Computing Research Association

Academic Member Highlight Book

Fall 2021

UNITING INDUSTRY, ACADEMIA, AND GOVERNMENT TO ADVANCE COMPUTING RESEARCH AND CHANGE THE WORLD.
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   Computer Science

Saint Louis University
   Computer Science

Simmons University
   College of Organizational, Computational, and Information Sciences

Simon Fraser University
   School of Computing Science

Singapore Management University
   School of Information Systems

Stevens Institute of Technology
   Computer Science

Stony Brook University
   Computer Science

Syracuse University
   Electrical Engineering and Computer Science

Temple University
   Computer and Information Sciences

Tennessee Technological University
   Computer Science

Texas A&M University
   Computer Science and Engineering

Texas State University
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   Computer Science

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   Computer Science

Tufts University
   Computer Science

University at Buffalo
   Computer Science and Engineering

University of Arizona
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University of Cincinnati
    School of Information Technology
University of Colorado, Boulder
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    Information Science
University of Delaware
    Computer and Information Science
University of Florida
    Computer & Information Science & Engineering
University of Georgia
    Computer Science
University of Illinois
    Computer Science
    Electrical and Computer Engineering
    Information Sciences
University of Kentucky
    Computer Science
University of Maryland
   Computer Science
   Information Studies

University of Maryland, Baltimore County
   Computer Science and Electrical Engineering
   Information Systems

University of Massachusetts, Amherst
   Information and Computer Sciences

University of Massachusetts, Lowell
   Computer Science

University of Memphis
   Computer Science

University of Michigan
   Computer Science and Engineering
   School of Information

University of Michigan, Dearborn
   Computer and Information Science

University of Minnesota
   Computer Science and Engineering

University of Nebraska, Lincoln
   Computer Science and Engineering

University of Nebraska, Omaha
   Computer Science
   School of Interdisciplinary Informatics
   Information Systems and Quantitative Analysis

University of Nevada, Las Vegas
   Computer Science

University of Nevada, Reno
   Computer Science and Engineering

University of New Hampshire
   Computer Science

University of New Mexico
   Computer Science

University of North Carolina, Chapel Hill
   Computer Science
   School of Information and Library Science

University of North Carolina, Charlotte
   College of Computing and Informatics
University of North Texas  
  Computer Science and Engineering

University of Notre Dame  
  Computer Science and Engineering

University of Oregon  
  Computer and Information Science

University of Pennsylvania  
  Computer and Information Science

University of Pittsburgh  
  Computer Science  
  Informatics and Networked Systems

University of Rochester  
  Computer Science

University of South Florida  
  Computer Science and Engineering

University of Southern California  
  Computer Science

University of Southern Mississippi  
  Computing Sciences and Computer Engineering

University of Texas, Arlington  
  Computer Science and Engineering

University of Texas, Austin  
  Computer Science

University of Texas, Dallas  
  Computer Science

University of Toronto  
  Computer Science

University of Utah  
  School of Computing

University of Vermont  
  Computer Science

University of Victoria  
  Computer Science

University of Virginia  
  Computer Science
University of Washington
   School of Computer Science and Engineering
   Human Centered Design & Engineering
   Information School

University of Waterloo
   School of Computer Science

University of West Florida
   Computer Science

University of Wisconsin, Madison
   Computer Sciences

University of Wisconsin, Milwaukee
   Electrical Engineering and Computer Science

Vanderbilt University
   Computer Science

Virginia Commonwealth University
   Computer Science

Virginia Tech
   Computer Science

Washington State University
   Electrical Engineering and Computer Science

Wayne State University
   Computer Science

Whitman College
   Computer Science

Williams College
   Computer Science

Worcester Polytechnic Institute
   Computer Science

Wright State University
   Computer Science and Engineering

Yale University
   Computer Science

York University
   Electrical Engineering and Computer Science
School of Computing and Augmented Intelligence
formerly the School of Computing, Informatics, and Decision Systems Engineering

Degrees offered
Computer engineering (computer systems): MS, PhD
Computer science: BS, MCS, MCS Online, MS, PhD
Computer systems engineering: BSE
Data science, analytics and engineering: PhD
(NEW in Fall 2020)
Engineering management: BSE, BSE Online
Industrial engineering: BSE, MS, MS Online, MS/MBA, PhD
Informatics: BS
Robotics and autonomous systems (artificial intelligence): MS
Software engineering: BS, BS Online, MS

New faculty
Eduardo Blanco, associate professor
CSE (Natural Language Processing)
PhD, The University of Texas at Dallas

Michel A. Kinsy, associate professor
CSE (Hardware Security)
PhD, Massachusetts Institute of Technology

Zhichao Cao, assistant professor
CSE (Big Data Storage)
PhD, University of Minnesota, Twin Cities

Rakibul Hasan, assistant professor
CSE (Usable Privacy)
PhD, Indiana University Bloomington

Kookjin Lee, assistant professor
CSE (Deep Learning)
PhD, University of Maryland

Chaowei Xiao, assistant professor
CSE (Adversarial Learning)
PhD, University of Michigan

Tyler Baron, lecturer
Software engineering
PhD, Arizona State University

Yuli Deng, lecturer
CSE
PhD, Arizona State University

Md. Shohel Rana, lecturer
Software engineering
PhD, University of Southern Mississippi

Tushara Sadasivuni, lecturer
Software engineering
PhD candidate, Georgia State University

New center
Secure, Trusted, & Assured Microelectronics (STAM)
Led by Michel A. Kinsy and funded by the Department of Defense/U.S. Air Force.

By the numbers
71
T/TT faculty
25
T/TT hires in 5 years
1
NAE member
9
Fellows
13
NSF CAREER Awards in the past 5 years
$27M
FY21 expenditures
1,598
URG students
1,493
first-generation students
306
doctoral students
7
U.S. patents
4
spinout companies

U.S. News & World Report rankings
Graduate programs
#12 Industrial, Online Master’s Program
#18 Industrial Engineering
#33 Computer Engineering
#43 Computer Science
Undergraduate programs
#20 Computer Engineering
#23 Artificial Intelligence (computer science specialty)
#28 Cybersecurity (computer science specialty)
#54 Computer Science

NSF CAREER Awards
Giulia Pedrielli
LEarning to Search with Structure (LESS), a Unifying Algorithmic Framework for Gray Box Optimization of Biomanufacturing Systems

Jorge Sefair
Models and Algorithms for Strategic Conservation Planning

Yu “Tony” Zhang
When Reality Fails Expectations: Containing Reflective Domain Models for Human-Aware Planning and Learning of Robotic Teammates

Sethuraman “Panch” Panchanathan was confirmed as the 15th director of the National Science Foundation on June 18, 2020. The computer science and engineering professor will serve a six-year appointment to establish NSF policy and advise the agency and the President of the United States.

Learn more at scai.engineering.asu.edu
The School of Computer and Cyber Sciences is undergoing an unprecedented transformation as we are becoming a comprehensive research college, with national prominence in computer science, cybersecurity and information science education and research. Since the school’s founding in 2017, our faculty has tripled from 10 to 32 full-time faculty and our enrollment has doubled from 320 to 640 students. We have five undergraduate programs, two masters programs, two cybersecurity certificates and a doctoral program. Our faculty pursue active research in the areas of Distributed and Parallel Computing, Security and Privacy, Programming Languages, Software Engineering, and Formal Methods; Information Systems and Cyber Physical, IoT and Edge Systems. In 2021, our faculty won several grants from the National Science Foundation, Department of Defense and National Security Agency, totaling more than $5.8 million.

New Faculty:

Ahmed Aleroud
Associate Professor

Sarbottam Bhagat
Assistant Professor

Richard DeFrancisco
Assistant Professor

Mohsen Jozani
Assistant Professor

Jeffrey Morris
Assistant Professor

Jason Orlosky
Associate Professor

Shungeng Zhang
Assistant Professor

Faculty Highlights:

Dr. Gokila Dorai is the Principal Investigator for two major awards from the National Security Agency and National Science Foundation. The projects she has received funding for will look into threat mitigation in the Internet of Things landscape and security and privacy of digital evidence.

Dr. Gagan Agrawal is the Principal Investigator of two awards from the National Science Foundation and a Co-PI on three awards, including NSF’s Scholarship for Service. His projects will analyze HPC systems and speculation in mapping applications for modern high performance computing systems.

Dr. Harley Eades is the Principal Investigator on a major award from the National Science Foundation, funding his project “Semantically and Practically Generalizing Graded Modal Types.” This project will further Dr. Eades’ analysis of programming languages based on the concept of graded types.

Major Awards:

Scholarship for Service: Augusta University received a $3.2 million grant from the National Science Foundation’s CyberCorps® Scholarship for Service program. Seven students have received the inaugural scholarship award from Augusta University.

VICEROY: In collaboration with Clark Atlanta University and Mississippi State University, Augusta University has received a $300,000 award from the Office of the Secretary of Defense to fund a virtual institute through the VICEROY (Virtual Institute for Cyber and Electromagnetic Spectrum Research and Employ) program.

Center for Cybersecurity:

A Center of Academic Excellence in Cyber Defense (CAE-CD)

Augusta University is proud to be a designated Center of Academic Excellence in the area of Cyber Defense (CAE-CD). This designation is sponsored jointly by the National Security Agency (NSA) and Department of Homeland Security (DHS).
Founded in 1889, Barnard College aims to provide the highest-quality liberal arts education to promising and high-achieving young women, offering the unparalleled advantages of an outstanding residential college in partnership with a major research university. With a dedicated faculty of scholars distinguished in their respective fields, Barnard is a community of accessible teachers and engaged students who participate together in intellectual risk-taking and discovery. Barnard students develop the intellectual resources to take advantage of opportunities as new fields, new ideas, and new technologies emerge. They graduate prepared to lead lives that are professionally satisfying and successful, personally fulfilling, and enriched by a love of learning.

Through Barnard's partnership with Columbia University, Barnard students have had the opportunity to major in computer science. But Barnard did not have a program of its own until 2019. Computer Science at Barnard has grown dramatically over the last five years, more than quadrupling the number of majors from 2015 to 2020, making it one of the ten largest majors at Barnard.

Since Rebecca Wright came on board as Director and as the department’s first faculty member in the Spring 2019, Barnard Computer Science has continued to grow its faculty as well.

**Highlights**

- Hosting events including Barnard’s Distinguished Lecture in Computer Science Series, a Computer Science Seminar Series, and the DivHacks Hackathon, the annual diversity hackathon organized by Columbia’s Womxn in Computer Science.
- Participating in Barnard’s Summer Research Program for students to work on computer science research projects with Barnard and Columbia professors on topics ranging from improving inclusivity to healthcare.
- Awarded grants and gifts, including from the National Science Foundation, Northeastern’s Center for Inclusive Computing, Google, Columbia’s Data Science Institute, and the FDA.

Visit us at [cs.barnard.edu](http://cs.barnard.edu)
Faculty: 33 full-time faculty members: 9 professors, 10 associate professors, 8 assistant professors, 6 full-time lecturers, and 2 adjuncts.

Students: 1,013 students: 606 undergraduates, 264 MS and 75 PhD students with an additional 68 students that are part of our Dual Diploma Program with Turkey.

New NSF CAREER Award Winners:

Dr. Jeremy Blackburn, “CAREER: Towards a Data-Driven Understanding of Online Sentiment.”

Dr. Aravind Prakash, “CAREER: Binary-Level Security via ABI-Centric Semantic Inference.”

Other Selected Recent Research News:


Other Recent Highlights:

- Dr. Ping Yang received a SUNY Chancellor's Award for Excellence in Faculty Service.
- Steven Moore received a SUNY Chancellor's Award for Excellence in Teaching.
- The Engineering Building housing the Computer Science Department has recently been fully renovated.
Recent Accomplishments

Emily Whiting received an NSF CAREER Award for Geometry and Mechanics of Textile-Based Structural Design.

Adam Smith was named a 2020 ACM Fellow for contributions to data privacy and cryptography.

Alina Ene was awarded a Sloan Fellowship for theoretical computer science, machine learning, and optimization.

Mark Bun received an NSF CAREER Award for Privacy Foundations for Practice and Policy.

Ran Canetti was named a 2020 ACM Fellow for contributions to cryptography and computer security.

Leonid Reyzin was named an iACR Fellow for fundamental contributions to theory and practice of cryptography.

Other Headlines

- PhD student Parul Sohal was awarded the best student paper at the 2020 IEEE Real-Time Systems Symposium (RTSS).
- Faculty member Derry Wijaya received a Google Research Scholar Award to support her NLP research titled “Exploring the evolution of racial biases over time through framing analysis.”
- PhD student Wenzin Feng and faculty member Margrit Betke won the ACM ETRA 2021 best paper award for “HGaze Typing: Head-Gesture Assisted Gaze Typing.”
- Faculty members Kate Saenko and Bryan Plummer received a $2 million DARPA grant to battle automated misinformation in the news.
- PhD student Andrea Burns received a 2021 Google PhD Fellowship in the area of Machine Perception, Speech Technology and Computer Vision.
- Faculty members Adam Smith and Mark Bun received an Apple Award to support their research on memorization and model personalization.
NSF CAREER Award
FRANCESCO ORABONA
Machine Learning: parameterfree.com

2021 New Faculty Hires
- Ashok Cutkosky, Artificial Intelligence
- Alan Liu, Systems & Networking
- Abdoulaye Ndao, Photonic Systems
- Eshed Ohn-Bar, Autonomous Systems

THE RED HAT COLLABORATORY: $20M Renewal
Expansion of BU's partnership with Red Hat, providing funding and research opportunities in operating systems, cloud computing, machine learning, and big data platforms. Co-led by ECE Professor Orran Krieger.

Major Research Funding:
- $7.5M MURI grant to develop neuro-inspired autonomous robots (Department of Defense)
- $20M Engineering Research Center in Cellular Metamaterials (National Science Foundation)
- $5.9M BRAIN Initiative grant to measure brain activity in the real world (National Institutes of Health)
- $2M Center for Semiconductor Materials and Devices Modeling (Army Research Laboratory)

New MACHINE LEARNING Concentration:
Already a popular choice for students, this concentration requires a foundational course on the theory of ML and two additional courses from areas covering modeling, optimization, and applications, plus an experiential component in the form of research or an internship. The first cohort of students with this new ML skill set is set to graduate in May 2022.

ECE AT A GLANCE

STUDENTS
- 472 BACHELORS (9% average annual enrollment growth over 10 years)
- 158 MASTERS (6%)
- 160 PHD (16%)

FACULTY
- FULL PROFESSORS: 28
- ASSOCIATE PROFESSORS: 12
- ASSISTANT PROFESSORS: 11
- EARLY CAREER AWARDS: 30
- NATIONAL ACADEMY MEMBERS: 4
- SOCIETY FELLOWS: 45

25% OF ECE FACULTY OVER THE LAST 5 YEARS ARE NEW HIRES
Degree Offered
• Bachelor of Science in Computer Science
• Bachelor of Arts in Computer Science
• Bachelor of Science in Software Engineering
• Master of Science in Computer Science

Specializations Offered
• Digital Forensics Specialization
• Computational Data Science Specialization
• Business Systems Specialization

Interdisciplinary Program Offered
• Master of Science in Data Science
• Doctor of Philosophy in Data Science

Faculty News
• Dr. Sankadas Roy, whose expertise is in security vetting of mobile apps, static analysis, computer security, computer networks and data aggregation, has been tenured and promoted to an Associate Professor.
• Dr. Shuteng Niu is hired as our new tenure-track, assistant professor. He had received his Ph.D. from Embry-Riddle Aeronautical University and is an expert in machine learning, transfer learning, biomedical informatics, etc.
• Dr. Michael Decker, whose expertise is in software engineering, software evolution, software maintenance, and program analysis, received the Most Influential Paper (MIP) Award at the 21st IEEE International Conference on Source Code Analysis and Manipulation (SCAM’21) for his 2011 paper titled, “Lightweighted Transformation and Fact Extraction with the srcML”.
• Dr. Robert Green, is on faculty improvement leave, working on collaborative research project which focuses on performing data analysis and data-driven simulation in which can aid the analysis and development of novel methods for improving donor-recipient matching algorithms within the kidney donation process.

Some of Recent Publications
• “An Ensemble Approach for Annotating Source Code Identifiers with Part-of-speech Tags,” IEEE Transaction on Software Engineering. (Dr. Decker)
• “Contextualizing Rename Decisions using Refactorings, Commit Messages, and Data Types,” Journal of Systems and Software. (Dr. Decker)
• “On the Generation, Structure, and Semantics of Grammar Patterns in Source Code Identifiers,” Journal of Systems and Software. (Dr. Decker)
• “Low Hydrophobic Mismatch Scores Calculated for HLA-A/B/DR/DQ Loci Improve Kidney Allograft Survival,” Frontiers in Immunology. (Dr. Green)
• “Implementing Central Force Optimization on the Intel Xeon Phi,” IEEE PDPSW’20. (Dr. Green)
• “Distance Correlation Sure Independence Screening for Accelerated Feature Selection in Parkinson’s Disease Vocal Data,” CSCI’20. (Dr. Green)
• “Extension to CryptDB with Support for Arithmetic Expressions,” LNEECS. (Dr. Kresman)
• “Exploration of U-Net in Automated Solar Coronal Loop Segmentation,” WSCG’21. (Dr. Lee)
• “A Cloud-Based Framework for Verifiable Privacy-Preserving Spectrum Auction,” High Confidence Computing. (Dr. Li)
• “A Learning-Aided Intermittent Cooperative Jamming Scheme for Non-Slotted Wireless Transmission in an IoT System,” IEEE Internet of Things Journal. (Dr. Li)
• “Smart City Power Allocation Based on Linear Feasibility Problem,” IEEE ICSCI’21. (Dr. Li)
• “Zero-Bias Deep Learning for Accurate Identification of Internet-of-Things (IoT) Devices,” IEEE Internet of Things Journal. (Dr. Niu)
• “Leveraging attention-based deep neural networks for security vetting of Android applications,” Endorsed Transactions on Security and Safety. (Dr. Roy)
• “Task dependent deep LDA pruning of neural networks,” Computer Vision and Image Understanding. (Dr. Tian)
• “Feature Selection and Prediction for IoT Attacks,” High-Confidence Computing. (Dr. Wu)

For more information
Department of Computer Science
419-372-2337 | Email: bgcs@bgsu.edu | Website: bgsu.edu/cs
Student highlights
• CS&IS had significant increases in enrollment in Fall 2020.
• Kaleb Bolliger was the CS&IS 2020-2021 honor student; he currently works for IMEC.

Faculty research highlights
Vladimir Uskov chaired, co-authored and co-edited the 8th international conference on Smart Education and e-Learning (SEEL-2021. Vladimir, along with other faculty and three graduate students, co-authored and published three book chapters in the Smart Education and e-Learning 2021 book.

Curriculum updates
CS&IS is working on offering the online Master Programs for the Computer Science and Computer Information Systems in Fall 2022.

Faculty updates
The CS&IS department welcomes three new tenure track Assistant Professors – Drs. Nawaz Ali (Ph.D. in Computer Science, City University of Hong Kong), Marjan Asadinia (Ph.D. in Computer Engineering, Sharif University), and Mohammad Sadat (Ph.D. in Computer Science and Engineering, University of Cincinnati).
Tachun Lin served as the department chair starting in August 2021.
Brandeis hosts world-class research in the setting of a medium-sized university located only nine miles from Boston. It is part of the vibrant industrial and research community of the greater Boston/Cambridge area and a member of the Association of American Universities, ranked in the top 42 by U.S. News & World Report.

**Michrom School of Computer Science**

The department offers bachelor of arts and bachelor of science degrees in computer science, as well as several master’s degree programs, including an innovative two-year master’s program for students with little to no background in the field. Our master’s program in computational linguistics is nationally recognized, and our competitive PhD program offers full assistantships to top students who can be matched to the research areas of the faculty. 22% of Brandeis Undergraduates take COSI courses.

415 South Street, MS 018 Waltham, MA 02453-2728 781-736-2700 compsci@brandeis.edu

**Primary Research Areas**

- Artificial Intelligence & Adaptive Systems
- Computational Linguistics & NLP
- Databases
- Educational Technologies
- Machine Learning & Data Mining
- Operating Systems

**Recent Hires**

**Dr. Hongfu Liu**, Assistant professor

**Expertise:** Data mining, machine learning and related applications in social media, computer vision and bioinformatics

**Dr. Constantine Lignos**, Associate Professor

**Expertise:** Computational linguistics, natural language processing, language acquisition and change, and psycholinguistics.

**Dr. Chuxu Zhang**, Assistant Professor

**Expertise:** Machine learning, deep learning, data mining, graph mining & learning, recommender systems, time series & spatial–temporal learning.

**Dr. Iraklis Tsekourakis**, Associate Professor

**Expertise:** Computer vision, multiple-view and video–based 3-D reconstruction.

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<tr>
<th>Faculty</th>
<th>PhDs</th>
<th>Female</th>
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<tbody>
<tr>
<td>19</td>
<td>36</td>
<td>38%</td>
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<table>
<thead>
<tr>
<th>Master's</th>
<th>Undergraduates</th>
<th>URM</th>
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<tr>
<td>105</td>
<td>191</td>
<td>9.4%</td>
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**Department Highlights**

**2021**

**Professors Pustejovsky** (Brandeis) and **Krishnaswamy** (Colorado State) are developing “Diana”, a multi-modal virtual teaching assistant designed to respond to students’ nonverbal and visual cues in an effort to help middle-school teachers run their classrooms more smoothly. Diana can notice students’ facial expressions, conversations, gazes and gestures to infer whether they could use help or are getting distracted. Diana then responds by engaging them in conversation or prompting the teacher. The tool could be especially useful when a teacher divides students into small groups and can only focus on one at a time. Next, the researchers want to teach Diana to reliably recognize faces and voices, particularly diverse skin colors, accents and local dialects—a common oversight in data collection that can lead to gaps in AI’s effectiveness. Read the full article in the WSJ.

**Professor Pustejovsky** received an NSF grant to create an open platform for accessing and mining information from scientific texts that provides access to an array of software, computing resources, and publication data. This project is developing the cyberinfrastructure to support sophisticated search and retrieval from scientific publications, use and augmentation of facilities for advanced and well-established natural language processing and machine learning tools, and extraction and aggregation of data from scientific publications.

**2020**

With support from the Robust Intelligence program in the Division of Intelligent and Information Systems (IIS) and the NSF 2026 Fund Program in the Office of Integrated Activities, investigators at Boston College and Professor Pustejovsky’s team at Brandeis University are addressing the challenge of creating Artificial General Intelligence by synthesizing symbolic or logical reasoning, learning through interaction with the environment, as well as state-of-the-art neural networks.

Brandeis University was a finalist in the Northeast North American Regional Final of the International Collegiate Programming Contest (ICPC).

Professor **Antonella Di Lillo**, has received the 2020 Louis Dembitz Brandeis Prize for Excellence in Teaching.
Established in 1885, Bryn Mawr was founded to offer a more rigorous education than any then available to women. From its founding, Bryn Mawr has prized superb teaching and research. The College is a leader in academic innovation, with a particular focus on putting learning into action through research, fieldwork, community and social justice engagement, and internships. Bryn Mawr further expands students’ options to learn and explore through long-standing partnerships with Haverford and Swarthmore Colleges and the University of Pennsylvania, as well as through the cultural and social resources of Philadelphia.

The Computer Science major has grown dramatically over the last five years making it the fifth largest major on the campus in 2021. All faculty in the department maintain active research programs and engage in several large collaborative projects with R1 universities.

For more information, please visit: https://www.brynmawr.edu/cs
• Swarun Kumar teamed up with researchers from Virginia Tech to develop a versatile, reliable, and attack-resistant wireless sensor network for smart animal monitoring.

• Siyang Zheng and his lab are fabricating devices at micrometer and nanometer scale and synthesizing nanomaterials for critical medical applications.

