," says Mackenzie Ball, SCI's director of outreach and alumni engagement.

SCI has distinguished itself by strategically leveraging the expertise of leading regional employers and incorporating it into an SCI education. "Now, when prospective students come to Pitt for their campus tour, SCI promotes the role that these partners will play in future students' education and career development as early as their first year," says Bruce Childers, SCI dean. "Pittsburgh is an epicenter of corporate talent, and we are exploiting this advantage to the benefit of our students."



ShelInnovates, Jan. 28-30, 2022

- Pitt's women's hackathon to encourage and support female students in entrepreneurship and innovation in technology fields
- Hosted by Pitt's Women in Computer Science club, SCI, and the Big Idea Center
- A total of 180 participants (75 in person, 105 virtual)
- Participants represented 11 different majors, including computer science, mathematics, engineering, information science, business, nursing, and biological sciences
- Students from Pitt, Carnegie Mellon University, and Robert Morris University attended
- Ten of SCI's 11 corporate partners participated; five other companies participated in the event



SteelHacks, Feb. 25-27, 2022

- An annual event in its eighth year hosted by SCI for students who are passionate about technology and design
- A total of 75 students from Pitt, Carnegie Mellon, and Robert Morris participated either virtually or in person
- Participants represented 14 different majors, including computer science, mathematics, engineering, information science, business, political science, and biological sciences
- Six SCI corporate partners participated



Building a Puzzle, Building a Program: Forming the Professional Graduate Programs

The creation of new master's degrees is the primary focus of SCI's newly formed Professional Graduate Program Initiative (PGPI). Every faculty and staff member has ideas that must be sown to harvest the benefits. This involves talking to a variety of people and then synthesizing their ideas to create mechanisms for great pedagogical outcomes; make them viable; and enable students to learn more, relearn, expand, upskill, re-skill, and reinsert themselves in the workforce.

The initial focus of PGPI was creation of a master's degree in data science. It quickly became clear that creating this degree would be easier said than done given the need for a highly flexible structure that enables different students to explore data science in about a dozen classes.

Yet there are many ways to build up a data science program, from discussing and creating policy, designing user interfaces for different disciplines, and developing software that fuels the analytics or the dashboards to creating information structures to hold all the data and writing programs to do quick analysis and display terabytes of data.

Building any new program will require working with various groups in different departments, schools, universities, and industries; they will be local, regional, national, and international; they will include technical and pedagogical approaches, marketing, corporate relations, and international recruiters. Each of these connections will yield a piece of the puzzle. You see other pieces by conducting interviews and analyzing the current market and trends in finance, demographics, politics and technology.

In other words, putting the pieces together and creating new academic programs can be lots of fun!

Exploring the Future of Learning and Research at 130 N. Bellefield

The grand opening of the fifth floor of 130 N. Bellefield Ave. occurred on Aug. 31, 2022. This new space successfully fulfills the goal that faculty and staff collectively envisioned for the renovation: a collaborative space for testing new technology and ideas. Not only does the space resemble the original IKM Architecture renderings, but it truly exceeds SCI's expectations. The new space is bright and sleek and accommodates our desire for informal collaboration spaces, individual workspaces, conference rooms with smart technology for virtual collaboration, event spaces, and a maker space. IKM's engagement process collected enthusiastic responses from faculty and staff when asked what their number-one reason was for using office space in a hybrid environment. Their responses centered around collaboration and included "teamwork," "human-to-human interaction," "the people," and "building and maintaining community connectedness." Based on this feedback, the design was influenced by the flexible work environments of open-office formats found in companies where SCI students aspire to work. This modern work environment was created with our specific needs in mind and includes advanced remote conferencing and other technology that will allow us to meet each other where we are. It will enable us to test different approaches to the work environment layouts and amenities. We believe that the flexibility of this space also will enhance the way members of the SCI community interact internally with each other as well as externally with the University community, the Pittsburgh community, and beyond. It will allow us to continue to change as necessary and to try new technology as trends change. The impact and potential for collaboration opportunities are endless.