• Pulkit Grover and student researchers created an algorithm to locate regions of neural silence using an EEG, a widely accessible device that measures brain activity.

• Gauri Joshi will lead the team of Carnegie Mellon researchers in the NSF AI Institute for Future Edge Networks and Distributed Intelligence.

• Giula Fanti received the prestigious Intel 2021 Rising Star Faculty Award, selected as a promising early-career academic researcher who leads some of the most important technology research of our time.

• Franz Franchetti selected for the Department of Energy’s X-Stack Teams, focusing on a project titled, “BLUESTONE: Program Translation and Synthesis for Extremely Heterogeneous Architectures.”

• Byron Yu and researchers received an NSF grant to support research and trainees investigating internal states in the brain, including motivation, attention, and arousal, using brain-computer interfaces.

2020 STUDENT POPULATION: 1,328
- B.S. 525
- M.S. 556
- Ph.D. 247

2020/2021 DEGREES GRANTED: 607
- B.S. 164
- M.S. 400
- Ph.D. 43

RANKINGS
2022 U.S. News & World Report
Undergraduate Computer: 2 Electrical: 8
Graduate Computer: 5 Electrical: 8

SPONSORED RESEARCH
$37M

NSF Career Awards in the last five years
7
It’s Happening Here…
Among the first universities to offer a CS degree and instrumental in defining the scope and potential of the field ever since, Carnegie Mellon University has led the world from the beginning. We embrace a broad view of CS, with seven degree-granting departments that focus not only on theory, but also on specific areas of study.

Some Notable Things That Happened Here
Our Robotics Institute, Human-Computer Interaction Institute and Machine Learning Department were the first of their kind.

Dozens of startup companies spin out of SCS each year.

Bachelor’s Degrees
- Artificial Intelligence
- Computational Biology
- Computer Science
- Human-Computer Interaction
- Machine Learning
- Software Research

Master’s Degrees
- Artificial Intelligence and Innovation
- Automated Science: Biological Experimentation
- Computational Biology
- Computational Data Science
- Computer Science
- Computer Vision
- Educational Technology and Applied Learning Science
- Human-Computer Interaction
- Information Technology – Privacy Engineering
- Intelligent Information Systems
- Language Technologies
- Machine Learning
- Product Management
- Robotics
- Robotic Systems Development
- Software Engineering
- Software Engineering – Scalable Systems
- Software Engineering – Embedded Systems

TOP RANKINGS

#1 U.S. News and World Report
- Undergraduate Computer Science
- Graduate Computer Science

#1 Program Specialties
- AI
- Cybersecurity
- Game Development
- Programming Languages
- Software Engineering

#1 CSRankings.org
- Computer Science (overall)
- AI
- Computer Vision
- Machine Learning and Data Mining
- Natural Language Processing

FIRST-YEAR STUDENTS

258

10,820 Undergraduate Applications
4.5% Acceptance Rate

58 First-Year Students Identify as African American, Hispanic, and/or Native American
22.5% AHN

82.5% United States
17.5% 15 Countries

We coined the term “computer science” in the 1960s.

We were the first wired campus, then the first fully wireless campus.

We’re the first college to offer a bachelor’s degree in artificial intelligence.

Our Robotics Institute, Human-Computer Interaction Institute and Machine Learning Department were the first of their kind.

Dozens of startup companies spin out of SCS each year.
Meet our New Faculty

Fatemeh Afghah
Associate Professor
Ph.D., University of Maine

Wireless communication networks, decision making in multi-agent systems, radio spectrum management, UAV networks, security and artificial intelligence in healthcare.

Yongkai Wu
Assistant Professor
Ph.D., University of Arkansas

Machine learning, data mining, and artificial intelligence, particularly fairness-aware machine learning and causal inference.

Recent NSF CAREER Award Winners

Jon Calhoun, “Dynamic Management of Compressed Arrays for High-Performance Computing Applications”
This project improves current state-of-the-art lossy and lossless data compression by adding logic to dynamically manage compressed data; reducing the performance impact of high-cost compression and decompression times.

Judson Ryckman, “Multi-chrome metasurfaces for dynamic structural color and naked eye diagnostics”
The ultimate goal of this research is to break the present performance limits of dynamic structural color devices and to investigate a new class of structural color based diagnostics, readable by the naked eye, which can rival or even exceed the performance of benchtop alternatives.

Yingjie Lao, “Protecting Deep Learning Systems against Hardware-Oriented Vulnerabilities”
This project will yield novel methodologies for ensuring trust in AI systems from both the algorithm and hardware perspectives to meet the future needs of commercial products and national defense.

Recent Highlights

- Eric Johnson’s new $7.5 million MURI grant from the Office of Naval Research sharpens the focus on orbital angular momentum, a way of making light twist or spin in specific directions, even reversing course from clockwise to counterclockwise, or vice versa, as it travels from one point to another. The channels could make it possible to send pulses of light through a channel to communicate, similar to how a fiber-optic cable carries information, except without the cable.

- The P2PR2P smartphone platform developed by Richard Brooks’ research group gained new international attention after winning funding through the European NGatlantic.eu initiative. The platform helps securely connect civilians in conflict zones with people who can provide food, medicine, transportation and other aid.

- A new $2.5 million NSF grant led by Lin Zhu and Physics professor Kasra Sardashti aims to unleash the power of quantum computers by building interconnects between a microwave quantum system and a mechanical quantum system and realize quantum memory.

Degrees Offered

Undergraduate
- BS Computer Engineering
- BS Electrical Engineering

Graduate
- MS/PhD Computer Engineering
- MS/PhD Photonic Science and Technology
- MS/MEng/PhD Electrical Engineering

Student Body
- 13% Women
- 14% Underrepresented
- 79% In-State

536 Undergrad Students
As of 8/31/2021

166 Graduate Students
As of 8/31/2021
Jerry Tessendorf, a professor of visual computing, and his students have developed a simulator, Gilligan, they use for teaching, research, and film production. Working with Tessendorf gives the school’s students a chance to study under an Academy Award-winning, world-renowned scholar of visual effects.

Ioannis Karamouzas, an assistant professor in the School of Computing, has received a $501,800 CAREER award from the National Science Foundation. The research focuses on helping indoor, mobile robots coexist with humans in populated areas, such as homes and workspaces. He also plans to visit a number of K-12 schools across South Carolina to expose students to robotics, a step toward creating a college-going culture in economically disadvantaged areas and drumming up interest in STEM careers, particularly among groups underrepresented in STEM fields.

Yin Yang, an associate professor of visual computing, and his team presented four separate papers to some of the globe’s top computer graphics experts at the conference ACM SIGGRAPH. The work that Yang and his students do helps lay the groundwork for lifelike virtual reality simulations and research projects.

Bart Knijnenburg, a newly-tenured associate professor in the School of Computing, has launched research aimed at building a new breed of recommender system that would help users figure out their long-term goals and stay on path to achieving them. His project is supported with a $546,128 CAREER award from the National Science Foundation.

Guo Freeman, an assistant professor of human-centered computing, has received a $399,785 grant from the National Science Foundation to research harassment in social virtual reality spaces. It’s a step toward creating safer online social spaces and promoting healthier interaction dynamics in these spaces.

Moses Namara, a Ph.D. student who helped start academic programs to support Black artificial intelligence researchers made MIT Technology Review’s new global list of “35 Innovators Under 35.” Some of the previous honorees to make the magazine’s list have gone on to become household names, including Facebook co-founder Mark Zuckerberg and Google co-founders Sergey Brin and Larry Page.

Deyrel Diaz, a second year Ph.D. student in the School of Computing, has received a Graduate Research Fellowship from the National Science Foundation. His research focuses on investigating the effects a virtual surrounding has on users’ short-term memory, spatial cognition, and travel techniques.

3 New Faculty Members

Nianyi Li
Assistant Professor
School of Computing
Ph.D., University of Delaware
Interests: Computer Vision, Machine Learning, and Computational Photography

Abolfazl Razi
Associate Professor
School of Computing
Ph.D., University of Maine
Received $480K for Proactive Inverse Learning of Network Topology for Predictive Communication among Unmanned Vehicles

Zhenkai Zhang
Assistant Professor
School of Computing
Ph.D., Vanderbilt University
Conducts research on hardware & CPS security and received $200,000 from the NSF SaTC

In the past 6 years undergraduate enrollment has surged by 50% for a current enrollment of more than 1070 across our three undergraduate majors.

38 T/TT Faculty
262 graduate students across 3 PhD and 4 master's programs

comp.clemson.edu
Colgate University
Hamilton, NY USA

Department of Computer Science
https://www.cs.colgate.edu

Research Highlights

• Colgate University is a highly selective, private, liberal arts, undergraduate institution with roughly 2,900 students.
• Colgate recently announced a policy to provide full tuition support for the lowest income students, to align incomes and tuition costs for middle-income students, and to replace any federal loans with university grants in aid packages.
• We value high-quality teaching and we have a strong research culture. Our energetic faculty have active research programs and involve student researchers during the summer and the academic year.
• We are excited to have three new visiting Assistant Professors join our ranks for the 2021-22 academic year: Reyan Ahmed, Mario Graff-Guererro, and Georgiana Haldeman

Other Highlights

• Three very active student clubs: Women in Computer Science, <ColgateCoders>, Game Dev Club
• Students run after-school coding lessons at the local elementary school
• Students won scholarships from CRA-W and other organizations to attend the Grace Hopper Conference (GHC) in each of the last four years
• The department is funding ~40 students to attend the virtual GHC and Tapia Conferences in 2021 and has a new endowed fund to support diversity and inclusion efforts

Student Numbers and Growth

• The department is committed to small class sizes; still, ~200 students take our CS1 course each year
• 250% increase in majors from class of 2015 to class of 2021, with students continuing on to top-tier industry positions and graduate programs
• Women make up nearly 50% of our majors
• We are hiring 2 new tenure stream faculty members to start in 2022

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Research Highlights

• The department averages 15-20 undergraduate summer research fellows hosted during the summer, mentored by faculty members
• Papers co-authored with undergraduates published in each of the last three years; students have presented work at regional, national, and international conferences
• Faculty have secured external grants from NSF & DARPA as well as many internal grants, including from the Colgate Picker Interdisciplinary Science Institute

Other Highlights

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New Faculty Welcomed in 2021

Paul Baier, MS
Ellie Lovellette, PhD
Mohamed Baza, PhD
Kebin Xu, PhD
Sarah Schoemann, PhD

CS at CofC: By the Numbers

- 3 floors of classroom, collaboration and research space directly on the Charleston Harbor
- 450+ undergraduate & graduate students
- 1 and only Computing in the Arts program in the state of South Carolina
- 32% female student population
- 5 undergrad degree programs
- 2 graduate degree programs
- 16 faculty members
- 8 research labs

Degrees offered

- BS Computer Science
- BA Computer Science
- BS Data Science
- BA Computing in the Arts
- BS Computer Information Systems

MS Data Science and Analytics
MS Computer & Information Sciences (joint program)

Research clusters

- Health Informatics
- AR/VR Simulation
- Cloud Computing
- Data Mining and IoT Connectivity
- AI, Music and Interaction
- Computing Education Research
- Cybersecurity and Blockchain
- Machine Learning and Data Science
- Critical Art and Technology

@CSatCofC
compsci.cofc.edu
FACULTY HIGHLIGHTS

* Hao Zhang received the DARPA Young Faculty Award to improve robot teamwork.
* Tom Williams received an NSF Career Award to improve robotic communication skills.
* Three assistant professors (Mehmet Belviranli, Jed McClurg, and Neil Dantam) received an NSF grant to improve the embedded systems design process.
* Jeff Paone was promoted from Teaching Associate Professor to Teaching Professor.
* Qi Han was selected as a Distinguished Member of the 2021 INFOCOM Technical Program Committee.
* Tracy Camp's 1997 paper titled The incredible shrinking pipeline received the 2021 ACM SIGCSE's Test of Time Award.

ORGANIZATIONAL NEWS

* Mines is the top national university in Colorado, and the #33 public university in the U.S., according to the latest U.S. News & World Report. CS@Mines jumped from #68 to #60 in Best Undergraduate CS Programs.
* In Fall 2021, 82 Scholarships were awarded to students thanks to our industry partnerships (C-MAPP).
* CS@Mines hosted (virtually this year) the Colorado NCWIT Aspirations Award ceremony for the third year! The event recognized 77 high school and collegiate women from all across the state of Colorado.
* CS+Space is a new track for our undergraduates, developed in partnership with Lockheed Martin.

STUDENT ACHIEVEMENTS, NUMBERS, & GROWTH

* Three CS@Mines students participated in the HackUMBC remote hackathon and won a prize for the "Best use of secured cloud technologies" given by General Dynamics Mission Systems.
* Two CS@Mines students became new DoD Cyber Scholars! This DoD program received more than 550 applications for only 68 slots. Our three scholars from last year were also approved for a 2nd year. This program provides full tuition, fees and a stipend.
* Two CS@Mines teams – “A Magnetized Needle and a Steady Hand” and “Mines Team 1” advanced to the International Collegiate Programming Contest (ICPC) North American Divisional Championship.
* Computer Science has grown again and is now the 2nd largest department at Mines! For Fall 2021, we have 987 CS undergraduates, 121 CS graduate students, 25 Robotics graduate students, and 32 Data Science graduate students.

OUTREACH PROGRAMS

* DECtech: A program led by female students at Mines for K-12 students. DECtech generates and fosters interest in STEM subjects. [https://tech.mines.edu/](https://tech.mines.edu/)
* C-START: Offers Colorado K-12 educators professional development courses and workshops in computer science. [https://cstart.mines.edu/](https://cstart.mines.edu/)

We have faculty openings!

Follow us on Facebook: [CS at Mines](https://www.facebook.com/CSatMines)
Follow us on LinkedIn: [CS@Mines](https://www.linkedin.com/company/cs-mines)
Visit us at: [cs.mines.edu](https://cs.mines.edu)
Record total enrollment in 2021 – over 1100 students. 26% growth in undergraduate majors.

92% increase in women CS majors since fall 2018, supported by our Northeastern Center for Inclusive Computing best practices grant.

281% increase in online enrollment, 7X growth in new online BS in computer science program.

Ranked #2 nationally by OnlineU, Best Online Colleges for ROI, with a 10-year ROI of $754,700.

Launched Computer Science Scholars Program offering prospective academic faculty training, mentoring, skill development, and practical teaching and research experience. Hired new scholars Amani Altarawneh and Marcia Moraes.

Introduced new minors in bioinformatics and machine learning.

Multi-Objective Methods for UUV Mission Planning (ONR)

Perceptual/Cognitive Aspects of Augmented Reality (ONR)

Center for Cybersecurity Analytics and Automation (NSF)

Program Optimization with Data-Specific Compilation (NSF)

Fused Augmented Realities with Synthetic Vision (FAR/SV ) Systems for Ground Forces (DOD Navy)

Understanding Gesture User Behavior in Augmented Reality Headsets (NSF)

Bringing Historic Seed Test Data Alive Through Machine Learning Algorithms (OSU)

CC* Integration-Small: Error Free File Transfer for Big Science (NSF)

IEEE Pioneer Award Darrell Whitley

ACM Distinguished Member Sudeep Pasricha

CSU Distinguished Alumni Award Thomas Heidenfelder

CSU CNS Professor Laureate Award Indrakshi Ray

CSU CNS Faculty Excellence in Undergraduate Teaching and Mentoring Award Joseph Gersch

Top 10 National CyberSeed Competition, Subhojeet Mukherjee, Dipendu Kar, Sean Kouma, Ben Ettlinger

Best Student Paper Award WACV, Ameni Trabelsi, Mohamed Chaaban, Ross Beveridge, Nate Blanchard

Best Demo Award ICAT-EGVE, Nikhil Krishnaswamy, Ross Beveridge, Francisco Ortega, Dhruva Patil, David G. McNeely-White, Heting Wang
New Faculty

Andrew Blumberg
Professor
Computational Biology
PhD, University of Chicago

Toniann Pitassi
Professor
Theory
PhD, University of Toronto

Richard Zemel
Professor
Machine Learning
PhD, University of Toronto

Josh Alman
Assistant Professor
Theory
PhD, Massachusetts Institute of Technology

Zhou Yu
Assistant Professor
Natural Language Processing
PhD, Carnegie Mellon University

Henry Yuen
Assistant Professor
Theory
PhD, Massachusetts Institute of Technology

Best Paper Awards

Andrew Blumberg

Toniann Pitassi

Richard Zemel

Josh Alman

Zhou Yu

Henry Yuen

Test of Time Awards

Xiaohui Huang

Henry Yuen

Major Faculty Awards

ALFRED AHO WINS THE 2020 ACM A. M. TURING AWARD

SHREE NAYAR WINS FUNAI ACHIEVEMENT AWARD

JASON NIEH NAMED 2021 GUGGENHEIM FELLOW

CARL VONDEBICK WINS NSF CAREER AWARD

CS@CU BY THE NUMBERS

#13 (tied) up from #15 (tie), in US News and World Report ranking of US Computer Science Departments

STUDENTS STATS FROM SPRING 2021

1,858 CS majors

12,665 CS class enrollments

44% of CS majors are women

63 Faculty

1 ACM A.M. Turing Award Winner

9 Elected to National Academy of Engineering

7 Elected to National Academy of Sciences

1 Elected to American Philosophical Society

1 Elected to National Academy of Inventors

1 Harvey Prize

3 IEEE John von Neumann Medal Winners

2 ACM/IEEE Youth Prize Winners

3 AAAI Fellows

5 AAAA Fellows

3 ACL Fellows

4 Guggenheim Fellows

20 ACM Fellows

17 IEEE Fellows

1 Elected to Internet Hall of Fame

3 Dohon Foundation Fellows

16 Alfred P. Sloan Foundation Fellows

NSF Awards: 3 PECASE, 3 CAREER, 2 NYI, and 4 PFI

Department Numbers
SEVEN NEW FACULTY MEMBERS

Tapomayukh Bhattacharjee
- Robotics and HCI
  Ph.D. Georgia Tech

Sanjiban Choudhury
- Robotic and Machine Learning
  Ph.D. Carnegie Mellon

Sarah Dean
- Machine Learning
  Ph.D. UC Berkeley

Kevin Ellis
- Artificial Intelligence and Machine Learning
  Ph.D. MIT

Emma Pierson
- Data Science and Machine Learning
  Ph.D. Stanford

Alexandra Silva
- Programming Languages and Theory of Computing
  Ph.D. Radboud University Nijmegen

Faculty Highlights

Seven Faculty win NSF CAREER Awards: Rachit Agarwal, Austin Benson, Eshan Chattopadhyay, Yudong Chen (ORIE, Operations Research and Information Engineering), Chris De Sa, Owolabi Legunsen, and Madeleine Udell (ORIE).

Three Faculty win Sloan Fellowships: Rachit Agarwal, Alexander Sasha Rush, and Madeleine Udell (ORIE).

Carla Gomes receives 2021 Feigenbaum Prize given by the AAAI.

Adrian Sampson wins IEEE TCCA Young Computer Architect Award.

Thorsten Joachims inducted into the ACM SIGIR Academy.

Emma Pierson named to MIT Technology Review’s Innovators under 35.

Fred Schneider receives Distinguished Paper Award at the IEEE Computer Security Foundations Symposium.

Robert Constable and Liron Cohen win Pazy Memorial Research Award.

Killian Weinberger finalist for Blavatnik Foundation and New York Academy of Sciences National Award for Young Scientists.

Department News

Ann Bowers ’59 provides nine-figure transformative gift to fund the new Cornell Bowers College of Computing and Information Science.

Hopper-Dean Foundation funds new Office of Diversity, Equity, and Inclusion for Cornell Bowers CIS.

David Shmoys named inaugural Director of the Center for Data Science for Enterprise and Society.

Hakim Weatherspoon appointed Associate Director of Center for Research on Programmable Plant Systems (CROPPS), a new center at Cornell made possible by a five-year, $25M grant from NSF.

Multiple Facebook Fellowship Winners (Yan Ji, Yunhao Zhang, Weizhe Hua) and Finalists (Trishita Tiwari, Harjasleen Malvai, Marianne Aubin Le Quere) among Cornell Ph.D. candidates.

Zhengqi Li wins Google Ph.D. Fellowship.

Wenqi Xian wins Microsoft Research Ada Lovelace Fellowship.

By the Numbers

- Faculty Members: 57
- Undergraduate Students: 1,132 (Majors: 38.9% female, 14.75% URM)
- Ph.D. Students: 210 (30% female, 6% URM)
- Masters Students: 138 (21 M.S. + 117 M.Eng. in Ithaca) + 104 (in New York City)

Cornell is a private, Ivy League university and the land-grant university for New York state. Cornell’s mission is to discover, preserve, and disseminate knowledge, to educate the next generation of global citizens, and to promote a culture of broad inquiry throughout and beyond the Cornell community.

Over 50% of all undergraduates take a CIS class during their four-year degree.

More than 10% of all undergraduates major in one of the CIS fields.

Two Campuses. Ithaca and New York City.
2020-2021 Highlights

• Ranked top 10 nationally for performance on coding tests, among top schools such as MIT, Columbia, Carnegie Mellon and Princeton University (CodeSignal, 2021)
• Expansion of CCI Corporate Partners Program with an innovative program with Comcast Corporation to reskill/upskill 70 employees through CCI master's degrees
• New stackable, customizable graduate program offerings in areas such as AI & Machine Learning, Data Science, Economics & Computer Science and Business IT (with LeBow College of Business)
• Establishment of a College-wide Diversity, Equity & Inclusion Council to support a welcoming, supportive, respectful and inclusive environment, in partnership with our Women in Tech Initiative
• Record enrollment growth across undergraduate and graduate programs for fall 2021, exceeding 2,400 students

Faculty & Research

• CCI’s Metadata Research Center (MRC), led by Alice B. Kroeger Professor Jane Greenberg, PhD, is one of 10 research partners that are a part of a new $15 million NSF effort to harness the power of data science and AI to guide materials science research. The Data-Driven Dynamical Design Institute is one of five new “Harnessing Data Revolution Institutes,” funded by a $75 million NSF program to enable new modes of data-driven discovery that will explore fundamental questions at the frontiers of science and engineering.
• Christopher MacLellan, PhD, Edward Kim, PhD and Rosina Weber, PhD were selected by DARPA for a competitive award to improve battlefield injury diagnostics by developing point-of-care ultrasound (POCUS) AI innovations. Drexel is one of five institutions chosen to tackle DARPA's ground-breaking project.
• Drexel CCI researchers are developing AI technologies for adult learning and online education as part of NSF’s Adult Learning & Online Education (ALOE) Institute ($20 million over five years). Asst. Professor Christopher MacLellan, PhD will be collaborating on this effort to lead the machine teaching thrust.
• NSF awarded a grant to Jina Huh-Yoo, PhD (PI), Edward Kim, PhD (co-PI), and American Psychology Association’s (APA) director of research ethics at APA Sangeeta Panicker, PhD (co-PI) to form a conference focused on the ethics of digital technology.

CCI Welcomes Twelve New Faculty Members

Dept. of Computer Science: (2021) Preetha Chatterjee, PhD, Shahin Jabbari, PhD, Yusuf Osmanioglu, PhD, Kaidi Xu, PhD; (2020) Ehsan Khosroshahi, PhD.

Dept. of Information Science: (2021) Chad Peiper, PhD, Shadi Rezapour, PhD, Michelle Tarbutton, PhD, Hegler Tissot, PhD; (2020) Milad Toutounchian, PhD, Christopher MacLellan, PhD; and Bo Song, PhD.