"Using a space to build our culture of collaboration and partnership is so important for the future of our school, faculty, and students," SCI Dean Bruce Childers says. "It brings energy to us. It brings new ideas [that] embody our mission and vision."



More than You Were: A Transformational Experience

“What aspects of computing and information do I want to focus on?”

“How can I apply the skills I am learning in the classroom to different contexts?”

“How do I become a leader?”

“How do I keep track of what I still need to do and when?”

“What kind of an impact do I want to have when I graduate?”

“What matters to me as I enter the world of work?”



A University of Pittsburgh School of Computing and Information degree will do many things, perhaps the most important of which is to document that the student has developed the capacity to both learn and solve problems in computing and technology in ways that are quite in demand. But participation in course work will not necessarily answer questions like the six posed above, and the search for answers warrants the same level of rigor as what a student puts into their course work.

Just as SCI has instructors who are experts in areas within their given degrees, SCI Student Services has staff members who are experts in areas that help students address questions like the ones above—advising, student success, experiential learning, and academic records. These staff members offer personal engagement and structured guidance to help students reflect on their studies and become their best selves.

Some assistance directly relates to curricula, such as first-year seminars, internships, and co-ops. The Student Services team has developed a professional development website curated for SCI students so they can easily find opportunities to grow professionally. The site also allows employers to easily review SCI student resumes and recruit SCI students for available jobs, internships, and co-ops. This resource launched in fall 2022.

Other forms of assistance pertain to areas outside the curriculum, like skills-based volunteerism, advisement reports, community engagement (both locally and internationally), time management seminars, peer tutoring, and peer advising. In collaboration with the Office of PittServes, SCI offers the iServe program and Alternative Break. iServe provides students with experience and connects them with the local community through projects every fall and spring term. For Alternative Break, students embark on a 10-day trip to another country to complete service-learning projects that benefit the local community.

In short, if students spend even a modest amount of time engaging in the student services “curriculum” throughout their studies, at the end of their Pitt journey, they will find themselves excited both by the opportunities that come next and by who they have become when they become alumni of Pitt.

New Faculty

During the 2021-22 academic year, the School of Computing and Information conducted a rigorous faculty search and met with many esteemed candidates. Now the school is excited to announce seven new faculty members who will continue SCI's mission of supporting discovery, innovation, and entrepreneurship driven by data and technology.

New faculty starting in 2022



Jonathan Misurda, teaching assistant professor, Department of Computer Science

Misurda previously taught at the University of Pittsburgh and is excited to return. Before returning to SCI, Misurda was a faculty member at the University of Arizona.



Song Shi, teaching assistant professor, school-appointed faculty

Shi's research includes examining new media interventions for development and social change initiated by activists, nongovernmental organizations, and the government, as detailed in his monograph "China and the Internet: Using New Media for Development in Social Change." Shi received his PhD in communication and media studies from the University of Massachusetts Amherst in 2013.



Angela Stewart, assistant professor, Department of Informatics and Networked Systems, and research scientist, Learning and Research Development Center

Stewart's research area is at the intersection of education, human-computer interaction, and artificial intelligence. She graduated from the University of Colorado Boulder before completing her postdoctoral studies at the Human-Computer Interaction Institute at Carnegie Mellon University.



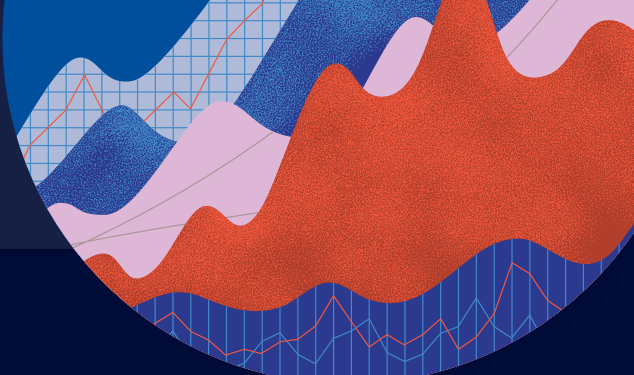
Pengfei Zhou, assistant professor, Department of Informatics and Networked Systems

Prior to joining SCI, Zhou was a research scientist at the Advanced Digital Sciences Center in Singapore, a research fellow at the Alibaba-Nanyang Technological University Joint Research Institute in Singapore, and a technical advisor for Alibaba Group Holding Limited. He received his BS degree from Tsinghua University and his PhD from Nanyang Technological University. His research interests span the areas of mobile computing, large-scale systems, artificial intelligence of things, 5G networking, and applications.



New Academic Program in Fall 2021

Graduate Certificate in Applied Data-driven Methods



New faculty recruited in 2022, starting in 2023



Frances Corry, assistant professor,
Department of Information Culture
and Data Stewardship

Corry's research asks how concepts of the past are shaped by technological change, and her dissertation examined social media sunseting in this context. She will do a one-year postdoctoral fellowship before joining the department in summer 2023.



Aakash Gautam, assistant professor,
Departments of Computer Science and
Information Culture and Data Stewardship

Prior to coming to SCI, Gautam was an assistant professor in the Department of Computer Science at San Francisco State University. He completed his PhD in computer science at Virginia Polytechnic Institute and State University in 2021. His research lies at the intersection of human-computer interaction, learning sciences, and community development. He will join Pitt in fall 2023.



Lorraine Li, assistant professor,
Department of Computer Science

Broadly, Li's research is in the area of artificial intelligence and specifically in common-sense knowledge reasoning. She will complete a one-year postdoctoral fellowship before joining the department in fall 2023.

Department and Program Spotlights

Department of Computer Science

Since its founding in the 1960s, the Department of Computer Science has continued to strive for teaching and research excellence, now influencing how computing grows and impacts society and inspiring our students to do the same. Our alumni can be found around the globe, making changes to the ways we administer health care, conduct business, provide education, and more in startups and small and large companies. Our faculty are increasing the department's research, supported by many internal and external sources. Both faculty and students receive awards for their research papers at numerous conferences, demonstrating the department's commitment to being at the forefront of computer science.



“After 30 years in the Department of Computer Science, I’m still enthralled with the quality of research and education being carried out by our faculty and students. Our research grants and publications have also increased in size and number. Education continues to forge ahead with successful recruitment of new teaching and research faculty. The department’s undergraduate and graduate programs are growing, and our alumni are using [computer science] skills to move robots, secure networks, find health-related discoveries, facilitate user lives, save energy, and give back to society. I remain a proud member of this department.”

Daniel Mossé, interim chair,
Department of Computer Science

RESEARCH HIGHLIGHT

Assistant Professor Receives \$1 Million Grant

Assistant Professor Malihe Alikhani was awarded a \$1 million grant from the Defense Advanced Research Projects Agency for her work designing content moderation systems for social media called the Grete Facilitators. The goal of this research is to design agents that will actively moderate social media content to foster positive dialogue and discourage harmful behaviors such as bullying. Alikhani and her collaborators at SRI International received their funding through the U.S. Department of Defense Civil Sanctuary program.



Thank You to Former Chairs and Program Director

New department chairs and a new program director started in 2022-23. The SCI community thanks the previous chairs and program director: Vanathi Gopalakrishnan, Intelligent Systems Program; Prashant Krishnamurthy, Department of Informatics and Networked Systems; and Alexandros Labrinidis, Department of Computer Science. They served during the height of the COVID-19 pandemic, providing important support and guidance to students and faculty in their respective areas at a crucial moment with flexibility, resilience, and determination. They also worked to create new academic and research programs and enhance existing ones. Thank you, Vanathi, Alex, and Prashant!