Student Achievements

• Doctoral students Houda El mimouni and Jiangen He were awarded 2020 Eugene Garfield Doctoral Dissertation Fellowships. The Fellowship awards will support El mimouni’s dissertation research, “Robotic Telepresence in the Classroom and Values,” and Jiangen He’s dissertation research, “Predictive and Visual Analytics of Scientific Development.”
• A video game co-designed by CCI students, named “Resilience,” won “Best Student Game” at the 2020 Games for Change Awards. The game aims to teach players about the day-to-day needs and struggles of those on the forefront of the refugee crisis.
• Doctoral students Angela Mastrianni and Joel Pepper received the highly competitive 2021 National Science Foundation (NSF) Graduate Research Fellowships (GRF). Based on the NSF data, 2,074 students were offered fellowship in 2021; of these, only 17 were offered in the Comp/IS/Eng - Human Computer Interaction field of study.
• Drexel’s Women in Computing Society launched a mentorship program to connect students with industry professionals. At its inception in July 2020, the program matched 40 students with mentors from top tech companies like Amazon, Google and Microsoft.
DEPARTMENT SUMMARY

- 17 Tenured and Tenure Track faculty
- 3 Faculty on Continuous Lecture Track
- Three faculty members received NSF and NIH Early Career Awards
- Faculty & Student research funded by NSF, NIH, PCORI, AFOSR, DOE, IARPA, various other corporations, agencies, and foundations.
- Major Research Areas: AI, HCI, Information Retrieval, Graph and Data Mining, Machine Learning, NLP, High Performance Computing and Storage, Security and Privacy.

UNDERGRADUATE PROGRAMS

- BS and BA Degrees in Computer Science
- Joint degrees with Math, QTM, Econ (coming)
- 272 majors, 99 degrees in 2021, 6 students with Highest Honors, 19 awards/scholarships
- ~2000 students enroll in CS each year

GRADUATE PROGRAMS

- Interdisciplinary PhD and MS programs in Computer Science and Informatics (CS, BMI, BIOS)
- 74 PhD students, 9 MS students
- Recent graduate placements include USC, UCSD, UNCC, Amazon, Facebook, Google, Microsoft, Etc

STUDENT ACTIVITIES

- Vibrant and engaged student community
- Student team recognized for advances in chatbots that care and Conversational AI
- Active undergraduate ProgramHers club promotes BPC and Women in Computing

FACULTY HIGHLIGHTS

Emily Wall
New Assistant Professor

Jinho Choi
Promotion to Associate Prof.

Ymir Vigfusson
Promotion to Associate Prof.

SELECTED AWARDS AND HONORS

- Faculty Recognitions
  - Educator of the Year: Nosayba El-Sayed
  - Researcher of the Year: Joyce Ho
  - Citizen of the Year: Dorian Arnold
  - Professor of the Year: Jinho Choi
- Research and Teaching
  - Jinho Choi and student Lydia Feng recognized for paper in EMNLP
  - Carl Yang receives ICDM 2020 Best paper Award
  - Ymir Vigfusson, students Karimi & Zhang win SIGMETRICS best paper award
  - Joyce Ho and student Sotoodeh receive AMIA nomination for outstanding paper
  - Agichtein is CIKM 2022 PC chair, Li Xiong is CIKM 2022 General Chair.
  - Davide Fossati publishes book on Intelligent Support for CS Education
- Selected Grants
  - Li Xiong receives grant for NSF RAPID Covid-19 contact tracing with differential privacy
  - Joyce Ho receives grant from NSF for Smart and Connected Health project
  - Liang Zhao receives NSF Career award and three other NSF grants
  - Yu Li receives NSF/CRA Computing Innovation Fellowship
  - Avani Wildani receives grant from Sandia National Laboratory for Storage Tuning project
  - Eugene Agichtein, Jinho Choi, Li Xiong, Ymir Vigfusson, Dorian Arnold, Avani Wildani, have industry grants/partnerships.
NEW FACULTY

SCHOOL HIGHLIGHTS

- FIU Ranked #1 Florida Public University-Based Upon State Performance Metrics
- >3200 Students (20% Increase in New Enrollment)
- 400+ Computing Professionals Graduating Each Year
- KFSCIS Ranked #6 in Awarded Computing Degrees, #1 for Hispanic Students, and #2 for Black and African American Students in Engineering Colleges
- 20 New Tenured and Tenure-Track Faculty Positions in the Next 6 Years

FACULTY HIGHLIGHTS

- 7 NSF CAREER Award Winners
- 1 DOE CAREER Award Winner
- 1 DARPA Young Faculty Award Winner
- 9 Faculty Members Recognized as Fellows of NAE, IEEE, ACM, AAAS, NAI, AIMBE, and Others
- 4 Faculty Members Recognized as ACM Distinguished Scientists
- S.S. Iyengar, Distinguished University Professor, Selected as a Fellow of the European Academy of Sciences and Arts
- Geoffrey Smith Was Awarded the Prestigious European Joint Conference on Theory and Practice (ETAPS) Test of Time Award for Quantitative Information Flow
- Naphtali Rishe Awarded the 2021 IBM Global University Program Academic Award and Selected as a Fellow to the National Academy of Inventors
- Mark Weiss Recognized as AAAS Fellow and for ACM SIGSE Award for Outstanding Contributions to Computer Science Education
- Amin Kharraz Received Microsoft Security AI Award

RESEARCH 2020–2021

- $18.5 Million in New Research Grants
- Established a New Center of Excellence in Digital Forensics
- NSF HERD Ranking #41 in Computer Science Research Expenditures, Top-30 in Public Research Universities
- 21 Patents With KFSCIS Inventions in the Last 4 Years

More information about the School can be found at https://www.cis.fiu.edu/
DEPARTMENT of COMPUTER SCIENCE at FLORIDA STATE UNIVERSITY

Research Areas:
- Algorithms
- Artificial Intelligence
- Bioinformatics
- Cancer Genomics
- Compilers
- Computer Architecture
- Computer Networking
- Databases
- Data Engineering
- Mobile Computing
- Operating Systems
- Parallel & Distributed Systems
- Programming Languages
- Scientific Computing
- Security
- Software Engineering
- Theory of Computation

Degree Programs:

Undergraduate

B.S. Degrees
- Computer Science (ABET Accredited)
- Computational Biology
- Cyber Criminology

B.A. Degrees
- Computer Science
- Computer Programming & Applications
- Computer Science-Math/FSU Teach

Graduate

M.S. Degrees
- Computer Science
- Cybersecurity
- Computer Network & System Administration
- Cyber Criminology
- Data Science

Ph.D. in Computer Science

(850) 644-4029
253 Love Building
Florida State University
Tallahassee, FL 32306-4530

In addition to our main Tallahassee presence, distance and on-site learning opportunities are available with the FSU Panama City Campus: pc.fsu.edu/computer-science

visit us at: cs.fsu.edu
George Mason University received a grant from BREAK THROUGH TECH to propel more students who identify as women and non-binary into tech education—and ultimately tech careers—through curriculum innovation, career access, and community building.

Mason’s Break Through Tech program will be directed by the College of Engineering and Computing, the School of Computing, the Departments of Computer Science and Information Sciences and Technology, and led by Computer Science Professor Huzefa Rangwala.

The faculty working on this initiative seek to attract and retain women and underrepresented communities pursuing computing degrees and careers in tech in the D.C. metropolitan area.

For the full article visit here.
Recent Hires:

Adam Aviv
computer security, cybersecurity, privacy, and usable security, human factors in mobile authentication and oblivious access in the cloud.

Yasemin Aşar
establishing practices for ecologically valid usable security and privacy research as well as supporting developers in making secure programming choices.

Kinga Dobolyi
CS education, automated testing for deep learning models, characterizing uncertainty in research on emerging infectious diseases.

Location:
In the heart of Washington DC, we are co-located with the entire Engineering school, the cancer research center and the School of Public Health, in a modern building that creates unmatched space for cross-disciplinary research.

Research Highlights:

NSF NRT Program
The “Co-Design of Trustworthy AI and Future Work Systems” Program trains the next generation of researchers in both algorithm design and systems Engineering, to bridge across those disciplines so that we can take full advantage of the opportunities to transform work for social good.

Knight Foundation
The Institute for Data Democracy and Politics was created to help the public, journalists, and policymakers understand digital media’s influence on public dialogue and opinion, and to develop sound solutions to disinformation and other ills that arise in these spaces.

NIH
R01 grant funded for “Advancing 3D optical body surface scan technology to assess physiological and psychological effects in highly obese populations”

National Institute of Justice
Funding to support Traffickcam, a crowd-source data gathering app and search engine to help the National Center for Missing and Exploited children investigate sex trafficking.

GW CyberCorps/SFS
Running since 2002, this program provides technical degrees and funding for students who commit to working as security experts in a government agency following their graduation.
Research Highlights

- A new partnership between Georgia Tech and NVIDIA is bridging the education gap for data science and machine learning by providing digital teaching kits. This initiative is led by CSE Associate Professor Polo Chau and Polo Club for Data Science researchers Scott Freitas, Haeyou Park, Jay Want, Jon Saad-Falcon, Kevin Li, Aiswarya Bhagavatula, and Frank Zhou.

- Each year, one paper and software artifact from the previous year’s Supercomputing (SC) conference is selected as the Reproducibility Challenge Benchmark for the next year’s Student Cluster Competition. For SC21, School of CSE Professor Srinivas Aluru’s research group’s paper from last year was selected by the committee as the benchmark for the student competition. This is the second time a paper from Aluru’s group has been selected.

- CSE Assistant Professor Srijan Kumar developed a data science pipeline to leverage social media data signals to measure how targeted hate and racism spread as a product of Covid-19. This is now the longest study to date for anti-Asian hate and counter hate on social media.

- CSE and Wallace H. Coulter Department of Biomedical Engineering Joint Regents’ Professor Mark Borodovsky’s GeneMark-HM software was highlighted as the most accurate microbiome gene prediction software in peer-reviewed publication NAR Genomics and Bioinformatics.

- The Association for Computing Machinery (ACM) named CSE Chair and Regents’ Professor, Haesun Park, and CSE Professor and Executive Director of the Institute for Data Engineering and Science, Srinivas Aluru, as two of its 95 researches accepted to its latest class of Fellows.

- CSE Regents’ Professor and Chair Haesun Park and three of her former graduate students – Jaegul Choo, Hanseung Lee, Jiyeon Kim – won the IEEE Vast Test of Time award for 2010 for their paper, iVclassifier: An interactive visual analytics system for classification based on supervised dimension reduction. This paper was awarded for its being a pioneer of supporting data mining tasks with interactive systems.

- CSE Associate Professor Edmond Chow was named as one of 28 new Society for Industrial and Applied Mathematics (SIAM) Fellows for 2021. This SIAM recognition highlights Chow’s contributions to the field of computational science and engineering within the areas of numerical linear algebra and high-performance computing.

- Professor Rich Vuduc, appointed co-director of the Center for Research into Novel Computing Hierarchies (CRNCH), a unit built on the mission of reexamining and building computing technologies for the post-Moore computing era.

Research Highlights

- CSE Ph.D. Student Alex Rodriguez and CSE Associate Professor Aditya Prakash won two Covid-19-related challenges for their framework, DeepOutbreak. They were awarded 2nd place in the C3.ai Covid-19 Grand Challenge and 1st prize in the Facebook Symptom Data Challenge. DeepOutbreak models the progression of Covid-19 and symptomatically similar co-evolving influenza-like illnesses to support optimal deployment of healthcare resources.

- Professor Ümit Çatalyürek was named as an Amazon Scholar and is currently working on R&D for the 2021-22 year.

New Hires

- Assistant Professors Spencer Bryngelson, Florian Schaefer, Anqi Wu, Yuan Luo, and Nabil Imam

People

- Total Staff and Faculty: 46
- Academic Faculty: 18
- Adjunct Appointments: 14
- Staff: 7
- Professors: 4
- Associate Professors: 4
- Assistant Professors: 6
- Joint Appointments: 4
- Research Scientists: 4
- Postdocs: 2
- Lecturers: 1

Awards and Honors

- 5 Regents’ Professors: Richard Fujimoto, Mark Borodovsky, Surya Kalidindi, Haesun Park, David Sherrill
- 2 AAAS Fellows: Srinivas Aluru, David Sherrill
- 3 ACD Fellows: Richard Fujimoto, Srinivas Aluru, Haesun Park
- 1 American Chemical Society Fellow: David Sherrill
- 1 American Physical Society Fellow: David Sherrill
- 4 IEEE Fellows: Srinivas Aluru, Ümit Çatalyürek, Haesun Park, Richard Fujimoto
- 1 IITSEC Fellow: Richard Fujimoto
- 1 ISCB Fellow: Mark Borodovsky
- 4 SIAM Fellows: Haesun Park, Srinivas Aluru, Ümit Çatalyürek, Edmond Chow
- 1 Swarnajayanti Fellow: Srinivas Aluru
- 1 Vannevar Bush Faculty Fellow: Surya Kalidindi
- 6 NSF CAREER Awards: Srinivas Aluru, David Sherrill, Ümit Çatalyürek, Rich Vuduc, Le Song, B. Aditya Prakash
- 3 Gordon Bell Awardees: Toby Isaac, Edmond Chow, Rich Vuduc
By the Numbers
• 31 primary professors
• 8 joint professors
• 10 adjunct faculty
• 129 Ph.D. students

New Faculty
• Associate Professor Alberto Dainotti joined us from UCSD, where he worked as a research scientist. He specializes in internet measurement, data science, and cybersecurity.

• Assistant Professor Sahil Singla obtained his Ph.D. from CMU in 2018 and was a research instructor at Princeton University prior to joining us. His research focuses on algorithms and uncertainty.

• Assistant Professor Ahmed Saeed received his Ph.D. from GT in 2019. After two years as a postdoctoral associate at MIT, he returns to SCS as a faculty member working on scalable computer networks and computer systems.

Community News
• SCS Ph.D. students have created a new Graduate Student Association to provide peer support and build community.

• SCS introduced the Incubator Fellowship to foster new research collaborations.

Junior Faculty Highlights
• Assistant Professor Alexey Tumanov’s group developed CompOFA, an algorithm that trains hundreds of models simultaneously and makes this process inexpensive by focusing on the most efficient possible models.

• Assistant Professor Ashutosh Dhekne’s research group has created two Covid-19 era innovations: a custom wearable device that helps users social distance and a new pen attachment that can record the movements of the pen on a whiteboard for virtual meetings.

Selected Accolades
• Ph.D. student Yuanbo Li won a Facebook Fellowship for his concurrent computing research.

• Ph.D. student Sana Damani won an NVIDIA Fellowship for her research on GPU optimizations.

• Professor Moinuddin Qureshi received Intel’s 2020 Outstanding Researcher Award for designing efficient and robust hybrid memory architectures.

• Professors Wenke Lee and Alessandro Orso have been named IEEE fellows.

• Associate Professor Richard Peng and Professor Santosh Vempala won the Best Paper award at SODA 2021 for their new approach to solving linear systems.

• Professor Alessandro Orso won the ACM SIGSOFT Impact Paper Award 2021 for his ISSTA 2011 paper.

• Professor Vivek Sarkar received the 2020 ACM/IEEE Ken Kennedy Award.
School Leadership
• John Stasko, Interim Chair
• Amy Bruckman, Associate Chair
• Rosa Arriaga, Associate Chair for Graduate Affairs
• Ashtria Jordan, School Administrative Officer

New Faculty Hires
• Rosa Arriaga, Associate Professor, HCI, Social Computing, Developmental Psychology; continues with the School after 14 years as a research scientist.
• Harish Ravichandar, Assistant Professor, HRI, Robot Learning, Multi-Agent Coordination; continues with the School after two years as a research scientist.

Student and Faculty Numbers
• IC FY22 enrollment numbers: 128 Ph.D. students (61 computer science, 41 human-centered computing, 15 robotics, 11 machine learning); 127 master's students; 303 Ph.D. graduates to date.
• 84 faculty members -- 52 academic faculty, 25 adjunct faculty, 7 research scientists.

Organizational News
• Regents’ Professor John Stasko began his term as interim chair of the School of Interactive Computing in March 2021.
• Two IC faculty members, former Chair Ayanna Howard and Regents’ Professor Gregory Abowd, were hired as Deans of Engineering at the Ohio State University and Northeastern University, respectively.

Research Highlights
• The School was announced as partners in a pair of NSF AI Research Institutes – The NSF AI Institute for Adult Learning and Online Education (ALOE) and the NSF AI Institute for Collaborative Assistance and Research Interaction for Networked Groups (CARING).
• IC researchers are partners in projects receiving $2.2M in Toyota Research Institute robotics funding at Georgia Tech. The projects will first advance autonomous vehicle testing and, second, improve the way robots assist older adults with daily tasks.
• IC researchers are part of a $1M grant from the NSF, in partnership with the Department of Energy, to make public transportation in Atlanta faster, more convenient, and more equitable.

Other News
• The School was awarded $10.9M in new research funding in FY21, bringing the total in its 15-year history to over $100M.
• Professor Amy Bruckman was named Regents’ Professor by the University System of Georgia Board of Regents.
• Professor Ashok Goel was named a 2021 Fellow by the Association for the Advancement of Artificial Intelligence.
• Associate Professor Neha Kumar was named President of the Special Interest Group on Computer-Human Interaction (SIGCHI).
DEPARTMENTAL & UNIVERSITY HIGHLIGHTS:
- GSU ranks #2 for most innovative university (US News & World Report)
- GSU ranks #1 in commitment to undergraduate teaching (US News & World Report)
- CS Ph.D. program ranks among best in the Southeast (National Research Council)
- CS Ph.D. program has produced over 160 graduates
- CS Ph.D. program is highly ranked in several categories by PhDs.org
- CS is home to the INSPIRE center, a National Center of Academic Excellence in Cyber Defense Research (CAE-R) designated by DHS and NSA.
- 36 full-time faculty

FACULTY HIGHLIGHTS:
- Dr. Zhipeng Cai became an Editor-in-Chief of Wireless Communications and Mobile Computing and an associate editor-in-chief of Elsevier High-Confidence computing.
- Dr. Xiaolin Hu awarded NSF grant under the Smart and Connected Communities (S&CC), $150K
- Dr. Xiaolin Hu served as General Chair for the 2021 Annual Modeling and Simulation Conference
- Dr. Daniel Takabi and Dr. Zhipeng Cai and collaborators awarded two NSF grants on Trustworthy AI, $900K
- Dr. Anu Bourgeois was awarded a $60K grant to explore barriers for women in computing from the Center for Inclusive Computing.
- Dr. Daniel Takabi and Dr. Anu Bourgeois were awarded two grants for capacity building in cybersecurity, one from the NSA ($150K) and one from the DoD ($150K).
- Dr. Olga Glebova was named CETLOE Faculty Teaching Fellow for 2021-2022.
- Dr. Sergey Plis was awarded NSF CRCNS Research Proposal: Collaborative Research: Multimodal Dynamic Causal Learning for Neuroimaging $1,282,104 (PI)
- Dr. Sergey Plis served as co-senior author on a paper published in a prestigious “Nature Communications” journal.

UNDERGRADUATE ENROLLMENT DATA:

<table>
<thead>
<tr>
<th>Enrollment for Fall 2021</th>
<th></th>
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</thead>
<tbody>
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<td>BS</td>
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</tr>
<tr>
<td>MS</td>
<td>145</td>
</tr>
<tr>
<td>MSA (BDML)</td>
<td>28</td>
</tr>
<tr>
<td>PhD</td>
<td>101</td>
</tr>
</tbody>
</table>

- White
- Black
- Asian
- Am Ind/AA Native
- Natv HI/PI
- Mixed Race
- Not Reported
Computer Science at the Harvard John A. Paulson School of Engineering and Applied Sciences is part of a dynamic hub with strong ties to engineering, economics, law, biology, physics, statistics, mathematics, business, government, and more. Harvard computer scientists pursue ground-breaking work in a wide range of areas including theoretical computer science, AI, the interface of economics and CS, adaptive and trustworthy systems, intelligent interfaces, computer graphics, computational linguistics, privacy and security, robotics, data-management systems, networks, energy-efficient architectures, program languages, and machine learning and visualization.

**NEW SPACE**
In Fall 2021, Harvard CS occupied a new state-of-the-art, 500,000-square-foot Science and Engineering Complex.

**CENTERS & INITIATIVES**
Harvard undergraduate, masters, and Ph.D. students and researchers are involved in interdisciplinary initiatives across the University, such as:

**Center for Research on Computation and Society**
brings together computer scientists and scholars from a range of fields to make advances in computational research that serves a public interest

**Institute for Applied Computational Science**
trains graduate students to solve real-world problems and conduct innovative research by using mathematical models, algorithms, systems innovations, and statistical tools

**Berkman Center for Internet and Society**
explores the development, dynamics, norms, standards, laws, and sanctions of cyberspace

**Harvard Data Science Initiative**
fosters collaboration in research and teaching, and catalyzes research to benefit our society and economy

**NEW FACULTY 2020-2022**

- **Anurag Anshu**
  research interests: quantum computing and communications

- **Stephanie Gil**
  research interests: trust and coordination in multi-robot systems

- **Yannai Gonczarowski**
  research interests: interface between economic theory, theoretical computer science, and game theory

- **Sham Kakade**
  research interests: mathematical foundations of machine learning and AI

- **Ariel Procaccia**
  research interests: AI, algorithms, economics, and society

- **Fernanda Viégas**
  research interests: data visualization, machine learning, human/Al interactions

- **Martin Wattenberg**
  research interests: machine learning, data visualization, collective intelligence

**BY THE NUMBERS**
392 Undergraduates  120 Ph.D.  36 Master of Computational Science and Engineering  108 Master of Data Science

[https://www.seas.harvard.edu/computer-science](https://www.seas.harvard.edu/computer-science)
Harvey Mudd College offers a computer science program that provides students with a strong background blending experimentation, theory and design. Computer science majors are exposed to a balance of foundational theory and practice that includes collaborative, hands-on student-faculty research experiences. Through its internationally recognized Clinic Program, students conduct advanced research for industry, government and nonprofit clients. Well-prepared HMC graduates go on to prominent PhD programs and innovative jobs with top companies.

AWARD-WINNING FACILITIES
The Scott A. McGregor Computer Science Center is the new 36,000-square-foot home to Harvey Mudd’s rapidly growing computer science department. It houses a permanent makerspace, labs, Clinic space, student study and collaboration space, as well as administrative and faculty areas. The building brings faculty offices, teaching labs, research labs and project work areas into one space to help build a sense of community and belonging while also allowing the College to respond to student needs in an integrated, cohesive way. The design, tied to strategies that invigorate interdisciplinary collaboration, was lauded by Engineering News-Record California, which named the McGregor Center as Southern California’s Best Higher Education/Research Project.

ACCESS OUR CASE STUDY
Harvey Mudd College’s successful effort to raise the percentage of women majoring in computer science is now a featured case study in the Harvard Kennedy School Case Program, the world’s largest repository of case studies for educators in government and public policy. The case study, “Harvey Mudd College: Promoting Women in Computer Science Through Inclusive Education,” details the steps faculty took to redesign the core CS introductory course, engage students and incorporate inclusive pedagogy, raising the percentage of women CS majors from 10% to over 50% in less than 10 years. bit.ly/hks-hmc21

STUDENT AWARDS
Thomas J. Watson Fellowship
Abel Sapirstein ’21, mathematical and computational biology major, will study alternate perspectives in healthcare equity while traveling to Bhutan, Chile and Japan.

2021 CRA Award for Outstanding Undergraduate Researchers
• Awardee: Lindsay Popowski ’21 researched introductory CS education, developed new dynamic scheduling algorithms and created vector representations of app screens.
• Finalist: Abtin Molavi ’21 helped develop the first algorithm and software for counting the number of solutions to logical formulas involving integer arrays.

NSF GRANT ACTIVITY
• George Montañez and Lucas Bang, “Harvey Mudd REU Site in Computer Systems,” $382,668
• Julie Medero, “Open-Source Renewables: Coupling Resilience to Natural Disasters with Environmental Justice,” $46,840

SELECTED 2020–2021 CLINIC PROJECTS
• Galaxy Semiconductor: Detecting patterns of defects in the manufacture of integrated circuits
• Factor Programming Language: Implementing the GZIP compression algorithm and HTTP/2, a new standard for communicating on the web
• Proofpoint: Creating user-friendly explanations for black-box classifiers, such as random forests and recurrent neural networks
With unsurpassed breadth and more than 3,000 graduate and undergraduate students, the Luddy School of Informatics, Computing, and Engineering is among the largest schools of its kind in the country. Luddy strives to lead in research, education, and outreach spanning and integrating every facet of computing, IT, and modern engineering. The school aims to lead the nation in creating a new, broad, and interdisciplinary view of computing and information technology, and uses this viewpoint as the foundation of its main areas of emphasis.

In 2019 we changed our name to the Luddy School of Informatics, Computing, and Engineering thanks to a $60 million gift from Fred Luddy.

The new Luddy Center for Artificial Intelligence opened in August 2021.

Luddy offers 7 bachelor's, 6 accelerated master's, 9 master's, and 5 doctoral degrees

Luddy Fall 2021 Enrollment by Department

<table>
<thead>
<tr>
<th>Department</th>
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<th>200</th>
<th>400</th>
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<td>Computer Science</td>
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<td>Data Science</td>
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<td>Informatics</td>
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<td>Information and Library Science</td>
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<td>Intelligent Systems Engineering</td>
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<td>Information Science</td>
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<td>Statistics</td>
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<td>Cybersecurity and Global Policy</td>
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Luddy faculty across five disciplines

- **32** Computer Science Faculty
- **32** Informatics Faculty
- **23** Intelligent Systems Engineering Faculty
- **9** Information and Library Science Faculty
- **9** Statistics Faculty
DEPARTMENT OVERVIEW

- Tenured and tenure-track faculty: 31
- NSF CAREER Award winners: 9
- ACM Distinguished Members: 3
- AAAS Fellows: 2
- NSF PECASE Award: 1
- AFOSR Young Investigator Award: 1
- Fulbright Scholar: 1
- IEEE Fellow and EURASC Fellow: 1

IOWA STATE UNIVERSITY LAUNCHED ONE OF THE 1ST M.S. PROGRAMS IN A.I. IN THE NATION

NEW FACULTY Since Fall 2019

- Tichakorn Wongpiromsarn: Assistant Professor
- Qi Li: Assistant Professor
- Christopher Quinn: Assistant Professor
- Abusayeed Saifullah: Assistant Professor
- Hongyang Gao: Assistant Professor

RESEARCH EXPERTISE:
- Artificial intelligence and machine learning
- Bioinformatics
- Data science
- Robotics
- Software engineering, programming languages
- Systems and networking
- Theoretical computer science

MULTI-DISCIPLINARY RESEARCH:
- Computational biology
- Human computer interaction
- Information security

RANKINGS:
- #11 in Software Engineering
- #23 in Embedded and Real Time Systems
- #35 in Robotics
- #59 in Artificial Intelligence

UNDERGRADUATES

- Computer Science: 722
- Data Science: 63
- Software Engineering: 680

GRADUATES

- M.S.: 55
- Ph.D.: 151
DEPARTMENT OF COMPUTER SCIENCE

DEGREES OFFERED
- Bachelor of Science
- Bachelor of Arts
- Masters of Science in Engineering in Computer Science (MSE)
- Masters of Science in Security Informatics (MSSI)
- PhD in Computer Science

FACULTY
- 32 Tenure-Track Faculty
- 11 Research & Teaching Faculty
- 21 Research Scientists & Postdocs

NEWS & HIGHLIGHTS
- **Russell Taylor** elected to National Academy of Engineering for his contributions to the development of medical robotics and computer integrated systems
- **HopHacks**, a student-run, 36-hour biannual Hackathon now in its 9th year, went virtual with a record number of international participants and prizes
- **Steven Salzberg** named a Fellow of the Association for Computing Machinery
- PhD candidate **Eli Sherman** named 2020 Google Machine Learning Fellow
- **Peng “Ryan” Huang** receives NSF CAREER Award
- Team led by **Michael Schatz** develops open-source software that cuts time, cost from gene sequencing
- Researchers create **Anytown, USA tool** to simulate COVID-19 spread in small towns
- Undergrads partner with NATO on **digital triage assistant** to reduce combat casualties

AFFILIATED CENTERS & INSTITUTES
- Center for Language and Speech Processing (CLSP)
- Information Security Institute (ISI)
- Laboratory for Computational Sensing and Robotics (LCSR)
- Malone Center for Engineering in Healthcare (MCEH)
- Institute for Assured Autonomy (AAA)
- Institute for Data Intensive Engineering and Science (IDIES)
- Mathematical Institute for Data Science (MINDS)

RESEARCH EXCELLENCE
- Computational Biology and Medicine
- Information Security
- Machine Learning & Data Intensive Computing
- Robotics, Vision & Graphics
- Speech & Language Processing
- Systems
- Theory & Programming Languages

RECENT FACULTY HIRES
- **Anqi (Angie) Liu**
  Assistant Professor
  Machine learning theory and applications
- **Yana Safonova**
  Assistant Professor
  Bioinformatics and computational genomics
- **Patricio Simari**
  Senior Lecturer
  Geometry processing and computer graphics
The Institute for Assured Autonomy (IAA) ensures the safety, resiliency, and reliability of autonomous systems—from home security systems and health monitoring devices to first-responder robots and self-driving cars. The IAA focuses on inspiring and advancing multidisciplinary research and development related to the complex technological challenges and societal concerns associated with increasingly ubiquitous autonomous systems.

Institute for Assured Autonomy (IAA)

Quick Facts

- Established in 2020 as national center of excellence for assured artificial intelligence (AI) and smart autonomous systems
- Run jointly by the Johns Hopkins Applied Physics Laboratory (APL) and the Johns Hopkins Whiting School of Engineering (WSE)
- Seed-funding 10 projects for researchers to lead advancements in the field

Research Domains

- Transportation
- Public Safety & Emergency Response
- Health Systems

Selected Research Projects

- Developing a policy framework for autonomous vehicles
- Developing software for safe traffic management in national airspace
- Assuring safe operations of AI-enabled systems in offices, hospitals, and other social spaces
- Assuring privacy and fairness in AI technologies
- Strengthening AI systems against adversarial attacks

Leadership

- Jim Bellingham
  - Executive Director
- Anton Dahbura
  - Co-Director
- Cara E. LaPointe
  - Co-Director
- David Silberberg
  - Research Director

For more information, visit isi.jhu.edu
Students
- 506 BS students
- 20 MS students
- 48 PhD students

Graduates
- 112 BS degrees awarded
- 13 MS degrees awarded
- 12 PhDs awarded

Faculty
- 16 tenure track faculty
- 8 instructional faculty
- 15 named/endowed positions
- 7 NSF career awards
- 1 ONR young investigator awards

ABET Accredited Degrees
- Computers Science (BS, MS, PHD)
- Computer Science – Cybersecurity (BS)
- Computer Science – Entrepreneurship (BS)
- Computer Science BS + MBA
- Computer Science BS + MS

Research
- Cyber-physical Systems
- AI and Data Science
- High Assurance Software
- Cybersecurity

CSRankings.org
#18 - Embedded & real-time systems
#31 - Logic & verification
#81 - Theory
#83 - Software engineering
#85 - Robotics
#86 - Web & information retrieval

Highlights
Pascal Hitzler, professor and Lloyd T. Smith creativity in engineering chair in the computer science department at K-State, and his co-authors have been recognized with the Semantic Web Science Association Ten-Year Award for his published work

Computer Science Master's Online degree program recognized for excellence in latest U.S. News and World Report rankings. Kansas State University's online portfolio of programs was recognized for excellence in 12 categories in the 2021 U.S. News and World Report.

Beocat, the high-performance computing cluster at the Kansas State University Institute for Computational Research, is marking 15 years of service excellence having provided more than 135 million central processing unit hours to 2,500+ active researchers.

K-State computer science initiative will soon bring university computer science courses to high schools, community/tech colleges, and independent colleges across the state. The Cyber Pipeline program provides online text, videos, and programming content along with teacher training.

cs.k-state.edu
**New Faculty**

Xudong (Nick) Zhang  
Ph.D, City University of New York  
Machine Learning

Amani Ayad  
Ph.D, New Jersey Institute of Technology  
Software Testing

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**Bachelor's Degrees**

- Computer Science
  - Cybersecurity
  - Data Science
  - Information Systems

- Information Technology
  - Cybersecurity

**Master's Degree**

- Computer Information Systems

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**News & Highlights**

- 5-year B.S/M.S degrees in both Computer Science and Information Technology offered
- Explore CS Research event, funded by Google, virtually hosted over 100+ students across the country.
- 75+ students participate annually in the Grace Hopper, Tapia, National Conference on Undergraduate Research & Great Minds In STEM conferences.
- Designated as a NJ Computer Science K-12 Professional Learning hub by the NJ DOE.
- Kean leads a five-school consortium, funded by NSF, to increase the number of students entering the field of cybersecurity and data science.

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**2020 Student Population**

<table>
<thead>
<tr>
<th></th>
<th>Computer Science Majors (5 Tracks)</th>
<th>Information Technology Majors (3 Tracks)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>455</strong></td>
<td></td>
<td><strong>221</strong></td>
</tr>
<tr>
<td><strong>676</strong></td>
<td>Total Undergraduate Students</td>
<td>Population of Diverse Students</td>
</tr>
<tr>
<td><strong>52%</strong></td>
<td></td>
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</tbody>
</table>

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**Computer Science at Kean**

- Cybersecurity
- Software Engineering
- Computer Science Education
- Human Computing Interaction
- Machine Learning
- Data Science

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**2020 Student Population**

- #23 in Social Mobility  
  U.S News Ranked
- #7 Campus Ethnic Diversity Index  
  U.S News Ranked

---

**Research Awards**

- $4.3 Million
New Faculty Hires 2020-2021

Honors

**Sukyoung Ryu**’s team won Distinguished Paper Award at ICSE 2021.

**Geehyuk Lee**’s team won Honorable Mention Award at CHI 2021.

**Min Suk Kang**’s team was nominated for the GSMA Mobile Security Research Acknowledgements.

**Sang Kil Cha**’s team won Distinguished Paper Award at FSE 2020.

**Sukyoung Ryu**’s team won Distinguished Paper Award at ASE 2020.

**Sunghee Choi**’s team won Test of Time Award at CGTA journal.

**Sue Moon** & **Alice Oh** inducted to NAE of Korea.

**Alice Oh** joined Global Partnership on AI (GPAI).

Highlights

**Dongman Lee** is appointed as new Dean of Engineering at KAIST.

**Sukyoung Ryu** is appointed as new Head of School of Computing.

**Krafton** matched alumni donations to raise 11B KRW (~10M USD) for a new SoC building and education of software engineers.

**KAIST-Samsung SDS AI Joint Research Center** opened.

Alum **Kyunghyun Cho** endowed the Lim Mi-Sook Scholarship for female computer scientists.

Alums **Beom-Jun Kim, Ha-Yeon Suh & Dong-Hun Han**, and 11 engineers at Devsisters Corp. made donations to SoC.

On csrankings.org

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<tr>
<th>Rank</th>
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<td>All areas (2017-2021, worldwide)</td>
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</tr>
<tr>
<td>6th</td>
<td>HCI</td>
<td>6th</td>
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<tr>
<td>8th</td>
<td>Systems</td>
<td>8th</td>
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<tr>
<td>15th</td>
<td>Computer Vision</td>
<td>15th</td>
</tr>
<tr>
<td>15th</td>
<td>ML &amp; Data Mining</td>
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</table>

By the Numbers

<table>
<thead>
<tr>
<th>Count</th>
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<tr>
<td>50</td>
<td>Tenure-track Faculty</td>
</tr>
<tr>
<td>281</td>
<td>Ph.D. Students</td>
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<tr>
<td>237</td>
<td>M.S. Students</td>
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<tr>
<td>985</td>
<td>B.S. Students</td>
</tr>
</tbody>
</table>
Four New Faculty Members Join CSE

From left to right:

- **Assistant Professor Arielle Carr**, PhD: Virginia Tech.  **Research expertise**: scientific computing.  **Current focus**: recycling techniques for solving large linear systems and eigenproblems.
- **Assistant Professor Yu Yang**, PhD: Rutgers.  **Research expertise**: cyber-physical systems, data science, and human-system interaction.  **Current focus**: human behavior driven urban systems such as personal transportation networks.
- **Professor of Practice Steve Urban**, PhD: Lehigh.  **Previous experience**: 10 years as a research scientist at Georgia Tech Research Institute.  **Research expertise**: Game AI, automated planning, and cognitive systems.  **Current focus**: teaching software engineering and programming languages.
- **Assistant Professor Lichao Sun**, PhD: University of Illinois, Chicago.  **Research expertise**: machine learning and security.  **Current focus**: privacy, robustness, and interpretability of machine learning algorithms.

Recent Highlights:

- **Prof. Roberto Palmieri** won an NSF CAREER award entitled, "Distributed Protocols and Primitives Optimized for RDMA Read/Write Operations in Data Management Systems."
- **Prof. Hank Korth** is leading an initiative in blockchain, which currently offers three courses (pure CS, interdisciplinary with business, grad-level in Financial Engineering). His research group, part of the Scalable Systems and Software Lab, is working on blockchain-system issues and central-bank digital currencies.
- **Prof. Dan Lopresti** was named Vice Chair of the Computing Community Consortium (CCC) Council.
- **Prof. Dominic DiFranzo** received an NSF grant titled "EAGER: SaTC: Collaborative: Addressing Social Media-Related Cybersecurity and Privacy Risks with Experiential Learning Interventions."
- **Prof. Sihong Xie** received a 3-year NSF grant titled "III: Small: Collaborative Research: Algorithms, systems, and theories for exploiting data dependencies in crowdsourcing."
- **Prof. Mooi Choo Chuah** was awarded a Qualcomm Faculty Award which "supports key professors and their research through a $75k charitable donation to their university." The core topic for this award is computer vision.
- **Prof. Michael Spear** and **Prof. Jeff Heflin** were awarded an NSF REU Site award titled: “Intelligent Scalable Systems” which provided research experiences to eight undergraduate students in Summer of 2021.
National Center of Academic Excellence in Cyber Defense Education for BS: Cybersecurity (2020-2025)

NEW PROGRAMS

MS: Data Science, to be launched in Fall 2022
MS: Computer Science with Machine Learning Concentration, starting Fall 2021

FACULTY & ALUMNI NEWS


Dmitriy Dligach, Sujack Research Award in the College of Arts and Sciences, Loyola University Chicago, 2021

Dmitriy Dligach, (Site PI). R01. NIH/NIDA. Data Driven Strategies for Substance Misuse Identification in Hospitalized Patients(R01DA051464). Loyola budget: $491,973 over 5 years.

Chandra N Sekharan, Team Chair, ABET.


FACULTY RESEARCH AREAS

Mentoring programs like UCEM mean our doctoral students gain access to a robust infrastructure of support, resources, and people to fully navigate the MIT Community.

Rising Stars, an intensive workshop for graduate students and postdocs of underrepresented genders who are interested in pursuing academic careers in electrical engineering and computer science, returns to MIT this year.

GAAP, a student-run initiative offered by doctoral students in the MIT EECS department, pairs eligible URM applicants with current EECS doctoral students to receive feedback on personal and research statements.

Recent hires from the 2020-21 academic year include (L to R):
Top row: Ashia Wilson, Jelena Notaros, Marzyeh Ghassemi
Middle row: Anand Natarajan, Sixian You, Robert Yang
Bottom row: Sam Hopkins, Yoon Kim, Dylan Hadfield-Menell

Supporting our students

The new generation of faculty

By the numbers, 2021-22

<table>
<thead>
<tr>
<th>Type</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty members across EE, CS and AI+D</td>
<td>139</td>
</tr>
<tr>
<td>Graduate students</td>
<td>838</td>
</tr>
<tr>
<td>Undergraduate students</td>
<td>1568</td>
</tr>
<tr>
<td>MEng students</td>
<td>290</td>
</tr>
</tbody>
</table>

#1 in Computer Science and Information Systems: QS World University Rankings 2021
#1 in Computer Science: U.S. News and World Report 2021

Award highlights

- Hari Balakrishnan - SIGCOMM Lifetime Achievement Award
- Regina Barzilay - inaugural AAAI Squirrel AI Award
- James Fujimoto - The Sanford and Susan Greenberg Prize to End Blindness
- Shafi Goldwasser - 2021 L’Oréal-UNESCO For Women in Science International Awards
- Muriel Médard - inducted into the National Academy of Engineering
Miami University has a well-established reputation for the quality of its undergraduate and graduate programs, and high-quality research. CodeSignal ranks Miami graduates #2 nationally in fundamental computer science knowledge and programming ability (Link). Intelligent.com ranks the Miami Software Engineering degree program #7 nationally (Link). Building on successful BS and MS degree programs, Miami CSE is developing:

- Bachelor of Arts in Computer Science
- Center for Cybersecurity Education and Research
- Undergraduate Cybersecurity Degree
- Remote Graduate Cybersecurity course offerings for industry professionals
- A co-op program with in-residence and remote work opportunities
- Breaking ground Fall 2021 on new CSE home - McVey Data Science Building (Link).

**CSE HIRES**

Dr. Xianglong Feng  
*Rutgers University*  
Assistant Professor  
*Multimedia Computing, Virtual and Augmented Reality, HCI*

Dr. Aise Zulal Sevkli  
Gebze Institute of Technology  
Associate Teaching Professor  
*Deep Learning, Data Optimization, IoT*

**CSE By the Numbers**

- Full-Time Faculty - 30
- Undergraduate Majors - 837
- BS in Computer Science - 674
- BS in Software Engineering - 172
- MS in Computer Science Majors - 40
- Average Undergraduate Class size - 30
- Major to faculty Ratio – 28:1
- BS in CS Placement Rate - 97%
- BS in SE Placement Rate - 100%

**CSE RESEARCH**


Research Sponsors: CDC, DHS, US DoD, Google, Microsoft, NSF

**CSE Publication Output 2014-2020 Academic Years**

**RISING STARS**

Associate Professor Philippe Giabbanelli teaches courses in *Machine Learning* and *Computational Epidemiology*. He is responsible for leading international collaborations with Canada, UK, France, and the Netherlands and attracting over $1M in funding. Dr. Giabbanelli has authored over 100 Refereed Publications, including five Best Paper Nominations with student co-authors. (Link)

Assistant Professor Khodakhast Bibak teaches courses in *Cryptography* and *Artificial Intelligence*. Currently has 26 peer-reviewed journal articles including papers earning Editors’ Choice of *Discrete Mathematics*, and being on the Cover of *International Journal of Quantum Chemistry*. Dr. Bibak has also co-authored 3 Books.
Faculty
19 Tenure-track/Tenured
3 Lecturer Track

Enrollments – Fall 2020
Computer Science
- BS: 443
- MS: 30
- PhD: 26
Software Engineering
- BS: 96
Cybersecurity
- MS: 6

New Faculty
Briana Bettin
Assistant Professor
Areas of Expertise:
- User experience
- Human factors
- Education, engagement, retention

Junqiao Qiu
Assistant Professor
Areas of Expertise:
- Parallel computing
- Programming systems
- Compiler optimization

Leo Ureel
Assistant Professor
Areas of Expertise:
- Software engineering
- Computer science education
- Intelligent tutoring systems

Student Highlights
In Spring 2021 NCL cybersecurity competition, the MTU RedTeam completed 100% of the challenges earning a 3rd place in the team game, out of 922 teams from hundreds of universities across the US.

A team of MTU students qualified for the ICPC North America Division Championships.

Recognitions


Funding Highlights


Oommen, T., Havens, T., Meadows, G. SCC-CIVIC-PG Track B: Helping Rural Counties to Enhance Flooding and Coastal Disaster Resilience and Adaption, NSF.

Pastel, R., Morgan, C., ENTERPRISE: Real Time Strategy Game for Military Commanders, National Center for the Advancement of STEM Education.

Hatti, N., Walker, J., Morgan, C., ENTERPRISE: Interactive Website Design for Multiple Hospitality Venues, Destination Calumet LLC.

Qiu, J., CRII: SHF: GPU-accelerated FSM computations with advanced speculation, NSF.

http://www.mtu.edu/cs
Faculty Opportunities in 2021-2022

- 3 Tenure-Track Positions
- 1 Non-Tenure Track Position (cybersecurity priority)
- More information: https://www.cs.montana.edu/opportunities.html

Research Highlights

- Our organization’s research expenditures rose from $1,162K in fiscal year 2020 to an all-time high of $1,616K in fiscal year 2021.
- Brittany Fasy received an NSF Career Award (see below).
- Laura Stanley (PI) received $1.2M from the NSF and NIH to develop an opioid treatment using augmented reality (more information below).
- Clem Izurieta (PI), in partnership with Idaho National Labs, received $3.1M to detect and report cyberattacks.
- John Sheppard gave the March Provost’s Distinguished Lecture on computer-based diagnostics.
- Computer Science Major Elliott Pryor received a Goldwater Scholarship.

Student Numbers

- 553 students in Fall 2021 (including B.S., M.S. and Ph.D. students)
- 569 students in Fall 2020 (including B.S., M.S. and Ph.D. students)
- Awarded 2 Ph.D. degrees, 10 M.S. degrees and 84 B.S. degrees in AY 2020-21
MEET OUR NEWEST FACULTY

Shruti Biswal
Model Checking in Software Engineering

Shruti Biswal received her Ph.D. in Computer Science from Iowa State University. Her research interests include formal logic, model checking, and symbolic state-space generation. Her research allows for efficient verification of safety-critical systems.

Ozan Erat
Digital Image Processing / Computer Vision

Ozan Erat's research interests include digital image processing and computer vision applications. He uses artificial intelligence tools and frameworks to conduct his research. He works on several topics such as underwater color correction, skin cancer detection, point cloud systems for autonomous driving.

HIGHLIGHTS

- Computer science is one of the top majors (and the fastest growing) at Mount Holyoke College
- James McCauley was awarded an equipment grant from Edgecore Networks to support joint research among faculty and students at Mount Holyoke and UC Berkeley.
- Melody Su was awarded an NSF CRII (CISE Research Initiation Initiative) grant to support further development of Melody’s research lab and fund summer research students.

Mount Holyoke College is a research liberal arts college for women that is gender diverse with about 2000 undergraduate students. The oldest of the Seven Sister colleges, Mount Holyoke is renowned for educating women leaders, from medical pioneers to Pulitzer Prize–winning playwrights.
The CS department in the National University of Singapore currently has 59 Tenure Track, 4 Practice Track and 25 Educator Track members.

**Faculty Awards:**
- ACM SIG PLAN Conference on Programming Language Design and Implementation (PLDI) 2021 Distinguished Paper Award: Ilya SERGEY
- EATCS-IPEC Nerode Prize 2021: Sanjay JAIN and Frank STEPHAN
- IEEE Symposium on Privacy and Security (S&P) 2021 Test of Time Award: Reza SHOKRI
- International Joint Conference on Artificial Intelligence (IJCAI) 2021 Distinguished Paper Award: Warut SUKSONMPONG
- International Conference on Very Large Data Bases (VLDB) 2021 Best Research Paper Award: XIAO Xiaokui
- International Conference on Very Large Databases (VLDB) 2021 Best Scalable Data Science Paper Award: TAN Kian Lee
- Robotics: Science and Systems (RSS) 2021 Test of Time Award: David HSU and LEE Wee Sun
- ACM International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS) 2020 Most influential paper award: PEH Li Shuang
- ACM Multimedia (ACM-MM) 2020 Best Paper Award: CHUA Tat-Seng
- ACM SIGMOD Edgar F. Codd Innovations Award 2020: OOI Beng Chin
- ACM Symposium on Parallel Algorithms and Architectures (SPAA) 2020 Best Paper Award: YU Hai Feng
- Conference on Information and Knowledge Management (CIKM) 2020 Best Paper Award: KAN Min-Yen
- IEEE Intelligent Systems AI’s 10 to Watch 2020: Kuldeep MEEL
- IEEE International Symposium on High-Performance Computer Architecture (HPCA) 2020 Test of Time Award: PEH Li Shuang
- International Conference on Software Engineering (ICSE) 2020 Distinguished Paper Award: DONG Jinsong
- International Conference on Software Engineering (ICSE) 2020 Distinguished Paper Award: Abhik ROYCHAUDHURY

**News:**
- We will have a new purpose-built building with resources to cater to our growing community of students, faculty member, and staff.