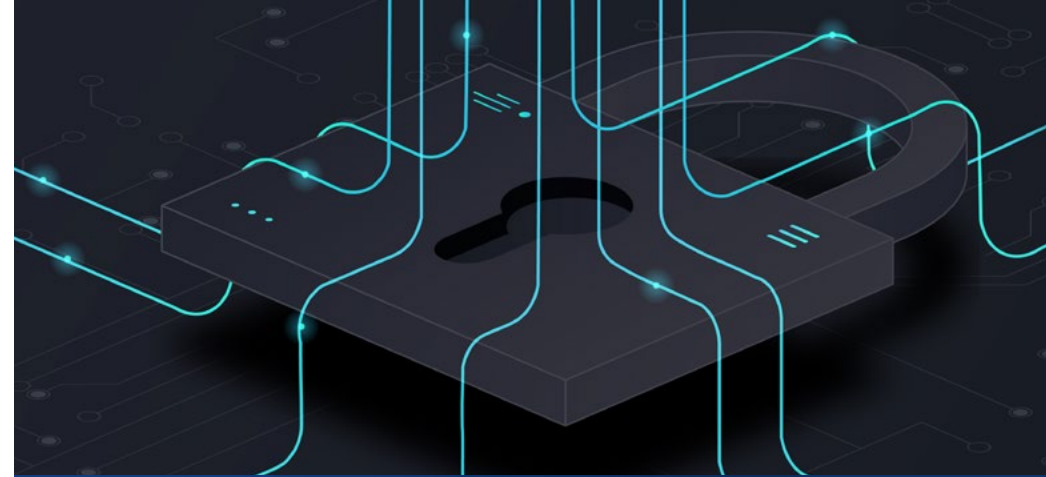
Department of Informatics and Networked Systems

For more than six decades, the Department of Informatics and Networked Systems has been a leader in academic and research programs in information science, telecommunications, and networking. We explore how information, networks, and human behavior work together to extend the capabilities of humans, businesses, and society. Our courses and research delve into a wide range of topics, considered from both a systems and a people focus. Our faculty are working to develop sophisticated recommender systems, improve aphasia treatments, predict recovery from cardiac arrest, protect vulnerable critical infrastructure from cyberattacks, remove barriers to green jobs for displaced coal workers, design gamified interventions for cancer patients, and develop quantum joint detection receivers for communications in deep space.



“Our research and degree programs have the potential to significantly influence our daily lives—from education to health care, from our jobs to our government, and from online banking to virtual communities. This diversity in research interests, with our dual focus on humans and technology, makes [the Department of Informatics and Networked Systems] an exciting place to learn, work, and imagine the future of technology and its impact on society.”

Daqing He, chair, Department of Informatics and Networked Systems



RESEARCH HIGHLIGHT

Faculty Enhancing Education through Research and New Educational Opportunities

We are working to change what and how we learn. Current projects will improve learning tools and create educational programs for college students, high school teachers, and displaced workers. Peter Brusilovsky received National Science Foundation (NSF) funding to build infrastructure for teaching and learning in computational fields, while Ahmed Ibrahim and Balaji Palanisamy received a National Security Agency/NSF grant to create a cybersecurity program for high school teachers. Konstantinos Pelechrinis is coprincipal investigator for an NSF-funded project on building a national network for data science curricular materials. Yu-Ru Lin and collaborators will use Pitt funding to create curricular materials to cultivate ethical competence in machine learning and artificial intelligence. These are just a sampling of the many projects undertaken by our faculty to enhance existing or create new educational opportunities.

Department and Program Spotlights

Department of Information Culture and Data Stewardship

The Department of Information Culture and Data Stewardship contributes to the common good through community-centered scholarship and teaching in data, information, and library studies. The MLIS program educates and empowers librarians, archivists, and other information professionals to understand and address the information needs of people, organizations, and communities. Graduate faculty in the library and information science PhD program mentor future leaders who will advance teaching, research, and service in library and information studies. First as part of the Carnegie Institute of Technology and later as part of the University of Pittsburgh, the MLIS program has been continuously accredited by the American Library Association since accreditation began in 1925. In 2001, the MLIS program became the first degree program offered both on campus and online at the University of Pittsburgh.



“Our faculty embrace the values of integrity, access, openness, transparency, empathy, communities, and literacies, and they provide students in our professional Master of Library and Information Science (MLIS) degree program with experiential learning within and outside the classroom. Our students—representing [more than] 40 undergraduate majors, diverse backgrounds, and life experiences—build skill sets anchored in the concepts and competencies of user-centered design, computational thinking, ethical professional behaviors, and community service. The principles of social justice and serving all are exemplified in the MLIS Goals for Graduates.”