Computing 3 (COM3) is a bridge building located over Lover’s Park Valley, connecting our existing buildings COM1 and COM2 with the Smart Nation Cluster. It will serve as a hub for collaboration and innovation within the university. COM3 is due to be completed at the end of 2021.

- The 33rd International Olympiad in Informatics (IOI) 2021 was hosted virtually by the NUS School of Computing from 19 to 28 June 2021. Team Singapore won 3 gold medals and a silver medal.

- NUS School of Computing launched the Centre for Computing for Social Good & Philanthropy to nurture tech leaders for social good in June 2021.

- Singapore grown tech company Sea Limited donated SGD 50 million for research and education at the NUS School of Computing in March 2021.

**New Faculty Members:**
- **YOU Yang**, Presidential Young Professor
  Research Areas:
  - Artificial Intelligence
  - Systems & Networking

- **Warut SUKSONMPONG**, Presidential Young Professor
  Research Areas:
  - Algorithms & Theory
  - Artificial Intelligence

- **Kenji KAWAGUCHI**, Presidential Young Professor
  Research Areas:
  - Artificial Intelligence
  - Algorithms & Theory

- **Prashant VASUDEVAN**, Presidential Young Professor
  Research Areas:
  - Algorithms & Theory
  - Security

- **Umang MATHUR**, Assistant Professor
  Research Areas:
  - Programming Languages & Software Engineering

- **CHANG Yi-Jun**, Presidential Young Professor
  Research Areas:
  - Algorithms & Theory

**Recent Rankings:**
- #4 in Computer Science and Information Systems: QS World University Rankings 2021
- #8 in Computer Science: Times World University Rankings 2021
Our Mission

We offer graduate level computer science education and research to support the combat effectiveness of the US Navy.

Our Students

Our students are primarily US military officers with 5-10 years experience who have been selected for graduate education in computing. We graduate 50-60 students annually, with around 100 on board at any time, including international students from several countries. Our students are highly disciplined, hard-working, and enthusiastic. They bring a strong dose of pragmatism, seeking to bring theory and practice together in their masters theses.

Our Faculty

We have 22 tenure track faculty, 4 lecturers, and about a dozen research faculty.

Our Curricula

We offer masters and PhD degrees in Computer Science. Our two-year masters curriculum requires every student to complete a thesis. Our specialty areas are: Artificial Intelligence, Cyber Security, Data Science, Mobile Computing, Modeling and Simulations, Networking, and Software Engineering. We also offer 3- and 4-course graduate certificates, both locally and remotely, in Cyber Security, AI, Data Science, and Innovation and Design.

Our Research

We examine hard national security problems, developing theories for general solutions and proof-of-concept prototypes. Cyber security and AI are top priorities; we specialize in architectures that are demonstrably secure and implementable in the Cloud and also on cryptographic protocols and advanced architectures such as quantum computing. In artificial intelligence -- autonomous, robotic, and deep learning systems -- we search for safe and reliable self-learning systems. Networking is another priority; we focus on design, characterization, measurement, and validation of communication protocols for tactical networks, unmanned systems, self-organized mobile networks, software-defined data centers, and the Internet.

Much of our research is multidisciplinary, involving students and faculty from mathematics, operations research, electrical engineering, mechanical engineering, and physics. Our research environment is unique in its blend of theory and practice, and with students' determination to put their thesis results into practice. Many student theses have led to publications in major conferences and frequent best-paper awards.
Industrial Affiliates Program

NJIT’s Newark and Jersey City, N.J., campuses are at the heart of the emerging high-tech corridor in the New York metropolitan area. Given this strategic advantage, NJIT has begun an Industrial Affiliates Program (IAP), which works with local corporations that are interested in advancing their technical operations. Member companies participate in several student engagement activities, such as capstone projects, internships, co-op courses, competitions, recruiting events, continuing education courses and joint R&D projects. Current IAP Members include major high-tech companies (Amazon, Apple, Facebook, Google, Microsoft, Twitter, AT&T), as well as financial/Wall Street companies (Bank of America, JPMorgan Chase, Forbes, UBS) and pharmaceutical companies (Johnson & Johnson, Merck).

Department of Data Science

Established in July 2021, the Department of Data Science reflects significant strides by Ying Wu College of Computing as a leader in data science education and research. Offering a B.S., M.S. and three graduate-level certificate programs, the department gives NJIT students across all degree levels a fully immersive experience to explore the deep underlying technologies driving data science and the spectrum of applications taking advantage of these technologies. Located in the region where data scientist jobs are most needed in the U.S., NJIT has made a strategic investment in data science education that significantly benefits the New York metro area. According to the U.S. Bureau of Labor Statistics, May 2020 Occupational Employment and Wages Report, the New York-Newark metropolitan region has the highest number of jobs for data scientists and mathematical scientists in the nation.

Institute for Data Science

The Institute for Data Science initiates collaborative, interdisciplinary basic and applied research in AI/ML, big data, cybersecurity and medical informatics across all NJIT colleges and schools. Founded in 2019 by Distinguished Professor David A. Bader, the institute is located at NJIT’s new Jersey City satellite campus, includes more than 35 participating faculty and has received a number of externally sponsored research projects from NSF and industry. Its weekly, virtual data science seminar series has had over 2,600 attendees since its creation in spring 2020, with prominent national and international speakers from academia and industry, including members of the U.S. National Academy of Engineering. The series is available on the Institute for Data Science’s YouTube channel.
By the numbers...

By the numbers...

Undergrad Enrollment (Fall)
- 2018: 300
- 2019: 350
- 2020: 400
- 2021: 450

Graduate Enrollment (Fall)
- 2018: 40
- 2019: 50
- 2020: 60
- 2021: 70

Degrees Awarded
- 2017: 10
- 2018: 20
- 2019: 30
- 2020: 40

Research Expenditures
- 2018: $0.0 mil.
- 2019: $0.5 mil.
- 2020: $1.0 mil.
- 2021: $1.4 mil.

Highlights
- Diverse student population: 50% ethnic minority students and 23% female students
- Rank 113 in the US for Graduate CS
  - Top 50 in Artificial Intelligence
  - Top 80 in Databases and Data Mining, Human Computer Interaction and Computer Security
- Degree concentrations in AI, HCI, SE, Security, and ML
- Funding Sources:
  - Government (NSF, DoD, DoE, ...)
  - Industry (Google, Intel, ...)

New Programs

Bachelor of Science in Cyber-Security
Designed for students interested in developing expertise in the theoretical and practical aspects of cyber-security and cyber-defense.

Professional Master in Data Analytics
Aimed at providing students with diversified backgrounds the necessary foundation in data management and analysis, computational and statistical thinking, and computer systems for applying data analytics techniques.

Research Specialties
- cyber-security
- bioinformatics
- artificial intelligence & knowledge representation
- software engineering
- programming languages
- computer & wireless networks
- data mining
- machine learning
- game design
- human-computer interaction
- high-performance computing
- smart assistive technologies
Dr. James Lester, Director of the Center for Educational Informatics & Distinguished University Professor, is PI for a new multi-institute $20M NSF grant to establish an AI Institute for Engaged Learning to develop new tools that radically improve human learning and education.

2020-21 Highlights:

- Dr. Laurie Williams was named “Distinguished University Professor” and named a 2020 Association for Computing Machinery (ACM) Fellow.
- Dr. Munindar Singh was elected a Fellow of the American Association for the Advancement of Science (AAAS), and also received the 2020 Graduate School Outstanding Graduate Faculty Mentor Award.
- Dr. Tiffany Barnes was named a 2020 Distinguished Member of the Association for Computing Machinery (ACM).
- The Department added three new NSF CAREER Award recipients: Drs. Alex Kapravelos, Chris Parnin, and Ruozhou Yu.
- Dr. Veronica Cateté received the 2020 Erskine B. Bowles Staff Service Award; the first person from NC State to win this UNC System-wide award.
- Dr. Arnav Jhala was named a Senior Member of the Association for Computing Machinery.
- Launched the Security Computing Institute (SCI), driving a major cybersecurity initiative to enhance the security and privacy of computing systems through basic and applied research and advancing and delivering cybersecurity education.
- Launched Undergraduate Cybersecurity Concentration
- May 2021 grads had NC State’s HIGHEST average starting salaries:
  - $81,250 BS CSC
  - $116,000 MS CSC
INTERIM DEAN ANNOUNCED
Dr. Alan Mislove, Professor of Computer Science, has been named Interim Dean of Khoury College. He will serve as interim dean until a permanent dean is appointed. Former college Dean Carla Bradley now serves as professor, Dean of Inclusive Computing, and Executive Director of the Center for Inclusive Computing on our Boston campus.

INSTITUTES & CENTERS
The Center for Inclusive Computing was launched in 2019 with a goal to increase women in computing programs across the country (cic.khoury.northeastern.edu).

David Choffnes, Associate Professor of Computer Science, was named Executive Director of the Cybersecurity and Privacy Institute, which is housed in Khoury College (cyber.khoury.northeastern.edu). The institute is dedicated to safeguarding critical technology through research and education. In collaboration with industry experts, government agencies, and global academic partners worldwide, the institute focuses on the research, development, and enhancement of crucial technologies.

The Network Science Institute (NetSI) at Northeastern University is a multi-disciplinary research community supporting innovative research and training in network science. NetSI brings together faculty, researchers, and students from diverse disciplinary backgrounds, including: physics, computer sciences, political sciences, business, communication, economics, and health sciences – all joined together by a shared passion for networks.

BY THE NUMBERS
• 73 TT/T faculty total - (28% interdisciplinary with another college)
• 4 PhD programs - Computer Science, Cybersecurity, Personal Health Informatics, Network Science
• 255 PhD Students
• 19 PhD graduates in the last 12 months

COOPERATIVE EDUCATION
Cooperative Education (co-op) is a cornerstone of our MS and undergraduate programs. Khoury College placed 1,700+ students in co-ops at over 700+ companies last academic year.

LOCATIONS
Khoury College has a global network of campuses with locations in Boston, London, Portland, San Francisco, San Jose, Seattle, and Vancouver.

LATEST TENURED/TENURE-TRACK AND TEACHING FACULTY HIRES
• 24 tenured and tenure-track faculty over the past five years
• 56 teaching faculty across all ranks over the past five years

RESEARCH HIGHLIGHTS
BEST PAPER AWARDS (2016-2021)
Khoury College faculty and students won best paper/test of time awards at the following conferences, forums and workshops:

CAREER, YOUNG INVESTIGATOR & SLOAN FELLOWSHIP AWARDS
From 2016-2020, the following members were awarded the Sloan Research Fellowship, Young Investigator, ASA, NSF CAREER, or DARPA Young Faculty Awards:
Chris Amato, Michelle Borkin, David Choffnes, Seth Cooper, Ehsan Elhamifar, Raymond Fu, Wolfgang Gatterbauer, Long Lu, Huy Le Nguyen, Robert Platt, Christoph Riedl, Jonathan Ullman, Jami-Willem van de Meent, Olga Vitek, Byron Wallace, Lu Wang, Daniel Wichs, Christo Wilson

CONFERENCE GENERAL OR CO-CHAIRS (2016-2021)
Khoury College faculty have been general chair or co-chair for the following conferences:

NEW FACULTY AT KHOURY COLLEGE (2021-2022)

Michael Running Wolf | Clinical Instructor | PhD, MSU-Bozeman
Adeel Bhutta | Associate Teaching Professor | PhD, University of Pittsburgh
Aadil Mina | Assistant Teaching Professor | PhD, Stanford University
Deepayan Dutta | Assistant Teaching Professor | PhD, University of Texas at Austin
Fatemeh Ghoreishi | Assistant Professor | PhD, Texas A & M University
Huaizu Jiang | Assistant Teaching Professor | PhD, University of Massachusetts, Amherst
Michael Running Wolf | Clinical Instructor | PhD, MSU-Bozeman
Aarti Satyendarayana | Assistant Professor | PhD, University of Minnesota
Saith Savage | Assistant Professor | PhD, University of California, Santa Barbara
Logan Schmidt | Assistant Teaching Professor | PhD, Carnegie Mellon University
Sanita Singh | Associate Teaching Professor | PhD, NDIT Women’s University, Mumbai
Cheng Tan | Assistant Professor | PhD, New York University
Melanie Troy | Professor of the Practice | PhD, Simon Fraser University
Mohammad Toubaee | Assistant Teaching Professor | PhD, University of Georgia
Rai Winnow | Professor & Director | PhD, Johns Hopkins University School of Medicine
Silvio Amir | Assistant Professor | PhD, Instituto Superior Tecnico da Universidade de Lisboa
David Bau | Assistant Professor | PhD, Massachusetts Institute of Technology
Emanuele Bertini | Associate Professor | PhD, La Sapienza University of Rome
Joseph Lee | Teaching Professor | PhD, University of Texas at Arlington
Varun Mishra | Assistant Professor | PhD, Dartmouth College

INTERDISCIPLINARY FACULTY
New Tenure-Track Faculty

Awad Mussa
Assistant Professor
Cybersecurity

Yangyang Tao
Assistant Professor
Data Science

Current Programs

Undergraduate Majors
- Applied Software Engineering
- Computer Information Technology
- Computer Science
- Cybersecurity
- Data Science

Graduate Degree Programs
- Master of Science in Cybersecurity

Department News

- NKU’s designation as a National Center of Academic Excellence in Cyber Defense Education (CAE-CDE) for the Bachelor of Science in Computer Information Technology, Cybersecurity Track has been renewed until 2024 by the National Security Agency and the Department of Homeland Security.

- Northern Kentucky University tops in Kentucky for awarding computer science degrees to women. The CS Department ranked 40th nationally, awarding 171 degrees in Computer Science with 21.1 percent going to women.

- The Bachelor of Science in Data Science is ranked as the 16th best program in the nation by the Data Science Degree Programs Guide (DSD).

CS Department by the Numbers

Faculty:
- 28 full-time faculty, including 10 Full Professors, 1 Associate Professor, 10 Assistant Professors, 1 Visiting Assistant Professor, 1 Professor of Practice, and 5 Lecturers.

Students:
- Over 700 current majors, with over 300 majors in Computer Information Technology and Computer Science undergraduate programs.
- 4 Years average time to degree.
- $70,000 average starting salary for Computer Information Technology, Computer Science, and Data Science graduates in 2019.
- 75% of students stay in Northern Kentucky/Greater-Cincinnati region after graduation.
Technical excellence. Whole-brain thinking. Highly interdisciplinary work.

Now in our fifth year of an ambitious growth initiative, we are in the process of hiring 20 tenure-track faculty members, more than doubling our faculty. We are driven to push the boundaries of the field with exceptional work in programming languages, machine learning, robotics, network security, computer science theory, artificial intelligence, computational imaging, human-computer interaction, high-performance computing, networking, algorithms, mechanism design, and personalized education.

New Faculty

V.S. Subrahmanian joined as Walter P. Murphy Professor with a joint position in the Buffett Institute for Global Affairs. Most recently, he was a distinguished professor at Dartmouth College and is a leader in cybersecurity and AI.

Core Tenure-track CS Faculty

Emma Alexander (UC Berkeley) bio-inspired, physics-based approach to artificial vision

Xinyu Xing (Penn State) software, systems, and AI security

Faculty of Instruction

Mohammed Alam (PhD Northwestern) AI and machine learning

Connor Bain (PhD Northwestern) computing frameworks in K-12 STEM education

Sruti Bhagavatula (PhD Carnegie Mellon) security, privacy

Zach Wood-Doughty (PhD Johns Hopkins) natural language processing methods

Huiling Hu (PhD University of Maryland) data science, machine learning related to climate change

By the Numbers

Faculty: 42 tenure track, 10 teaching track
Undergraduate Students: ~800 majors
Graduate Students: 130 PhD and 180 MS
Enrollment: 8,100

Programs

We welcomed the first class in our new MBAi program, a joint degree at the intersection of business and technology offered by the Kellogg School of Management and the McCormick School of Engineering.

In collaboration with the Department of Industrial Engineering and Management Sciences, we launched a data science and engineering minor to teach practical knowledge fundamental to the data science lifecycle.

A new certificate from the Human-Computer Interaction + Design Center will help students build knowledge and skills in the design, evaluation, and implementation of interactive computing systems for human use.

Diversity Initiatives

We organized a new summer camp for high schoolers from backgrounds underrepresented in CS.

As part of the BRAID (Building, Recruiting, And Inclusion for Diversity) Initiative we seek to increase participation from underrepresented groups in undergraduate CS programs by working to positively transform our classroom environments.

Our DEI committee members supported over 80 Northwestern CS students in the Grace Hopper Celebration of Women in Computing, and the Richard Tapia Celebration of Diversity in Computing.

CS Chairs Conference

This summer, we held a conference with faculty from across the country to examine education, faculty, and programming issues faced by CS departments.

CS+X Connections

Our CS+X interdisciplinary initiatives continue to flourish.

Our Digital Marketing and Computer Science Workshop brought together leaders from Adobe Research, Kellogg Marketing, and Computer Science to discuss the complex, interdisciplinary problems of today’s (and tomorrow’s) digital marketing landscape.

The “AI and Its Impact” series highlighted research underway with the aim of inspiring further AI research across the University.

Awards

Noshir Contractor received the 2022 SIMMEL Award and the International Communication Association Fellows Book Award.

Jason Hartline received the ACM SIGecom Test of Time Award, the association’s annual recognition of influential papers at the intersection of economics and computation.

Josiah Hester was named to the Brilliant 10 by Popular Science. He also received the 2021 Most Promising Engineer or Scientist Award from the American Indian Science and Engineering Society.

PhD student Byungjin Jun (advised by Fabian Bustamante) received a Google PhD fellowship.

Samir Khuller was named EATCS Fellow by the European Association for Theoretical Computer Science.

Eleanor O’Rourke and Marcelo Worsley received prestigious NSF CAREER awards.
Research Grants
$3.6 million in sponsored research in 2020 from FAA, AFRL, NASA, and NIH in areas such as cybersecurity, artificial intelligence, flight safety, virtual reality, material science and space communication.

Degree Programs (Current Enrollment)
• B.S. (430) in Computer Science and Electrical Engineering
• M.S. (126) in Computer Science and Electrical Engineering
• Ph.D. (38) in Electrical Engineering and Computer Science
• Certificate in Bioinformatics.

Research Centers
• Avionics Engineering Center
• Center for Scientific Computing and Immersive Technologies

Online M.S. Ranked among the nation’s “Best Online Master’s Engineering Programs” by U.S. News & World Report.

History
We began to offer electrical engineering study in 1891. Soon after modern computing came of age in the 1950s, the Russ College pioneered its own computer science courses in 1957. Established in 1999 by the visionary namesakes of the Russ College of Engineering and Technology at Ohio University, the Russ Prize is awarded biennially by the National Academy of Engineering and Ohio University to recognize a bioengineering achievement in widespread use that improves the human condition.

Departmental News
• Choose Ohio First Scholarships Available for new Computer Science Undergraduates and Transfer Students
• Ohio University launched their first satellite, Bobcat-1, built by an EECS team.
• Our Regional Programming Center is associated with the Ohio Cyber Range Institute on our cybersecurity efforts.

Two NSF career awardees and three ION fellows are among our faculty.

Meet Our New Faculty

Chad Mourning, Ph.D.
Ohio University
Computer graphics, augmented and virtual reality, simulation and modelling

Sabrina Ugazio, Ph.D.
Politecnico di Torino, Italy
Satellite navigation, signal propagation, remote sensing, time and frequency transfer

Faiz Rahman, Ph.D.
University of Glasgow
Solid-state lasers
The Oregon Research and Teaching Security Operations Center aims to address the shortage of trained cybersecurity professionals while serving the security needs of regional underserved entities — such as small local government agencies, K-12 schools, and nonprofit organizations — who struggle to meet their cybersecurity needs. Studies have shown that to best prepare students for careers in cybersecurity, experiential learning is the key, and ORTSOC is a “teaching hospital” for cybersecurity operations.
RECOGNITION AND HIGHLIGHTS

» Professor Shaowen Bardzell elected as executive VP for the ACM Special Interest Group on Computer-Human Interaction.

» Assistant Professor Shomir Wilson and David Reese Professor Lee Giles receive a $1.2 million NSF grant to build PrivaSeer, a search engine that can more efficiently collect and classify online privacy documentation.

» Professor Mary Beth Rosson named a 2020 ACM Fellow for her contributions to human-computer interaction.

» Edward Frymoyer Chair Vasant Honavar earned a NSF grant to create interdisciplinary institute encouraging the use of AI-enabled materials discovery, design and synthesis.

» Assistant Professor Sarah Rajtmajer receives $900,000 grant from U.S. Air Force Office of Scientific Research to create AI agents that can mirror human ability to plan for future events, which they’ll test in Minecraft.

» PNC Technologies Career Development Assistant Professor Amulya Yadav presents research at AAAI 2021 demonstrating novel detection systems that can identify substance use based on an individual’s Facebook posts.

» Distinguished Professor Jack Carroll earned the Pioneer Award from the International Federation for Information Processing Technical Committee on HCI.

» Assistant Professors Saeed Abdullah and Kenneth Huang present research at CHI 2021 finding that essential workers’ tweets have shown surprising positivity during pandemic.

NEW FACULTY HIRES

TENURE/TENURE-TRACK

- Jinghui Chen
  Assistant Professor
  Security and Privacy
  Ph.D., UCLA

- Kelley Cotter
  Assistant Professor
  Social and Organizational Informatics
  Ph.D., Michigan State University

- Priya Kumar
  Assistant Professor
  Social and Organizational Informatics
  Ph.D., University of Maryland

- Qingyun Wu
  Assistant Professor
  Data Science and Artificial Intelligence
  Ph.D., University of Virginia

TEACHING

- Miguel Bustamante
  Assistant Teaching Professor
  Data Science and Artificial Intelligence
  Ph.D., University of Nebraska

- Carl Cotner
  Associate Teaching Professor
  Security and Privacy
  Ph.D., University of California, Berkeley

- Ying Lu
  Associate Teaching Professor
  Social and Organizational Informatics
  Ph.D., University of Wisconsin – Milwaukee

- Daniel Richert
  Assistant Teaching Professor
  Human-Computer Interaction
  M.S., Indiana University – Bloomington

RESEARCH HEADLINES (Headlines are clickable links)

» New tool could help authors bust writer’s block in novel-length works

» Honeypot security technique can also stop attacks in natural language processing

» Students use AI to support mental health, address unanswered calls for help

» Treating non-humans as stakeholders key to sustainable technologies

» Clickbait headlines might not lure readers as much, may confuse AI

» Study of police language aims to find patterns that may lead to tragic outcomes

» Twitter data unveils issues nursing mothers face, informs proposed interventions

» AI can help reduce risk of HIV in high-risk communities

» Pandemic survey points to design improvements for future remote learning

» What if opting out of data collection were easy?