Mary K. Biagini, chair, Department of Information Culture and Data Stewardship



RESEARCH HIGHLIGHT

Lecturer Awarded Pitt Seed Grant Funding

Lecturer Matthew Burton was awarded funding via the Pitt Seed grant program for Cultivating a Data Science Learning Community. This project addresses the growing demand for informal data science training from students, faculty, postdocs, and staff across disciplines at Pitt. Burton’s research will create a diverse and inclusive learning community to support learners and will scale up informal data science training.

Civic Switchboard Project Concludes

The Civic Switchboard project, with funding from the Institute of Museum and Library Services, is designed to help public and academic libraries become more engaged in their local civic data. By connecting libraries and civic data, libraries can expand or begin roles in local civic data ecosystems. Eleanor Mattern, a teaching assistant professor in the Department of Information Culture and Data Stewardship (ICDS), served as the principal investigator for the project’s data literacy team. ICDS faculty members Marcia Rapchak, Matt Burton, and Jacob Biehl participated in the data literacy team, as did postdoctoral associate Kahlila Chaar-Pérez and PhD student Jane Thaler.

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 our associated faculty, including the 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.



“ISP is one of the oldest graduate programs in artificial intelligence [AI]. It is a collaboration ground for students and faculty exploring multiple applications of AI.”

Peter Brusilovsky, director,
Intelligent Systems Program

RESEARCH HIGHLIGHT

ISP Director and Research Team Receive Grant for Aphasia Project

Peter Brusilovsky, ISP director and faculty member within the Department of Informatics and Networked Systems, recently received a National Institutes of Health grant for an aphasia rehabilitation project. Brusilovsky's project, Integrating Complementary Learning Principles in Aphasia Rehabilitation via Adaptive Modeling, aims to increase the effectiveness of established aphasia treatment by combining the benefits of complementary learning approaches using adaptive timing models. William Evans, an assistant professor in Pitt's School of Health and Rehabilitation Sciences, is the project's principal investigator. Brusilovsky is a coinvestigator alongside Lauren Terhorst, William Hula, and University of Massachusetts Amherst associate professor Jeff Starns.

Institutes

Sara Fine Institute for Interpersonal Behavior and Technology

In the 2021-22 academic year, the primary focus of the Sara Fine Institute was the administration of the Year of Data and Society at Pitt, a yearlong engagement with data and its impacts on our lives and communities. This role involved the administration of an internal funding opportunity for Pitt faculty, staff, and students as well as events outreach, planning, and facilitation. Thirty-one projects were funded through the Year of Data and Society.

In addition to providing leadership for the Year of Data and Society, the Sara Fine Institute planned and facilitated additional programming in the 2021-22 academic year.

The Sara Fine Institute contributed to fostering incoming Pitt students' thinking about data that documents our communities and about socially responsible data practices by facilitating a student group as part of the Provost Academy. This weeklong learning experience was led by Joseph Yurko, teaching assistant professor, and Eleanor Mattern, director, Sara Fine Institute, and teaching assistant professor.



Through the University of Pittsburgh Institute for Cyber Law, Policy, and Security-funded Forbes Corridor Colloquia, the Sara Fine Institute facilitated discussions between faculty and graduate students engaged in work around impacts of technology at Pitt and Carnegie Mellon University. As part of the Forbes Corridor Colloquia, the Sara Fine Institute hosted Lucy Suchman, professor emerita at Lancaster University in the United Kingdom, who presented “Data In/Securities: Automating Intelligence in the U.S. Department of Defense,” and Sarah Igo, Andrew Jackson Professor of History at Vanderbilt University, who presented “Infrastructure and Identifies: The Many Lives of the Social Security Number (SSN).”

With the Bernadette Callery Archives Lecture Series, the Sara Fine Institute cohosted Sharon Leon of Michigan State University, who presented “From Scholar to System to Scale: Generating Meso-level Historical Data to Recover the Lived Experiences of Enslaved People.”