» Study suggests smart assistant design improvements for deaf users

BY THE NUMBERS

<table>
<thead>
<tr>
<th>RESEARCH AND FACULTY</th>
<th>ENROLLMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>$10.5M</strong> FY21 New Funding</td>
<td><strong>1,665</strong> B.S.</td>
</tr>
<tr>
<td><strong>77</strong> Active Awards</td>
<td><strong>34</strong> M.S.</td>
</tr>
<tr>
<td><strong>72</strong> Full-Time Faculty</td>
<td><strong>167</strong> Ph.D.</td>
</tr>
<tr>
<td><strong>46</strong> Tenured/ Tenure-Track Faculty</td>
<td><strong>1,500+</strong> Online</td>
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</tbody>
</table>

- **4** Primary Research Areas
  - Data Sciences and Artificial Intelligence
  - Human-Computer Interaction
  - Privacy and Security
  - Social and Organizational Informatics

- **3** Cross-Cutting Research Areas
  - Biomedical and Health Informatics
  - Ethics
  - Sustainability
NEW FACULTY 2021

PAUL VALIANT
PhD, Massachusetts Institute of Technology

STEVE HANNEKE
PhD, Carnegie Mellon University

PETROS DRINEAS
Received IBM Academic Award

ANANTH GRAMA
Received Amazon Research Award

ANURAN MAKUR
ScD, Massachusetts Institute of Technology

AHMED QUARESI
PhD, University of California, San Diego

RAYMOND YEH
PhD, University of Illinois, Urbana-Champaign

RUOQI ZHANG
PhD, Cornell University

TIANYI ZHANG
PhD, University of California, Los Angeles

AWARDS AND PROMOTIONS

3 RECEIVE CAREER AWARDS
Professors Jeremiah Blocki, Christina Garman, and Dan Goldwasser received NSF CAREER AWARDS in 2021

ALEX POTHESEN // Awarded 2021 George Pólya Prize in Applied Combinatorics

TIARK ROMPF // Named Kevin C. and Susanne L. Kahn New Frontiers Associate Professor

ROOPSHA SAMANTA // Received Amazon Research Award

MUHAMMED SHAHBAZ // Named Kevin C. and Susanne L. Kahn New Frontiers Assistant Professor

WOJIECH SZPANKOWSKI // Elected to Academia Europaea

CYMANII
Professors Antonio Bianchi, Ananth Grama, Aniket Kate, Dave Tian, and Dongyan Xu joined the national Cybersecurity Manufacturing Innovation Institute (CyManII) to improve cybersecurity and energy efficiency for American manufacturing.

USENIX’21
Purdue CS professors presented 10 papers at USENIX Security Symposium.

SUSTAINED GROWTH
224% Increase growth in undergrad population over 10 years (2011-2021)
1805 CS Majors (9 Tracks)
367% Increase growth in DS Major over 4 years (2018-2021)

2 UNDERGRADUATE DEGREES
Computer Science | Data Science

WOMEN IN THE PROGRAM
Undergraduate 2021-2022 - 23%
Graduate 2021-2022 - 19%

GRADUATE STUDENTS
495 MS and PhD Students
26% Increased growth in grad population from previous year

RESEARCH EXPENDITURES
FY2020

$18.3 MILLION

SUPPORT
168 RAs | 188 TAs | 9 Fellowships

cs.purdue.edu
Computer and Cyber Sciences Department

At Regis University, Anderson College of Business and Computing, we believe that empowering students to expertly design and implement computational and cybersecurity solutions drives the strategic thinking needed to solve the world’s most challenging problems in a socially just manner.

Program format
On Campus and Online options

Program options
Earn a bachelor’s and master’s degree at the same time

Professional credentials
Certificates available to sharpen skills

Leading the way
First fully online program to earn ABET accreditation
Designated a National Center of Academic Excellence in Cyber Defense by the NSA and DHS
Host of the Rocky Mountain Collegiate Cyber Defense Competition

Faculty highlights

Pam Smallwood, assistant professor
Awarded the NCWIT Extensions Services for Undergraduate Programs (ES-UP) grant to recruit or retain women in computing departments.

Jeff Hemmes, Ph. D., associate professor
Awarded the USAFA Air Force Research Lab Summer Faculty Program grant for three consecutive years.

Department Chair
Richard Blumenthal, Ph.D.
rblument@regis.edu
303.458.4304

regis.edu/anderson
Xumin Liu and Rajendra Raj won an NSF grant to create Data Science coursework that is more hands-on and accessible.

Reynold Bailey is co-PI on a $2M NSF research traineeship program for graduate students, AWAREness for Sensing Humans Responsibly with AI (AWARE-AI).

Xumin Liu and Rajendra Raj won an NSF grant to create Data Science coursework that is more hands-on and accessible.

Recent Hires

Varsha Dani
Theory
Ph.D., University of Chicago

Christian Chilan
AI & Robotics
Ph.D., UIUC

Ting Cao
MSc, Univ. of Edinburgh

Faculty highlights

· Second year student Saranya Dadi is conducting research to make machine learning for automated surveillance systems fairer.
· Over the past year, Van Pham and J.P. Ramassini worked with students from RIT, MIT, the University of Pittsburgh, and the University of Waterloo to build and install an autonomous system for an Indy Light racecar.

Student highlights
Interdisciplinary Science and Engineering (ISE) building
- Innovative teaching environments and flexible lab spaces
- 10,000 ft² in research space
- Active learning classroom
- A research computing and data visualization support center

We’re hiring multiple faculty members!
For more info, please visit cs.slu.edu/hiring

2021 Faculty Highlights


Kate Holdener: New Grant from American Association of University Women: Increasing Early Interest in Engineering for Young Girls.

Jie Hou: Advance Protein Structure Prediction using Machine Learning and Data Mining

Abby Stylianou: New NSF grant: Leading computational efforts for NSF Biology Integration Institute Award: “New Roots for Restoration”.

Reza Tourani: Intel Award: Security and Privacy in Pervasive Edge Computing Ecosystem

Flavio Esposito: 2021 Outstanding Graduate Faculty Award at Parks, three active NSF grants, Winner of Comcast Innovation Fund.

Department Highlights
- Outstanding faculty, known for their advanced knowledge of the field and enthusiasm in teaching
- Strong computing ecosystem in the St. Louis region, including many tech startups and Fortune 500 companies
- All undergraduate and graduate-level courses taught in small labs or lectures; extensive one-on-one interaction with faculty

Research Clusters

About Saint Louis University
Founded in 1818, Saint Louis University is one of the nation’s oldest and most prestigious Catholic universities. SLU, which also has a campus in Madrid, Spain, is recognized for world-class academics, life-changing research, compassionate health care, and a strong commitment to faith and service.

Fast Facts about SLU
- 12,649 Students from all 50 states and 78 foreign countries
- $1.2B Endowment
- 190+ Undergraduate and graduate programs
- 2,348 Faculty members

New SSM Health Saint Louis University Hospital

Fast Facts about CS@SLU
- 13 Computer science faculty, and growing
- 212 Undergraduate students
- 94 Graduate Students
- $3.3M Current active awards

Degrees Offered
- PhD in Computer Science
- MS in Artificial Intelligence
- MS in Bioinformatics
- MS in Computer Science
- MS in Software Engineering
- BA in Computer Science
- BS in Computer Science
- BS in Data Science

cs.slu.edu

Higher Purpose. Greater Good.
The information, computing, and business disciplines at Simmons University combine theory with professional practice to enable students to succeed, thrive, and become leaders in their fields. The College of Organizational, Computational, and Information Sciences is led by Dean Marie desJardins, together with Sanda Erdelez (Director of the School of Library and Information Science (SLIS)), Amber stubbs (Director of the Division of Mathematics, Computing, and Statistics (MCS)), and Ray Pfeiffer (Director of the School of Business (B-School)).

Simmons’ mission as a women-centered institution is to provide transformative learning that links passion with lifelong purpose. We support small classes, combine practice with theory, and provide a supportive, innovative environment. We make use of the vibrant technology, business, library and cultural heritage, and education communities in Boston to enhance our faculty and student experiences.

MCS houses undergraduate degree programs in Computer Science, Information Technology, Data Science & Analytics, Web Design and Development, Mathematics, and Statistics. SLIS offers programs in Library and Information Science leading to PhD and to MS degrees with concentrations in Archives, Cultural Heritage, Information Science & Technology, and School Library Teacher, as well as dual degrees in Archives Management/History and Library Science/Children’s Literature. The B-School offers BSBA degrees in Accounting, Business & Management, Finance, Marketing, and Retail Management.

This year, Simmons launched CompleteDegree@Simmons with nine fully-online Bachelor’s programs. Of these flagship programs, three are from COCIS: Business and Management (BSBA), Computer Science (BS), and Marketing (BSBA). A fourth program in Public Relations/Marketing Communication (joint with the Communications Department) will be added in January 2022.

In her first year as President of Simmons, Dr. Lynn Perry Woo-ten has established the President’s Advisory Council on Diversity, Equity, and Inclusion to advance Simmons’ commitment to women-centered education and leadership. The College of Organizational, Computational, and Information Sciences nurtures a supportive and collaborative environment by embracing the principles of diversity and identity inclusion, developing the next generation of critical thinkers, problem solvers, and principled leaders who can solve the global challenges of the 21st century.

COCIS At A Glance

<table>
<thead>
<tr>
<th>STUDENTS</th>
<th>MAJORS &amp; PROGRAMS</th>
<th>DEGREES GRANTED</th>
<th>FACULTY</th>
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<tr>
<td>Undergrad: 122</td>
<td>Undergrad: 22</td>
<td>Undergrad: 45</td>
<td>Tenured: 24</td>
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<td>Graduate: 7</td>
<td>Graduate: 313</td>
<td>Tenure-Track: 12</td>
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<td>Contract: 10</td>
</tr>
<tr>
<td>Contract: 10</td>
<td>Adjunct: 36</td>
<td>Adjunct: 36</td>
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FACULTY AWARDS & ACCOMPLISHMENTS

- **Professor Naresh Agarwal (SLIS)** was elected President of the Association for Information Science & Technology (ASIS&T).
- **Sanda Erdelez, SLIS Director and Professor**, is the Chair-elect of the iSchool Organization.
- **Rong Tang, Professor and Co-Director of the SLIS Doctoral Program**, is the President-elect of the Association for Library and Information Science Education (ALISE).
- **Associate Professor Kyong Eun Oh (SLIS)** received an Alfred P. Sloan Foundation award for her project, “Collaborative Research Information Management in Cloud-Based Repositories,” which will explore the most effective ways for researchers to manage files in collaborative projects.
- **Associate Professor Colin Rhinesmith (SLIS)** has been awarded a grant by the Institute of Museum and Library Services (IMLS) to study digital inclusion and broadband access in tribal libraries, in partnership with the Association of Tribal Archives, Libraries, and Museums (ATALM). Rhinesmith also received the ASIS&T Outstanding Information Science Teacher Award and was named the Provost’s Faculty Fellow for Scholarship and Research.
- **Associate Professor Charlene Spiceland (Business)**, who retired in June 2021, was named the 2021 Outstanding Educator of the Year by the Massachusetts Society of Certified Public Accountants (MSCPA).
- **Professor Nanette Veilleux (MCS)** received a collaborative grant from the National Science Foundation (NSF) to study the connection between prosody—inflections in speech tone and rhythm—and meaning. Veilleux also received a Fulbright grant to teach computer science at Fulbright University in Vietnam.
- **Associate Professor Katherine Wisser, Director of the Archives Management Concentration and Archives Certificate**, has been selected as a Fellow of the Society of American Archivists (SAA) and is the newly appointed Associate Director of SLIS.
- **NEW FACULTY**
  - Brian Daly (Business)
  - Katelyn Federico (MCS)
  - Riti Gour (MCS)
  - Gokhan Karaatli (Business)
  - Divya Khaitan (Business)
  - Aspen Olmsted (MCS)
  - Lauren Trichtinger (MCS)

simmons.edu/cocis
The School of Computing Science at Simon Fraser University (SFU) is comprised of world-class researchers, talented instructors and an enthusiastic group of staff, all dedicated to the success of students and advancing knowledge dissemination and cutting-edge research in computer science.

SFU is among the top Canadian schools in computer science and has internationally competitive programs.

NEW FACULTY HIRES IN 2020-2021

Alaa Alameldeen
Associate Professor
PhD Wisconsin

Ke Li
Assistant Professor
PhD UC Berkeley

Steven Ko
Associate Professor
PhD UIUC

Yuepeng Wang
Assistant Professor
PhD UT Austin

ACADEMY AND SOCIETY FELLOWS
• 4 Royal Society of Canada (RSC) Fellows
• 1 ACM Fellow
• 2 IEEE Fellows
• 1 SIAM Fellow
• 2 Fellows of the Canadian Academy of Engineering
• 1 IEEE VIS Fellow
• 1 ACM CHI Academy
• 1 SIGGRAPH Academy

TEST OF TIME PAPER AWARDS
• INFOCOM - 2015
• ACM SIGKDD - 2015, 2017
• ICCV Helmholtz - 2017
• ICDE - 2018
• IEEE PAMI Longuet-Higgins - 2020
• ACL - 2021

MAJOR AWARDS AND HONOURS IN 2020-2021
• Best Experiments, Analysis & Benchmark Paper Award at VLDB 2021: Xiaoying Wang, Weiyuan Wu, Changbo Qu, Jiannan Wang
• Borealis AI 2021 Fellow: Nelson Nauata
• Godel Prize 2021: Andrei Bulatov
• RSC Fellow 2021: Sheelagh Carpendale
• ACM SIGGRAPH Academy 2020: Eugene Fiume
• Google PhD Fellowship 2021: Zhiqin Chen
• IEEE PAMI Longuet-Higgins Prize 2020: Yasutaka Furukawa

MAJOR FACULTY AWARDS AND GRANTS
• 14 Natural Sciences and Engineering Research Council Discovery Accelerator Awards
• 2 Natural Sciences and Engineering Research Council Steacie Memorial Fellowships
• 6 Google Faculty Research Awards

2,337 UNDERGRADUATE STUDENTS
470 GRADUATE STUDENTS (PHD & MSC)
68 FACULTY MEMBERS

2020 CS RANKINGS

Computer Vision
# 01 in Canada # 28 in the World

Computer Graphics
# 03 in Canada # 15 in the World

Databases
# 02 in Canada # 25 in the World

Visualization
# 04 in Canada # 54 in the World

Overall
# 04 in Canada # 53 in the World

CANADA’S ENGAGED UNIVERSITY
Find out more at sfu.ca/computing
Singapore Management University (SMU) was established in year 2000 as a specialist university focusing on Computing, Management, and Social Sciences. The School of Computing and Information Systems is the only SMU school offering research and education programs in STEM (Science, Technology, Engineering and Math) disciplines.

**RESEARCH AREAS AND ACHIEVEMENTS**

CREATE COMPUTING TECHNOLOGY AND SYSTEMS

- **ARTIFICIAL INTELLIGENCE & DATA SCIENCE**
  - Data Management & Analytics
  - Intelligent Systems & Optimisation
  - Machine Learning & Intelligence

- **HUMAN-MACHINE COLLABORATIVE SYSTEMS**
  - Pervasive Sensing & Systems
  - Multimedia
  - Human-Computer Interaction

- **INFORMATION SYSTEMS & TECHNOLOGY**
  - Software Engineering & Systems
  - Cybersecurity
  - Information Systems Management

**RESEARCH AREAS AND ACHIEVEMENTS**

- **ENGINEERING AND MATH** disciplines.

- **School of Computing and Information Systems**
  - Singapore Management University (SMU) was established in year 2000 as a specialist university focusing on Computing, Management, and Social Sciences.

**EDUCATION PROGRAMMES AND HIGHLIGHTS**

- **UNDERGRADUATE**
  - B.Sc. (Computer Science)
  - B.Sc. (Information Systems)
  - B.Sc. (Computing and Law)

- **POSTGRADUATE PROFESSIONAL**
  - Master of IT in Business (MITB)

- **DOCTORAL**
  - Ph.D. in Computer Science
  - Ph.D. in Information Systems
  - Doctor of Engineering

**MITB** was placed within the top 2 in Asia for the fourth year running in the 2022 QS World University Rankings for Masters in Business Analytics.

**FACULTY, STUDENTS AND ALUMNI**

- **Prof. David Lo** received the IEEE Technical Council on Software Engineering Distinguished Service Award in 2021.

- **Associate Prof. Akshat Kumar** was elected to Senior Member of AAAI in 2021.

- **PhD Candidate GOKARN Ila Nitin** (left) and **Prof. Archan MISRA** (right) received the Best Paper Award at the 13th Intl Conf on COMmunication Systems & NETworkS for their paper “Demonstrating High-Performance Simultaneous Visible Light Communication and Sensing”. —

**FACULTY, STUDENTS AND ALUMNI**

- **Prof. Robert H. DENG** and **Dr. Xu Shengmin** received one of two Best Papers Awards at the European Symposium on Research in Computer Security (ESORICS 2020) for their paper “Pine: Enabling Privacy-Preserving Deep Packet Inspection on TLS with Rule-Hiding and Fast Connection Establishment”.

**FACULTY, STUDENTS AND ALUMNI**

- **Associate Prof. SUN Jun** received the ACM SIGSOFT Distinguished Paper Award at the Intl Conf on Software Engineering (ICSE 2020) for the paper “White-box Fairness Testing through Adversarial Sampling”.

**FACULTY, STUDENTS AND ALUMNI**

- **PhD Candidate GOKARN Ila Nitin** (left) and **Prof. Archan MISRA** (right) received the Best Paper Award at the 13th Intl Conf on COMmunication Systems & NETworkS for their paper “Demonstrating High-Performance Simultaneous Visible Light Communication and Sensing”.

**FACULTY, STUDENTS AND ALUMNI**

- **MITB Analytics students Ms. GOH Bee Keow** and **Ms. Salkar BINIT AMEYA** came in first in the 2021 IEMO-FlexSim Student Simulation Competition.

**FACULTY, STUDENTS AND ALUMNI**

- **Carro**, Southeast Asia’s largest automotive marketplace, co-founded by alumni Mr. Aaron TAN (middle), Mr. Kelvin CHNG (right) and Mr. Aditya LESMANA (left) achieved Unicorn Status and was named Asia Pacific’s fastest growing company in 2021 by The Financial Times and Statista. —

**FACULTY, STUDENTS AND ALUMNI**

- **Undergraduate students Mr. Christopher LIM**, **Mr. Bryan LEE**, **Ms. KO Hui Ning**, **Ms. Justina WONG** and **Mr. Shawn PANG** from first cohort of Computer Science degree programme clinched the top spot at the CODE_EXP Hackathon 2021.
Department of Computer Science

RESEARCH NEWS

AI / MACHINE LEARNING / COMPUTER VISION

Yue Ning, "CAREER: Towards Deep Interpretable Predictions for Multi-Scope Temporal Events"

Samantha Kleinberg, NIH R01 "BIGDATA: Causal Inference in Large-Scale Time Series"

Jie Shen, "CRII: RI: Efficient and Robust Statistical Estimation from Nonlinear Compressed Measurements"

Yue Ning, "CRII: III: Learning Dynamic Graph-based Precursors for Event Modeling"

Philippos Mordohai, "Collaborative Research: NRI: INT: Cooperative Underwater Structure Inspection and Mapping"

Hui Wang and Jun Xu, "SaTC: CORE: Medium: Privacy for All: Ensuring Fair Privacy Protection in Machine Learning"


SYSTEMS / PROGRAMMING LANGUAGES

Georgios Portokalidis, DARPA Young Faculty Award "Effective Software Monitoring Leveraging Hardware Debugging Extensions"

Eric Koskinen, "SHF: Small: Symbolic Commutativity Analysis for Multicore Concurrency"

Jun Xu, "Collaborative Research: SaTC: CORE: Medium: Rethinking Fuzzing for Security"

Eric Koskinen, "Ensuring Safety and Liveness of Modern Systems through Dynamic Temporal Analysis"

US NEWS

#91 in CS
#8 in Best Online Master's in Computer Information Technology Programs

CSRANKINGS.COM

#63 Overall
#24 in Computer Vision
#58 in Machine Learning
#41 in Artificial Intelligence
#40 in Computer Security
#20 in Programming Languages
#22 in Logic & Verification

ACADEMIC HIGHLIGHTS

New Gateway Academic Center opened

Jason Corso appointed Director of the Stevens Institute for Artificial Intelligence (SIAI)

Georgios Portokalidis and Enes Göktaş win PWNIE award for the most innovative research at the 2021 American Black Hat Conference

Stevens CS Student, Ben Mirtchouk, topped more than 136,000 participants in the global TCS CodeVita coding challenge

NINE NEW CS FACULTY

Total Faculty: 30
Female Faculty: 10
Joined Since 2016: 21
Joined in 2021: 9
New Faculty Hires in Fall 21

- Two new tenure-track assistant professors join the Department:
  - Dominik Kempa -- Algorithms
  - Supartha Podder -- Quantum computing

Faculty Awards and Leadership

- Aruna Balasubramanian – 2021 ACM SIGMOBILE Rockstar award and Google Research Scholar award
- Michael Bender – ACM Distinguished Member for "outstanding scientific contributions to computing"
- Stanley Bak – AFOSR Young Investigator Award
- Andrew Schwartz – DARPA Young Investigator Award
- Scott Smolka – 2021 Edsger W. Dijkstra Prize in Distributed Computing
- Leadership in top-tier conferences – Anshul Gandhi (TPC co-chair of SIGMETRICS 2021), Dimitris Samaras (TPC co-chair of CVPR 2022)

PhD Student Success

- Several PhD student and faculty teams won best paper awards in major CS conferences – two “outstanding paper” awards at SPAA ’21, TVCG best journal paper award at IEEE VR 2021, and best paper award in EWSN 2021.
- Three PhD students received the CRA’s Computing Innovation Fellows (CI Fellows) award – Alissa Yurovsky (2020), Tapti Patil (2021) and Mallesham Dasari (2021).

Rankings

- Stony Brook Computer Science ranks #26 overall in CSrankings.org with two individual subfields, computer vision and visualization, ranked within the top 10.
- *US News and World Report* ranks the undergraduate program top #48 in the country.

Other Highlights

- The department is part of a recent $3M NSF NRT award for graduate research training on detecting and addressing bias in data, humans, and institutions. This is a significant collaboration between computational and data science with human-centered sciences.
- The department is making advances in quantum computing. It is a recipient of a recent Quantum Computing & Information Science Faculty Fellows award from NSF. Himanshu Gupta is leading major inter-disciplinary research projects on quantum networks with two individual research awards totaling over $1M+ from NSF and Cisco.
Computer Science at SU

- Artificial Intelligence and Machine Learning
- Cognitive wireless systems
- Cybersecurity
- Cyberphysical Systems and IoTs
- Programming languages
- Smart Grid systems

NSF Career Award

Sucheta Soundarajan
Associate Professor - Promoted Fall 2021

Received NSF Career Award for Foundations of Ethical Social Network Analysis

Faculty Award Highlights

Vir V. Phoha
Professor
Defense Advanced Research Projects Agency- Enhanced Attribution

Fernando Fioretto
Assistant Professor
NSF grant for Collaborative Research: RI: Small: Deep Constrained Learning for Systems

Kristopher Micinski
Assistant Professor
Department of Defense- Enhanced Usability of Malware Analysis Pipelines

Garrett Katz
Assistant Professor
Office of Naval Research- A Nerocognitive Approach to Robotic Cause-Effect Reasoning During Learning

346
Undergraduates

219
Masters Students

51
Ph.D. Students

Transform together.
The College of Engineering & Computer Science is an inclusive, intimate, and collaborative community of innovators set within Syracuse University’s gorgeous campus of extensive academic offerings and quintessential college experiences. With undeniable spirit, our students master in-demand disciplines, gain real-world, integrative skills, and graduate prepared to succeed in their careers and shape the future.
Program and Faculty Highlights

- New Tenure-Track Assistant Professor Jung-Eun Kim
- New Assistant Teaching Professors Jean-Daniel Medjo Me Biomo, Nadeem Ghani, and Joao Paulo (J.P.) Oliveira Marum
- The Computer Science Program received full accreditation from the ABET Accreditation Team for the next seven years
- Qinru Qiu received the IEEE Region 1 Technology Innovation Award
- Asif Salekin received the 'IAAI Deployed Application Award' from the Thirty-Third Annual Conference on Innovative Applications of Articial Intelligence (IAAI-21) for "Preclinical Stage Alzheimer's Disease Detection Using Magnetic Resonance Image Scans"

Broadening Participation in Computing

- Student led organization, Innovate Orange, expanded the CuseHacks hackathon to include over 350 people worldwide on a virtual platform (more)
- Farzana Rahman continues her work with Syracuse University Aspiring Students in Computing and Engineering Network (SU-ASCENT) and the National Center for Women in Information Technology (NCWIT)
- Farzana Rahman received a Google grant for her "Research Exposure in Socially Relevant Computing (RESORC)"

Research Highlights

- Biao Chen, M.J. Gans, and J. Matyjas are granted a patent for "Efficient Channel Estimation and Symbol Detection for Massive MIMO-OFDM"
- Shiu-Kai Chin received a NSF grant for Planning IUCRC Syracuse University: Center for High Assurance Secure Systems and IoT (CHASSI)
- Wenliang Du received an NSF grant for "Expanding TrustZone"
- Bryan Kim continues research on funding from Samsung to explore dynamically provisioned SSDs for container-native storage
- Asif Salekin, Zhe Feng, and Shabnam Ghaffarzadegan received a patent for "System and Method for Audio Event Detection in Surveillance Systems"

Learn more at ecs.syr.edu
Temple CIS is committed to exploring new opportunities in training students and expanding research strengths in data science, large-scale networked computing and machine learning to support future visions of computing. Internationally-recognized faculty, staff and more than 1,200 undergraduate and graduate students are fueling the department's rise towards the next level of excellence in academic programs and research endeavors.