The Sara Fine Institute is excited to continue to foster an interdisciplinary interest in data and to host engaging speaker series that bring together all members of the SCI and Pitt communities and beyond.

Provost Ann E. Cudd's appointment of Sara Fine Institute Director Nora Mattern as chair of the Year of Data and Society Steering Committee raised the visibility of the institute at the University.





Professional Institute at SCI

The cybersecurity skills gap remains a significant issue. The increased online presence due to COVID-19, along with complex cyberattacks, has escalated the need for qualified resources. Tapping into nontechnical fields solves both dilemmas. However, it has been challenging for professionals from fields outside computing—especially those from underrepresented groups—to obtain the skills needed to succeed in cybersecurity.

To address both the lack of diversity in the cybersecurity workforce and the field's skills shortage, the Professional Institute at SCI received a Pitt Seed grant in spring 2021 to develop a “boot camp” for nontechnical professionals from underrepresented groups. Offered at no cost, the purpose of this boot camp was to provide an avenue to gain technical skills to those who otherwise wouldn't have the opportunity, enabling them to pursue further cybersecurity education and eventually enter the field.



“It is difficult to create diverse and inclusive workforces if the education and resources needed to join are not easily accessible. We are committed to increasing diversity in the cybersecurity field. Our boot camps serve as a ramp to help underrepresented groups gain the needed technical skills to access cybersecurity education and enter the field.”

Leona Mitchell, founding director,
Professional Institute at SCI

During the summer and fall of 2021, SCI designed the Boot Camp for Non-tech Professionals as a 40-hour online asynchronous course with weekly office hours and instructor work sessions. This approach allowed students to go at their own pace and have flexibility to balance other obligations while still receiving tailored instructor support. Course modules consisted of instructional material and hands-on lab exercises to help students solidify and better retain new concepts.

We offered four iterations of the boot camp in January, May, July, and September 2022, with 25-35 students in each. We leveraged partnerships with RedChairPGH, WIT PGH, and our workforce advisory council to actively promote the program and attract applicants for each iteration. Over the four application periods, the institute received 499 applications and accepted 124 applicants into the program.

As we progressed through the boot camps, we saw a distinct student profile emerge across degree levels and disciplines. This profile consists of someone who is willing to accept a challenge, even if it is outside their area of expertise; is not afraid to face obstacles and work to overcome them; is willing to invest the necessary time and effort in the course; and is motivated to complete course work and recognizes the value of having a scholarship.

More than 90% of students who completed the boot camp expressed strong interest in continuing cybersecurity education and had plans to enroll in various forms of further education.

“I went into this course with very little knowledge of the cybersecurity field, but now I feel like I have a much deeper understanding of its importance and what it entails,” one student wrote in their course evaluation survey. “I would love to continue to deepen my knowledge in this field.”

Faculty and Staff

RECENT FACULTY ADDITIONS

2021-22

Frances Corry, assistant professor, Department of Information Culture and Data Stewardship

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

Jonathan Misurda, teaching assistant professor, Department of Computer Science

Song Shi, teaching assistant professor, school-appointed faculty, School of Computing and Information

Angela Stewart, assistant professor, Department of Informatics and Networked Systems, and research scientist, Learning Research and Development Center

Pengfei Zhou, assistant professor, Department of Informatics and Networked Systems

FACULTY PROMOTIONS, APPOINTMENTS, AND REAPPOINTMENTS

Peter Brusilovsky was appointed director of the Intelligent Systems Program.

Bruce R. Childers was appointed dean of the School of Computing and Information.

William Garrison was reappointed assistant dean for academic programs.

Chelsea Gunn was appointed director of the Bernadette Callery Archives Lecture Series.

Daqing He was appointed chair of the Department of Informatics and Networked Systems.

Timothy Hoffman was reappointed teaching assistant professor in the Department of Computer Science.

Sherif Khattab was appointed associate chair of the Department of Computer Science.

Adriana Kovashka was promoted to associate professor with tenure.

Elizabeth Mahoney was reappointed associate chair of the Department of Information Culture and Data Stewardship.

Nora Mattern was reappointed teaching assistant professor in the Department of Information Culture and Data Stewardship.

Rebecca Morris was appointed chair of the SCI Faculty Council.

Daniel Mossé was appointed associate dean for professional graduate programs and interim chair of the Department of Computer Science.

Balaji Palanisamy was appointed cochair of the SCI Faculty Council.

John Ramirez was reappointed teaching professor and director of the undergraduate program in the Department of Computer Science.

Joseph Yurko was appointed director for undergraduate data science education and reappointed teaching assistant professor.

NEW STAFF HIRES

Emily Bennett, manager of experiential learning

Kathryn Ferguson, academic records coordinator

Laura Finkle, academic records specialist

Jennifer Gentzel, undergraduate academic advisor

Anna Hermann, undergraduate academic advisor

Sasha Kotarski, digital communications specialist

Emily Park, undergraduate academic advisor

Jessica Watson, academic records lead

STAFF PROMOTIONS AND APPOINTMENTS

Heidi Davis, undergraduate studies coordinator

Corey James, payroll and financial aid administrator

Trudy Newring Evans, payroll administrator

STAFF RETIREMENT

Marcela Walls, administrative secretary

SELECTED FACULTY AWARDS, RECOGNITION, AND ACCOLADES

Assistant Professor **Malihe Alikhani** and her coauthors received the Best Theme Paper award at the 2021 Annual Meeting of the Association for Computational Linguistics, and with undergraduate students Chloe Ciora and Nur Iren, she received the Best Paper Award at the 14th International Conference on Natural Language Generation. She also received an honorable mention for her presentation at the 21st Association for Computing Machinery International Conference on Intelligent Virtual Agents.

Professor **Panos Chrysanthis** was named to the inaugural class of the IEEE Computer Society Distinguished Contributor Recognition Program.

Visiting Research Assistant Professor **Constantinos Costa** and Professor **Panos Chrysanthis** received the Best Industry and Application Paper Award at the 22nd IEEE International Conference on Mobile Data Management.

Rosta Farzan, associate professor and associate dean for diversity, equity and inclusion, received a 2022 University of Pittsburgh Chancellor's Distinguished Service Award for Public Service.

Professor **Rebecca Hwa** and Associate Professor **Adriana Kovashka**, along with Mingda Zhang (PhD '21), received the Best Paper Award at the 2021 IEEE/CVF Computer Vision and Pattern Recognition Conference.

Assistant Professor **Xiaowei Jia** received the Best Application Paper Award at the 2021 Society for Industrial and Applied Mathematics International Conference on Data Mining.

Assistant Professor **Stephen Lee**, Professor **Daniel Mossé**, and Yoones Rezaei received Best Paper Runner Up at the 8th Association for Computing Machinery International Conference on Systems for Energy-efficient Built Environments.

Associate Professor **Konstantinos Pelechrinis** was a coauthor of the second edition of "Mathletics: How Gamblers, Managers and Fans Use Mathematics in Sports," a book on sports analytics published by Princeton University Press.

Rob Rutenbar, senior vice chancellor for research, received the 2021 Association for Computing Machinery Special Interest Group on Design Automation Pioneering Achievement Award and was appointed Distinguished Professor.

SELECTED FACULTY GRANTS

Malihe Alikhani, assistant professor
Defense Advanced Research Projects Agency
Studying Artificial Intelligence Moderators to Foster Positive Dialogue and Discourage Harmful Behaviors Such as Bullying

Amy Babay, assistant professor
U.S. Department of Defense Strategic Environmental Research and Development Program
Severe Impact Resilience: Framework for Adaptive Compound Threats

Peter Brusilovsky, professor
National Institutes of Health
Integrating Complementary Learning Principles in Aphasia Rehabilitation via Adaptive Modeling

Morgan Frank, assistant professor
Heinz Endowments

Diane Litman, professor
National Science Foundation
Development of Natural Language Processing Techniques to Improve Students' Revision of Evidence Use in Argument Writing

Konstantinos Pelechrinis, associate professor
National Science Foundation
Building a Sustainable National Network for Developing and Disseminating Sports Content for Outreach, Research, and Education in Data Science

Martin Weiss, professor
National Science Foundation
Policy and Economics Working Group, SpectrumX

Students and Alumni

STUDENT AWARDS, RECOGNITION, AND ACCOLADES

PhD student **Kamil Akhuseyinoglu** and Professor Peter Brusilovsky received the Best Paper Award at the Association for Computing Machinery 29th Conference on User Modeling, Adaptation and Personalization in 2021.