**Core Research Areas**
- Artificial Intelligence
- Computer Vision
- Machine Learning
- Data Mining
- Natural Language and Processing
- Information Retrieval
- Computer Architecture
- Computer Networks
- Computer Security
- Data Science
- Design Automation
- Embedded & Real-time Systems
- High-performance Computing
- Mobile and Ubiquitous Computing
- Measurement & Perf. Analysis
- Edge Computing
- Wireless Sensor Networks
- Software Engineering
- Algorithms & Complexity
- Bioinformatics
- Economics & Computation
- Human Computer Interaction
- Robotics
- Visualization

**Academic Programs**
- Computer Science BA, BS
- Information Science and Technology BA, BS
- Data Science BS
- Mathematics and Computer Science BS
- Mathematics and Computer Science with Teaching BS
- Physics and Computer Science BS
- Computational Data Science MS
- Computer Science MS
- Information Science and Technology MS
- Cyber Defense and Information Assurance PSM
- Bioinformatics PhD
- Computer and Information Science PhD

**DEI Initiatives**
- Headquarters of STARS Computing Corps Alliance for Broadening Participation in Computing
- BRAID Affiliate
- NCWIT Learning Circles Member
- Sponsored student/faculty participation in Grace Hopper Celebration of Women in Computing
- Sponsored student/faculty participation in Tapia Celebration of Diversity in Computing

**Research Centers**
- Center for Data Analytics and Biomedical Informatics
- Center for Hybrid Intelligence
- Center for Networked Computing
- Center for Research in Intelligent Storage

**Recent Faculty Hires**
- **Stephen MacNeil**, Assistant Professor, comes to CIS from the University of California San Diego Design Lab, where he was a postdoctoral researcher. Building on theories from learning sciences, social computing, and human-computer interaction, Dr. MacNeil’s research aims to democratize design and education by integrating perspectives of non-experts.
- **Yan Wang**, Assistant Professor, comes to CIS from SUNY Binghamton, where he was an assistant professor in the Department of Computer Science. His research focuses on innovative sensing and actuation techniques for smart health, safety, and well-being.
- **Hongchang Gao**, Assistant Professor, joined CIS after earning his PhD in Computer Engineering from the University of Pittsburgh. He brings expertise in machine learning to the department, with a focus on stochastic optimization algorithms for training large-scale machine learning models and efficient training methods for deep neural networks that operate over large-scale data sets.

Read CIS Update 2021 for the latest news • Learn more about Temple CIS
Department Highlights

- **Two Faculty Hires**: Cyril Focht and Beata Kubiak
- **Redshirt Program**: $50k was awarded by Tennessee Board of Regents to enhance success of pre Computer Science majors.
- **Bruner Hall**: The Department of Computer Science moved back into a newly renovated building including updated classrooms and research labs.
- **Distinguished Reviewer Award**: Dr. Akond Rahman, lead of the PASER group at TnTech, received at the 2021 Mining Software Repositories conference.
- **WiCyS Poster Award**: Master’s student Sina Sontowski received runner up for this award for her research on “Cyber Attack Exploitation of a Smart Farm Architecture”
- **ESEC/FSE Student Research Competition**: Shazibul Islam Shamim won bronze for ongoing Ph.D work on Kubernetes security.
- **FLAIRS Best Student Paper Award**: Katherine Brown, Farzana Bhuiyan and Dr. Doug Talbert received this award for their paper “Uncertainty Quantification in Multimodal Ensembles of Deep Learners.”

Cybersecurity Education, Research & Outreach Center

- Completed the work for a renewal of the National Center of Excellence - Cyber Defense Designation from the National Science Foundation. Phase 1 has received final approval with Phase 2 pending a site visit.
- Conducted several, high-impact outreach events including NSF JROTC Cyber Enrichment Program for cadets from across the country. During COVID the national CyberCorps SFS bootcamp continued in a virtual format serving 200 new SFS scholars across the country.
- Continued to support of multiple cyber student competition teams in events such as National Cyber League, DoE Cyberforce, Collegiate Cyber Defense Competition, and Hivestorm.
NEW FACULTY

Drew Hamilton  
Professor,  
Director of the Texas A&M  
Cybersecurity Center

Nitesh Saxena
Professor

Nate Veldt
Assistant Professor

BY THE NUMBERS

FACULTY 2020-21

48 Tenured/Tenure Track  
21 Academic Professional Track

1 Chair  
4 Professorships  
3 Faculty Fellowships

ENROLLMENT* 2021  
*Preliminary, 5th class day

1,484 Undergraduates  
299 Graduates  
179 Ph.D.

STUDENT SUCCESS

380 Engineering Honors Track  
110 Undergraduate Scholarships  
100% Classes Under 100 Students

2,805 Students Took Introductory Programming Course (Fall 2020-Spring 2021)

RESEARCH HIGHLIGHTS

Chaspari receives NSF Faculty CAREER Development Award to develop algorithms that monitor mental health: tx.ag/ChaspariCAREER

Texas A&M researchers develop machine-learning approach that brings digital photos back to life: tx.ag/ViewSynthesis

Smart algorithm cleans up images by searching for clues buried in noise: tx.ag/SmartMicroscopy

Optimizing traffic signals to reduce wait times at intersections: tx.ag/TrafficSignals

Researchers receive NSF grant to develop new diabetic diet monitoring method: tx.ag/DiabeticMonitoringMethod
New Faculty Hires
• New Assistant Professor, Dr. Chul-Ho Lee. His research focuses on data science and network science.
• New Adjunct Lecturer, Mr. James Donley.

Organizational News
• We have multiple programs to increase opportunities for underrepresented groups in Computer Science:
  › The continuation of Facebook’s EIR program. This semester, Sami Alsheikh is teaching full time on campus and connecting with students.
  › A partnership with CodePath, whose mission is to eliminate inequity in technical careers.
  › A diagnostics project with Northeastern University’s Center for Inclusive Computing to help increase the representation of women in Computer Science.
• The Computer Science program is highlighted as an Excellent Program in the Texas Higher Education Coordinating Board Accountability System.
• The Computer Science Department will host 12 distinguished scientists from eight DOE laboratories to connect Texas State Students with innovative DOE research and internships.

Faculty Highlights
• Dr. Oleg Komogortsev won the Facebook Faculty Research Award in 2021.
• Dr. Martin Burtscher won the 2021 TXST Presidential Distinction Award for excellence in Scholarly/Creative Analysis.
• Dr. Tanzima Islam won the 2021 TXST College Achievement Award for Excellence in Scholarly/Creative Activities.
• Dr. Jill Seaman won the 2021 TXST Presidential Distinction Award for Excellence in Service.

Student Highlights
• Nader Maray was awarded the 2021-2022 Israeli Fulbright Fellowship to pursue a Master's degree in AI and Robotics after receiving his B.S. in Computer Science from the Technion Institute of Technology.
• Nousin Azami, a doctoral student, was awarded a P.E.O. International Peace Scholarship.
• Five Ph.D. students obtained prestigious internships with companies such as Facebook, Uber, Ford, and Cadence.
• Cody Blakeney won the Outstanding Doctoral Student Award from the College of Science and Engineering.

Research Highlights
• Dr. Anne Ngu was awarded an NSF research grant from the NSF Smart and Connected Health program for fall risk analysis and detection that will allow seniors to live independently and reduce medical costs.
• Dr. Martin Burtscher was awarded a grant by the US Department of Energy to help reduce the amount of data being stored and help scientists to better understand and analyze that data.
• Dr. Kecheng Yang was awarded an NSF CRII research grant to investigate the real-time scheduling of mixed-criticality tasks on heterogeneous platforms.
• Dr. Ziliang Zong partnered with Accenture to create and spread green software awareness.
• Dr. Tanzima Islam’s Research team is working on deep learning workloads for next-generation heterogeneous computing platforms in partnership with DOE national laboratories and industries through research gifts.
• Dr. Chul-Ho Lee partnered with SK Hynix America to conduct collaborative research on scalable data analytics. He is also working on two NSF research projects, which are concerned with cost-efficient graph sampling, and epidemic modeling and control.
Recent Faculty Hires

**Ying Liu.** Ph.D., Electrical and Computer Engineering, Rutgers University - New Brunswick (2017)  
Assistant Professor  
Network, Network Security, Applied Machine Learning, Game Theory

**Tara Salman.** Ph.D., Computer Engineering, Washington University, St. Louis (2021)  
Assistant Professor  
Cybersecurity, Blockchains, Artificial Intelligence

**Lu Wei.** Ph.D., Electrical Engineering, Aalto University (Finland) (2013)  
Assistant Professor  
Quantum Information

**Jingjing Yao.** Ph.D., Computer Engineering, New Jersey Institute of Technology (2021)  
Assistant Professor  
Internet of Drones, Applied Machine Learning, Mobile Edge Computing/Caching

Research Highlights

- Federal grants on cybersecurity to measure individual susceptibility against social engineering attacks (Dr. A. Namin with collaborators from the Department of Psychology) and on data science to leverage the growing process of datasets to deliver efficient search and data organizing (Dr. Y. Zhuang)
- Industrial grants with General Motor to optimize vehicle sequencing in general assembly (Drs. L. Chen, Y. Chen) and AVX Aircraft Company/US Army to develop metrics/dashboard for validating aircraft health, and to study the integrity and quality of aviation logistics and maintenance data (Dr. T. Dang)

Other Highlights

- Best Paper Award, the 35th IEEE International Parallel & Distributed Processing Symposium (IPDPS'21), the flagship conference of the IEEE TCPP (Technical Committee on Parallel Processing), entitled “xBGAS: A Global Address Space Extension on RISC-V for High Performance Computing” (Xi Wang, Dr. Chen's Ph.D. student and team).
- Best Paper Award, SmartNets 2021, entitled "On Finger Stretching and Bending Dynamics as a Biometric Modality" (Sraddhanjali Acharya, Dr. Serwadda's Ph.D. student)
- Best Paper Award, the IEEE International Conference on Electro-Information Technology (EIT) 2021, entitled “Finite Element Simulation of Inkjet Printed Flexible Parallel Plate MIM Capacitors on Polyimide Film” (Dr. Morshed and students)

Organizational News

- IUCRC Center for Cloud and Autonomic Computing at Texas Tech University has received NSF funding to be elevated to Phase II (Drs. Y. Chen, S. Mengel, T. Dang)
- The project entitled, "Intelligent Visual Analytics for Energy Aware Security of Advanced Manufacturing," (Dr. R. Hewett and team) has led TTU to be one of 25 partners of CYMANII (Cybersecurity Manufacturing Innovation Institute), a DOE sponsored institute led by UTSA and DOE's three national laboratories to address secure automation via secure intelligent efficiency.
- Ministry of Education Saudi Arabia provided grant to study physical unclonable functions as security primitive for security of resource constrained IoT devices (Dr. Y. Zhuang).

Student Numbers (Compared to last year)

<table>
<thead>
<tr>
<th>Undergraduate Student Enrollment</th>
<th>845 (765)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graduate Student Enrollment</td>
<td>268 (161)</td>
</tr>
<tr>
<td>Undergraduate Degree Awarded</td>
<td>167 (109)</td>
</tr>
<tr>
<td>Graduate Degree Awarded</td>
<td>64 (24)</td>
</tr>
</tbody>
</table>
New Faculty Hires

Kartik Goyal
Research Assistant Professor
Natural language processing, machine learning, probabilistic models and applications to digital humanities

Hongyuan Mei
Research Assistant Professor
Machine learning, neural probabilistic modeling, time series, natural language processing

Derek Reiman
Research Assistant Professor
Computational biology and bioinformatics, with emphasis on interpretable machine learning methods for clinical and molecular datasets

Lingxiao Wang
Research Assistant Professor
Machine learning, privacy-preserving machine learning, nonconvex optimization

Raymond A. Yeh
Research Assistant Professor
Machine Learning and Computer Vision

Research Highlights

• Prof. Karen Livescu was elected Fellow of the International Speech Communication Association.
• President Matthew Turk was elected Fellow of the ACM
• Student Blake Woodworth, Prof. Brian Bullins, Prof. Nati Srebro and collaborators won a COLT 2021 Best Paper Award. This is the 3rd year in a row that TTIC authors have won a COLT best paper or best student paper award.
• TTIC students Takuma Yoneda and Chip Schaff, TTIJ student Takahiro Maeda, and Prof. Matt Walter won first place at the Max Planck Institute Real Robot Challenge.
• Student Freda Shi was awarded a Google PhD Fellowship and student Naren Manoj was awarded an NSF Graduate Fellowship
• TTIC faculty received significant funding awards from the NSF, NIH, DARPA, the Simons Foundation, and many corporate sponsors.

2021 PhD Graduates

Congratulations to 2021 PhD graduates Nick Kolkin (advised by Greg Shakhnarovich), RT Luo (advised by Greg Shakhnarovich), Lifu Tu (advised by Kevin Gimpel), and Blake Woodworth (advised by Nati Srebro)!

RAP Placements

• Arturs Backurs joined Microsoft Research as a Senior Researcher
• Steve Hanneke joined Purdue University as an Assistant Professor
• Mina Karzand joined the University of California, Davis as an Assistant Professor
• Sepideh Mahabadi joined Microsoft Research as a Senior Researcher
• Sam Wiseman joined Duke University as an Assistant Professor

By the Numbers

• Fall 2021 Students: 43
• Tenured and Tenure-Track Faculty: 12
• Research Faculty (RAPs): 10
Students by the numbers:

- 700 CS + DS majors
- 150 CS + DS graduates
- 33% of CS majors are women
- 180 MS students
- 86 PhD students
- 180 undergraduate TAs

Program offerings:

- PhD, MS, Online MS, BS, BA, Minor, Post-Baccalaureate, Certificate, Online Post-Bac in CS in Computer Science
- PhD in Cognitive Science
- MS, Online MS, BS, and Certificate in Data Science
- MS and Certificate in Computer Engineering
- MS in Cybersecurity and Public Policy
- MS in Bioengineering
- MS in Software Systems Development
- MSIM dual degree program with the Tufts Gordon Institute

Faculty:

- 32 faculty members with research foci in programming languages, human-robot interaction, machine learning and data science, computational biology, theory, HCI, cybersecurity and policy, networks, and computational geometry
- Searches for two additional tenure-track and one teaching professor are underway in 2021-22

New Space!

The CS department will move into two floors of the newly constructed Joyce Cummings Center starting in November 2021, which will be adjacent to a new Green Line T Stop that will provide direct access to downtown Boston. The building will be open to classes and the public beginning in Spring 2022.

Recent Faculty Highlights:

- Prof. Diane Souvaine has been elected to the Executive Committee of the Board of Trustees of the Computer History Museum (CHM)
- Bridge Prof. Susan Landau published a new book on contact-tracing apps, People Count: Contact-Tracing Apps and Public Health, MIT Press, 2021
- Asst. Prof. Daniel Votipka was recognized with the John Karat Usable Privacy and Security Student Research Award
- Prof. Lenore Cowen is part of an interdisciplinary team, funded by the NSF, working to find a way to help coral survive

- Clare Boothe Luce Asst. Prof Elaine Schaertl Short joined AnitaB.org to talk about the accessible future of technology
- Assoc. Teaching Prof. Ming Chow helped recruit mentors and student mentees as a member of the MassCyberCenter’s Cybersecurity Mentorship Pilot Program steering committee
- Prof and Department Chair Jeff Foster was named chair of ACM-SIGPLAN
Chunming Qiao is part of an $8.2M effort to improve transportation options for vulnerable populations in the City of Buffalo. The “Complete Trip Deployment” project is funded by the US DOT.

Team Proto, led by UB CSE professor Rohini Srihari, placed third in the 2021 Alexa Prize Socialbiot Grand Challenge.

Junsong Yuan was named Fellow of IEEE for “contributions in human behavior understanding and video analytics.” He was also named Fellow of the Asia-Pacific Artificial Intelligence Association (AAIA) for “outstanding achievements in the areas of computer vision, pattern recognition and video analytics.”

Jennifer Winikus received the 2021 Distinguished New Engineer Award from the Society of Women Engineers (SWE) for her outstanding technical performance and leadership in professional organizations.

Nalini Ratha was appointed Editor in Chief of IEEE Transactions on Biometrics, Behavior and Identity Science (T-BIOM) for a 3-year term. T-BIOM is the flagship journal of the IEEE Biometrics Council.

Weihang Wang received an NSF Early CAREER award for her research investigating ways to streamline complex web applications and mitigate their unwanted effects.

Chunming Qiao is part of an $8.2M effort to improve transportation options for vulnerable populations in the City of Buffalo. The “Complete Trip Deployment” project is funded by the US DOT.
Awards and Recognition

Dr. Katherine Isaacs - DOE Early Career Research Award and NSF Career Award
Dr. Joshua Levine - DOE Early Career Research Award
Dr. Michelle Strout - Then and Now DOE Early Career Award
Staci Smith, PhD, 2020 and Dr. David Lowenthal - Best Paper, ACM HPDC 2021
Marina Kisley, PhD Student - 2021 NASA Space Grant Fellow
Rebecca Faust, PhD Student - 2021 Computing Innovations Fellow

New Faculty

David Claveau
Sr. Lecturer
PhD Concordia

Melanie Lotz
Lecturer
MA & MS Purdue

Sazzadur Rahaman
Assistant Professor
PhD Virginia Tech

Broadening Participation

The department is committed to broadening participation in computing. See our Broadening Participation in Computing Plan for more information.
In the Department of Computer Science and Computer Engineering, faculty and students are working to improve existing technology and create the next generation of computing hardware and software. This department is the largest in the college in terms of student enrollment, with two separate degree programs. In the Computer Science program, students develop skills needed to deliver high-quality software tools that industries and organizations depend on, taking into account scheduling and budgetary concerns. Computer Engineering students design computer products that are efficient and secure. Faculty in the department are focusing on cutting-edge technology areas such as artificial intelligence, big data, and cybersecurity. In recent years, new research centers created within the department have begun to tackle some of the most pressing issues in the digital world, finding ways to organize and interpret large amounts of data, and protecting security and privacy of organizations and individuals.

**Undergraduate Programs**
- B.S. in Computer Science
- B.S. in Computer Engineering
- B.A. in Computer Science

**Graduate Programs**
- M.S. in Computer Science
- M.S. in Computer Engineering
- Ph.D. in Computer Science
- Ph.D. in Computer Engineering

**Research Areas**
- Cybersecurity
- Big Data, Data Analytics, and Blockchain
- Machine Learning and Quantum Machine Learning
- Computer Vision and Image Processing
- Trustworthy and Responsible Artificial Intelligence
- Computer System Design and High-Performance Computing
- Deep Learning and Natural Language Processing
- Algorithmic Self-Assembly and Biomolecular Computing
- Computer-Aided Design

**Department Head**
Jia Di

**Chairs**
- Thomas Clinton Mullins Endowed Chair in the College of Engineering | David Andrews
- Rodger S. Kline Endowed Chair in Computer Science and Computer Engineering | Jia Di
- Charles D. Morgan/Acxiom Endowed Graduate Research Chair in Database | Xintao Wu

**By the Numbers**
- 22 Total Faculty
- 610 Undergraduate Students
- 85 Graduate Students

*Numbers are based on fall 2020 data reported by the Office of Institutional Research and Assessment (oir.uark.edu).*
Kellogg Booth • CS-Can Lifetime Achievement Award
Arpan Gujarati • ACM SIGBED Best Dissertation Award
Gregor Kiczales • AITO Test of Time Award
Laks V.S. Lakshmanan • ACM SIGMOD Research Highlight Award
Kevin Leyton-Brown • ACM Fellow; UBC Distinguished Scholar
Chris Liaw • Canadian Mathematical Society Doctoral Prize
Tamara Munzner • CHCCS Achievement Award
Raymond Ng • Royal Society of Canada Fellow
Margo Seltzer • American Academy of Arts & Sciences Member
• ACM SIGMOD Software System Award
Alla Sheffer • IEEE Fellow
Best & distinguished paper awards from: AII, AISTATS, ICSE, SCA

Jiarui Ding
Assistant Professor, bioinformatics

Caroline Lemieux
Assistant Professor, software engineering

Vered Shwartz
Assistant Professor, natural language processing

Giulia Toti
Assistant Professor of Teaching

**Recent News Highlights**

UBC is investing $23 million to fuel research and teaching in AI with a commitment to hire five new assistant professors. The investment will be led by UBC’s interdisciplinary AI research organization, CAIDA (Centre for Artificial Intelligence Decision-making and Action), which unites over 100 professors spanning 27 departments and institutes.

UBC launched a new Data Science Minor for undergraduates, building on the success of the MDS (Master of Data Science) program. These interdisciplinary programs are offered jointly via the departments of Computer Science and Statistics.

UBC undergraduates continue to dominate programming contests. One team won bronze at the North American Regionals in the International Collegiate Programming Contest (ICPC), giving them a spot in the 2022 World’s championship. The CS Capture The Flag team, Maple Bacon, placed 2nd overall across Canada at the CyberSCI regionals and 1st in the Western Region.
Computer Science at UC Berkeley, 2021

Recent Hires

Rediet Abebe  
Ph.D. Cornell, 2019  
Algorithms, AI for Social Justice

Nika Haghtalab  
Ph.D. CMU, 2018  
Machine Learning, Computational Economics

Alp Sipahigil  
Ph.D. Harvard, 2017  
Quantum Computing, Optical Interfaces for Qubits

Lisa Yan  
Ph.D. Stanford, 2019  
Computer Science and Systems Education, Access

News and Highlights

- The Berkeley Division of Computing, Data Science, and Society (CDSS) was formed to connect scholars in computing, statistics, the humanities, and the social/natural sciences, to address the changing needs of a world increasingly driven by data, machine learning, and artificial intelligence. It brings the EECS and Statistics departments together with Data Science Education and the School of Information to support a more dynamic and integrated approach to research education. Core to its mission is understanding how the digital revolution affects equality, equity, and opportunity—and the capacity to respond to related challenges. Berkeley EECS now sits within both CDSS and the College of Engineering.

- UC Berkeley's new Data Science major has become one of the most popular on campus, graduating over 600 students in 2021. EECS has been a key partner helping to create and teach the major.

- The EECS department has voted to drop the GRE requirement for graduate admissions indefinitely in response to concerns about its impact on historically underrepresented groups.