Graduate students **Maryam Aldairi** (MSIS '17), **Aren Alyahya** (MSIS '22), and **Krity Kharbanda** received scholarships to attend the 2022 Women in Cybersecurity Conference.

PhD student **Rakan Alseghayer** received the Diversity and Inclusion Award and the People's Choice of Best Pitch Video Award at the 22nd IEEE International Conference on Mobile Data Management.

Elsa Buehler (MLIS '21) received the University of Pittsburgh Outstanding School Library Certification Program Student at the 2022 Pennsylvania School Librarians Association Conference.

Urjeet Deshmukh (BS '22) received a graduate-level research internship in computational biology funded by the National Science Foundation.

Cesar Guerra-Solano (BS '26) received a 2022 Stamps Scholarship.

PhD student **Jamaica Jones** was named a LEADING fellow with the LIS Education and Data Science Integrated Network Group at Drexel University.

PhD student **Rongqian Ma** received the 2021 Eugene Garfield Doctoral Dissertation Fellowship from Beta Phi Mu Honor Society and the 2021 Association for Information Science and Technology Doctoral Dissertation Proposal Scholarship Award.

BS student **Janet Majekodunmi** received a 2022 Disney United Negro College Fund Corporate Scholarship.

PhD students **Shalani Dilinika Jayamanne Mohottige, Jamaica Jones, Emily Keith, and Sneha Vaidhyam** received a Year of Data and Society grant for a presentation on data journalism and media literacy.

PhD students **Behnam Rahdari** and **Alireza Javadian Sabet** and Professor Peter Brusilovsky received the Best Demo Award at the 15th Association for Computing Machinery Conference on Recommender Systems.

BS student **Olivia Terry** received a 2021 Nordenberg Leadership Scholarship.

PhD student **Abhishek Viswanathan** received a Year of Data and Society grant for Enriching Citizen-Science Data Using Context, Feedback, and Community-Oriented Communication alongside Amy Babay, assistant professor, and Rosta Farzan, associate professor and associate dean for diversity, equity and inclusion.

Liam White McShane (BS '21) received the 2022 Department of Computer Science Outstanding Undergraduate Award.

Zhen Wu (BS '22) received a 2021 David C. Frederick Honors College Community Research Fellowship.

PhD student **Ning Zou** received the 2022 Corbett Award for Best Dissertation Proposal.

SELECTED ALUMNI AWARDS, RECOGNITION, AND ACCOLADES

Hsin-liang "Oliver" Chen (PhD '99) was named chief library services officer of the Philadelphia College of Osteopathic Medicine.

Jonathan Fischer (BS '09, MSIS '14) received the 2022 Rising Star award at the Pittsburgh Technology Council CIO of the Year event.

Ernest N. Maley Jr. (BS '87) was promoted to vice president and chief information officer of FirstEnergy Corp.

Cathleen L. Martyniak (MLS '95) was appointed chief of the Collections Management Division at the Library of Congress.

Ihsan Qazi (PhD '10) received 2021 Sheth International Young Alumni Achievement Award from the University of Pittsburgh University Center for International Studies.

Kelly Richards (MLS '93) was appointed president and director of the Free Library of Philadelphia.

Deirdre Scaggs (MLIS '03) received 2021 Paul A. Willis Outstanding Faculty Award from the University of Kentucky Libraries.





School of Computing and Information

Fifth Floor, Information Science Building
135 N. Bellefield Ave.
Pittsburgh, PA 15260

412-624-5015

Learn more: sci.pitt.edu
sciadmit@pitt.edu

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