Awards

- 2022 IEEE Kiyo Tomiyasu Award, Pieter Abbeel
- 2022 IEEE James L. Flanagan Speech and Audio Processing Award, Nelson Morgan
- 2021 IEEE Medal for Innovations in Healthcare Technology, Ruzena Bajcsy
- 2021 Computer-Aided Verification (CAV) Award, Sanjit Seshia
- 2021 BBVA Frontiers of Knowledge Award, David Patterson
- 2021 ACM Fellows, Sanjit Seshia and John Canny
- 2021 AMS Ulf Grenander Prize in Stochastic Theory and Modeling, Michael Jordan
- 2021 Sloan Research Fellow in Computer Science, Alessandro Chiesa
- 2020 NEC C&C Prize, Michael Stonebraker
- 2020 ACM Distinguished Service Award, Jennifer Chayes
- Four Berkeley faculty among investigators awarded $20M from NSF to launch the National AI Institute for Advances in Optimization
- The LOGiCS project received an $8.4M DARPA grant to blend AI and machine learning with guidance from human and computational oracles to perform compositional design of Cyber-Physical Systems.
The Department of Computer Science at UC Davis is a world class research intensive department at the center of an internationally renowned public research university. We have a long-standing commitment to quality teaching at both the graduate and undergraduate level as part of our overall mission to integrate research, education and professional service in the areas related to computer science. Distinguishing attributes of our program include an undergraduate experience that is enriched by a strong research and service environment and a curriculum that provides significant flexibility in course selection and electives, provides a rigorous base of fundamentals and integrates fundamentals, application, ethics and professionalism within individual courses while striving to provide a more diverse and inclusive educational experience for all.

**Facts and Figures**

- 3 Association for Computing Machinery fellows
- 5 Institute of Electrical and Electronics Engineers fellows
- $7,884,125 in research expenditures (2019-2020)
- 35,856 square feet of space

**Enrollment**

- Total Enrollment: 1,605
- Undergraduate: 1,349
- Graduate: 256

**Average Time to Degree**

- Undergraduate: 3.9 years
- Ph.D.: 5.2 years

**Faculty & Staff**

- Faculty: 38
- Advisors: 4

**Rankings**

- #31 Undergraduate Program (U.S. News & World Report, 2022)
- #37 Graduate Program (U.S. News & World Report, 2022)
With almost 60 full-time faculty members, 200+ Ph.D. students and 250+ Masters students in two programs (professional MCS & research-oriented MS), and 2,300+ undergraduates, UC Irvine’s Department of Computer Science provides a world-class research environment spanning not only the core areas of computer science – including computer architecture, system software, networking and distributed computing, data and information systems, the theory of computation, AI/ML, and computer graphics – but also highly interdisciplinary programs, such as biomedical informatics, data mining, security and privacy, and ubiquitous computing.

Faculty Highlights

- **Michael Franz**
  - Doctor of Technical Sciences, ETH Zurich, the Swiss Federal Institute of Technology
  - **Building Faster and Safer Software**
  - **2020 ACM Breakthrough in Computing Award**

- **Jing Zhang**
  - Ph.D., University of Southern California
  - **Developing Methods to Analyze Gene Regulation and Genetic Variations**

- **Vijay Vazirani**
  - Ph.D., UC Berkeley
  - **Solving Algorithmic Problems in Economics and Game Theory**

- **Ardalan Amiri Sani**
  - Ph.D., Rice University
  - **Building Trustworthy Systems**
  - **2019 NSF CAREER Award**

- **Mohsen Imani**
  - Ph.D., UC San Diego
  - **Building Bio-Inspired Architectures and Systems**

- **Anton Burtsev**
  - Ph.D., University of Utah
  - **Building the Future Operating Systems**

- **Sameer Singh**
  - Ph.D., University of Massachusetts Amherst
  - **Designing Robust NLP and ML Algorithms**
  - **2021 NSF CAREER Award**

- **Stephan Mandt**
  - Ph.D., University of Cologne
  - **Researching Bayesian Deep Learning**
  - **2021 NSF CAREER Award**

- **Sangeetha Abdu Jyothi**
  - Ph.D., University of Illinois, Urbana-Champaign
  - **Researching Problems at the Intersection of Systems, Networks and ML**

- **Sang-Woo Jun**
  - Ph.D., MIT
  - **Designing High-Performance Computational Storage**

- **Ioannis Panageas**
  - Ph.D., Georgia Tech
  - **Applying Theory of Dynamical Systems to Algorithms and Machine Learning**

- **Faisal Nawab**
  - Ph.D., UC Santa Barbara
  - **Applying Data Science in the Context of Autonomous Applications**
Breathing Life Into Technology
With more than 30 full-time faculty members, 80+ Ph.D. students, 40+ Masters students, and 750+ undergraduates, UC Irvine’s Department of Informatics seeks to make a positive difference in how people live, work, and build in a digital world. Wherever technology touches people, it must be designed with ultimate care. This requires mastery of technological knowhow and a deep appreciation of the social, cultural, and organizational forces at work. To that end, we study interactions among information technologies and people, create innovative information technologies that serve the diverse needs of society, and educate our students to be leaders in these endeavors.

Investing in Digital Ethics
UCI’s Donald Bren School of Information and Computer Sciences recently established the Steckler Center for Responsible, Ethical, and Accessible Technology (CREATE, create.ics.uci.edu) to build on its decades-long history of research leadership on the social implications of digital technology. Led by Chancellor’s Professor of Informatics Paul Dourish, who is serving as CREATE’s founding director, the center promotes research and education into the challenges of creating technological futures that produce positive change in the world, focused on principles of equity, accountability, and care. CREATE will house a community of scholars whose research draws on a range of disciplines, including information science, computer science, science and technology studies, law, anthropology, media studies, sociology, philosophy, political science, and economics.

How We Imagine the World
With technology impacting and enabling so much of our lives, our faculty shared how they imagine a world where …

- "… technology integrates, instead of isolates, people with disabilities.”
  Stacy Branham

- "… where everyone can feel safe and secure in their digital experiences.”
  Sam Malek

- "… our technologies strengthen (rather than undermine) democracy, equality, and mutual respect.”
  Constance Steinkuehler

- "… there is a diverse online world full of kid-powered communities.”
  Katie Salen Tekinbaş

- "… technology minimizes not creates barriers to services for physical and mental health for all people.”
  Madhu Reddy

- "… communication technologies help people live more sustainable and fulfilling lives rather than undermine our expectations of ourselves and each other.”
  Melissa Mazmanian

- "… the trailblazing term Informatics continues to redefine the jobs and workplaces of the future.”
  Hadar Ziv

- "… individuals can better manage their health and wellness without much burden.”
  Yunan Chen

- "… the creators of new technology are armed with the information and insights needed to design a more equitable world.”
  Kylie Peppler

- "… where you can be virtually anywhere on Earth and beyond, with anyone you want, whenever you want, without having to physically travel.”
  Crista Lopes

- "… technology fuels and facilitates creative passions that replace the drudgeries of life.”
  Kurt Squire

- "… communication technologies help people live more sustainable and fulfilling lives rather than undermine our expectations of ourselves and each other.”
  Bill Tomlinson

informatics.uci.edu
BREAKING DEPARTMENTAL RECORDS

38
FACULTY MEMBERS

$17M
RESEARCH FUNDING

183
PH.D. STUDENTS

15%
INCREASE IN B.S. STUDENTS

NEW PROGRAMS LAUNCHED
- **Launched two new degrees**: B.S. in Data Science and M.S. in Robotics welcomed their first cohorts in Fall 2020 and Fall 2021, respectively. M.S. in Robotics becomes the first program of its kind in the University of California (UC) system

HISTORIC INCREASE IN RESEARCH FUNDING
- **Setting new department funding record**: CS faculty participated in grants totaling $50M, with the department share being $17M
- **Advancing sustainable agriculture**: A new $10M USDA grant uses data science to fight drought, insect invasions, and other farming impacts
- **Detecting cybersecurity vulnerabilities**: Srikanth Krishnamurthy leads the detection thrust of a $2.1M Department of Defense grant
- **Awarding early-career talent with 3 NSF CAREERS**: Totaling $1.7M, the grants support advancing exploratory data science on spatio-temporal big data, autonomous tensor analysis, and scalable concolic execution
- **Boosting outreach efforts like never before**: $1.5M NSF Data Science Corps grant explores pathways encouraging women and people from underrepresented groups to pursue data science careers

FACULTY AWARDS AND ACKNOWLEDGEMENTS
- **Welcoming our newest faculty member**: Neftali Watkinson uses hyperdimensional computing to detect and predict the onset of diabetes, COVID-19 and sepsis
- **Honoring faculty achievements/contributions**: Nael Abu-Ghazaleh inducted to the ACM/IEEE MICRO Hall of Fame; Vagelis Papalexakis named the IEEE Next Generation Data Scientist
- **Doing impactful research**: Zhiyun Qian's discovery of the DNS security flaw gained international attention and put an end to cache poisoning
- **Advancing to the World Cup**: Entrepreneur company FarmSensor, a smart pest monitoring system using AI and analytics, placed 2nd at the USA Cup Championship, earning a spot to compete globally
- **Winning 4 Best Paper awards**: Teams win Best Paper awards at conferences including ACM CCS, IEEE HiPC, IEEE CloudNet, and SCA

STUDENT HIGHLIGHTS
- **Smashing enrollment records**: A 34% increase; The M.S. program more than doubles enrollment compared to pre-pandemic years
- **Securing a 1st Place finish**: Cyber@UCR wins first place at the Western Regional Collegiate Cyber Defense Competition (WRCCD)
- **Becoming a Computing Innovation fellowship recipient**: CSE Ph.D. student Sara Abdali was named a 2021 CI Fellowship recipient
CSE RESEARCH INNOVATION & IMPACT

SOUNDED AN ALARM: CARS ARE VULNERABLE TO HACKING

Ground-breaking research by CSE and UW scientists led to papers that opened up a new area of cybersecurity research and served as a wake-up call for the automotive industry. This “dream team” has received the Golden Goose Award from the American Association for the Advancement of Science.

$20M TO CREATE AI RESEARCH INSTITUTE

Led by CSE and ECE Professor Andrew Kahng, the new AI Institute for Learning-enabled Optimization at Scale, or TILOS, is housed in UCSD’s Halicioglu Data Science Institute, and is funded by the NSF. Eleven CSE and CSE-affiliated faculty are engaged with the Institute to pursue foundational breakthroughs at the nexus of artificial intelligence and optimization.

UNDERGRAD RESEARCHERS SHINE AT CRA AWARDS

Four standout undergrad engineers were recognized for significant contributions to research. Bonnie Huang and Raechel Walker were named finalists, while Kabir Nagrecha and McKenna Lewis received honorable mentions.

RESEARCHERS UNCOVER SPECTRE VULNERABILITY

CSE Professor Dean Tullsen and collaborators at UVA discovered a new line of attack that breaks current Spectre defenses, making billions of computers and other devices vulnerable to attack.
Degree Programs

- BS in Computer Science
- BS in Information Technology
- MS in Computer Science
- MS in Computer Vision
- MS in Cyber Security and Privacy
- MS in Data Analytics
- MS in Digital Forensics
- MS in FinTech (Fall 2022)
- PhD in Big Data Analytics
- PhD in Computer Science

4100+ undergraduate students
500+ graduate students

Research Focused

- 51st Top U.S. CS Institutions
- 3rd Virtual Reality
- 10th Computer Vision
- 26th Computational Biology
- 27th Human-Computer Interaction
- 33rd Computer Architecture

Based on CSRankings.org

Innovative

UCF is the only public university in the U.S. to offer a Master of Science in Computer Vision:
https://www.crcv.ucf.edu/mscv/

New Major Awards

- $4.50M Army Research Lab
  Computer Vision-based Navigation System
- $2.88M National Science Foundation
  CyberCorps Scholarship for Service
- $2.48M US Dept of Education
  STEM Coaches to Support Special Education Teachers

Notable Faculty

1 National Academy of Inventors Member
3 National Academy of Engineering Members
6 IEEE Fellows
11 NSF CAREER Awardees
2 DARPA Young Faculty Awardees
3 AFOSR Young Investigator Program Awardees

Competitive

- 1st 4-Time National Collegiate Cyber Defense Champions
- 1st North America 2018 International Collegiate Programming Contest (ICPC)
  10th in the World
- 1st 2018 DoE CyberForce Competition
- 2nd 2021 U.S. Cyber Open
- 39 Consecutive Top 3s Southeast Regional ICPC
Our ambitious expansion of the computer science program at the University of Chicago continues to gain momentum in the 2021-22 academic year. We added new faculty specializing in human-computer interaction, visual computing, and the intersection of cryptography and policy, celebrated six NSF CAREER awards for our early-career faculty, and launched the campus-wide UChicago Data Science Initiative. We hope you’ll join us in defining the future of computer and data science.

Michael J. Franklin, Liew Family Chair of Computer Science

### News Highlights

**Faculty honors:** Prof. Fred Chong named to the National Quantum Initiative Advisory Committee, Prof. Rick Stevens named ACM Fellow, and Prof. Rebecca Willett named SIAM Fellow.

National and international media coverage of UChicago CS research, including New York Times features on wearable jammers, internet “dark patterns,” and protection against facial recognition tech. Additional press from Wired, Fast Company, Gizmodo, Tech Review, Bloomberg, as well as many TV and radio outlets.

An Inclusive Growth and Recovery grant from data.org to Prof. Nick Feamster launched a new data science project to measure broadband accessibility in Chicago and other cities and work with community partners to narrow the “digital divide.”

A $3M Department of Energy collaboration of UChicago and Argonne researchers led by Prof. Rebecca Willett will explore AI acceleration for physical models of climate, power grid infrastructure, and other scientific applications.

Best, Distinguished, and Test of Time papers at CHI (human-computer interaction), POPL (quantum programming), FOCS (theory), FSE (software), and ICER (CS education) conferences.

**UChicago CS graduate students received prestigious honors** including Siebel scholarships, the CRA Computing Innovation Fellowship, NSF Research Fellowships, Graduate Fellowships for STEM Diversity, and the Facebook Fellowship.

Recent PhD graduates and postdocs are in high demand from top academic programs (tenure-track faculty at Yale, Marquette, Michigan) and leading companies (Apple, Amazon, Intel), and have founded startups in quantum computing and software.

**UChicago joined the Institute for Foundational Data Science, a four-university collaboration establishing the maturing field of data science while advancing machine learning and other artificial intelligence approaches.**

### Affiliated Programs

**UChicago Data Science Initiative (DSI):** Executing our bold, innovative vision of Data Science as a new discipline, the DSI supports research on the interdisciplinary frontiers of this emerging field, forms partnerships with industry, government, and social impact organizations, and supports holistic data science education, including a new undergraduate major.

**MS in Computational Analysis and Public Policy (CAPP):** A joint program with the Harris School of Public Policy that builds foundational knowledge of computer science, statistics, and public policy analysis.

**Masters Program in Computer Science (MPCS):** A comprehensive and professionally-oriented education that combines the foundations of computer science with the applied and in-demand skills necessary for careers in technology.

### New Faculty

- **Aloni Cohen**
  - Area: Cryptography, Law, Privacy
  - Title: Assistant Professor
  - PhD: MIT '19
  - Previously: Boston University

- **Rana Hanocka**
  - Area: Computer Graphics, Machine Learning
  - Title: Assistant Professor
  - PhD: Tel Aviv University '21
  - Previously: Tel Aviv University

- **Ken Nakagaki**
  - Area: Tangible User Interfaces, Human-Computer Interaction
  - Title: Assistant Professor
  - PhD: MIT '21

- **William Trimble**
  - Area: Computational Biology
  - Title: Assistant Instructional Professor
  - PhD: University of Washington '07
  - Previously: Argonne

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Six UChicago CS assistant professors received the NSF CAREER Award in 2021

- **Marshini Chetty**
  - “Investigating and Curbing Educational Technologies’ Impact on Schoolchildren’s Privacy”

- **Aaron Elmore**
  - “Intermittent Query Processing”

- **Bill Fefferman**
  - “Near-term Quantum Computing: Achieving Quantum Advantages”

- **Pedro Lopes**
  - “Human-Computer Integration: Designing the Next Interface Paradigm”

- **Chenhao Tan**
  - “Decision-focused Explanations as a Bridge between Humans and AI”

- **Blase Ur**
  - “Usable, Data-Driven Transparency and Access for Consumer Privacy”
COLLABORATIVE

- Early IT Ecosystem Expanded Bringing Integrated Industry Internship to K-12 Students
- The Ohio Cyber Range Institute (OCRI) Advanced Cybersecurity Awareness and Education Across the State of Ohio
- Applied Machine Learning and Intelligence Lab (AMLI) Completed its First Research Project with Proctor and Gamble (P&G)
- The IT Solutions Center partnered with the Ohio Criminal Sentencing Commission to Discover and Develop the Ohio Sentencing Data Platform

RESPONSIVE

- The SoIT Launched the Third Cycle of the SoIT Strategic Plan, Introducing Common Goals, Core Values and Cross-Functional Teams
- Initiated the Student Success Program to Offer All SoIT Students Access to Peer-Coaching and Project Management Skills
- Introduced the Course Success Team to Elevate and Enhance the Delivery and Content of our Courses

ADVANCING

- Expanded the Cybersecurity Specialization to its own Bachelor's Degree in Cybersecurity
- Partnered with the UC College of Arts and Sciences and Created a MSIT 4+1 Pathway Program for Undergraduate A&S Students
- Created Ohio's First Undergraduate and Graduate Cybercorps Scholarship for Service Program through a $4m award from the National Science Foundation

GROWTH FROM 2020

- 963 BSIT Students
- 349 MSIT Students
- 12 PhD Students

24 FULL-TIME FACULTY
18 STAFF

15% EXTERNAL FUNDING

$7.6 MILLION
Danna Gurari

Gurari is the founding director of the Image and Video Computing Group, which focuses on creating computing systems that enable and accelerate the analysis of visual information. Gurari joined our faculty in fall 2021, and previously served as an assistant professor at the University of Texas, Austin and held industry positions at leading tech companies Boulder Imaging and Raytheon.

Our faculty continues to grow

18 among public undergrad programs*
17 NSF CAREER Award winners on faculty
70+ tenure-track and instructional faculty

Leading in innovative research

Our faculty members are playing key roles in several multi-million, multi-institutional research centers on the Internet of Things, roadway electrification and the role of artificial intelligence in education. Learn more at colorado.edu/cs/research.

NSF IUCRC in Pervasive Personalized Intelligence
ASPIRE NSF Engineering Research Center
NSF AI Institute for Student-AI Teaming

*U.S. News and World Report, 2022
Just the Facts 2021

4 UNDERGRADUATE DEGREES
A traditional Bachelor’s, two minors and an accelerated Bachelor’s to Master’s degree

26% UNDERGRADUATE GROWTH
And, our largest incoming class of freshmen

36 GRADUATE STUDENTS
Including 32 PhD and 4 Master’s students

4 POST-DOCTORAL SCHOLARS
With focuses on spirituality, mental health, equity in informal computing education, and human-AI user experiences in marginalized communities

The Human Side of Data
Our interdisciplinary research—blending computing with social science and the humanities—investigates all aspects of human-data interaction. From health and community wellness to social equity and tech ethics, we use computing and data to address large societal issues.

Nationally Recognized Faculty
With one NSF Medium project under PIs Robin Burke and Amy Voida, and two NSF CAREER awards—one to PI Jed Brubaker, and another to PI Casey Fiesler—our faculty demonstrates their research is far-reaching, timely and nationally impactful.

Outstanding Graduate Student Achievements
We are thrilled to congratulate Morgan Scheuerman, a Microsoft PhD Fellowship recipient, and Tajanae Harris, prestigiously named an ARCS Foundation Scholar.

Our Faculty

- **Lecia Barker**
  Associate Professor
  Information technology education, women in computing

- **Laura Devendorf**
  Assistant Professor, ATLAS Institute
  Design, human-machine interaction, computation and craft

- **Brian Keegan**
  Assistant Professor
  Computational social science, data science, large-scale collaboration

- **Bryan Semaan**
  Associate Professor
  Information technology to promote justice, fairness and equality

- **Jed R. Brubaker**
  Founding Assistant Professor
  Identity & data, social media, post-mortem data, marginalized users

- **Casey Fiesler**
  Founding Assistant Professor
  Social computing, data & research ethics, internet law, fan communities

- **Leysia Palen**
  Professor, Founding Chairperson
  Crisis informatics, cooperative work, social computing

- **Amy Voida**
  Founding Associate Professor
  Philanthropic informatics, supporting technology use for non-profits

- **Robin Burke**
  Professor
  Rec sys, personalization, algorithmic fairness, digital humanities

- **Abe Handler**
  Instructor
  Natural language processing, search user interfaces, data science

- **Ricarose Roque**
  Assistant Professor
  Learning, design, online communities, youth, creative computing

- **Steve Voida**
  Founding Assistant Professor
  Information overload, information sharing, ubiquitous computing

- **Jason Zietz**
  Instructor
  Computing for well-being, motivation, mindfulness

Connect with us:
colorado.edu/cmcl/infoscience
@cuinfoscience

Be Boulder.
University of Colorado Boulder
If you are interested in learning more, please visit https://www.cis.udel.edu/
Research Highlights

Boyer Receives NSF Grant to Study Effects of Introducing AI Education to Middle School Students: Kristy Boyer, Ph.D., an associate professor, received a $1.5 million grant from the National Science Foundation to investigate AI education for middle school students.

Gardner-McCune and AI4K12 Initiative Expand Access to K-12 AI Education One State at a Time: Christina Gardner-McCune, Ph.D., associate professor, co-facilitated a two-day virtual workshop to help education leaders from across the country create new K-12 AI efforts in several states.

Traynor Awarded $1.7 Million from DHS to Secure Cellular Networks: Patrick Traynor, Ph.D., professor, and his team will develop testbed prototype solutions for 4G Long Term Evolution (LTE)-capable calling devices with a secure distance bounding protocol and fuzzing infrastructure optimized for core LTE protocols.

Awards & Recognition


Notable News

Ph.D. Student is the First at a Florida University to Receive the Google Ph.D. Fellowship: Brendan David-John, a Ph.D. student, was recently named a Google Ph.D. Fellowship recipient under the area of Human-Computer Interaction. David-John is the first student from any Florida university to receive the fellowship.

Shadow Health, Co-Founded by CISE Professor, is Acquired by Elsevier: Shadow Health, a Gainesville company co-founded in 2011 by Benjamin Lok, Ph.D., a professor, was recently acquired by Elsevier, a leader in research publishing and information analytics.

Computer Engineering Graduate Program Jumps Four Spots to rank in Top 15: The CISE computer engineering graduate program has risen to No. 12 among public universities nationwide and is No. 1 in the State of Florida, according to the 2022 U.S. News & World Report Best Graduate Schools.
DEPARTMENT OVERVIEW
The Department of Computer Science at the University of Georgia offers B.S., M.S. with thesis and non-thesis options, and Ph.D. degrees in Computer Science, as well as M.S. in Cyber Security and Privacy. The department also offers three Double Dawgs programs: B.S. in CS/M.S. in CS, B.S. in CS/M.S. in AI, B.S. in CS/M.S. in Journalism and Mass Communication M.A. (Emerging Media) (non-thesis). The CS Department at UGA continues to attract extraordinary students. Our undergraduate enrollment increased from 588 in Fall 2014 to 1,282 in Fall 2021. In addition, the department has more than 240 undergraduate minors. At the graduate level, our Fall 2021 enrollment exceeded 180 students and continues to grow. In Fall 2019, the Departments of Computer Science and Statistics began jointly offering a B.S. degree in Data Science. The program currently has 76 students. In FY21, the department hired one tenure-track in Data Science and three non-tenure track faculty members.

RESEARCH
During FY21, the department had a very successful year in terms of external funding. Drs. Roberto Perdisci, Dr. Sheng Li, In Kee Kim, Lakshmsih Ramaswamy, Tianming Liu, Shannon Quinn, Suchendra Bhandarkar, and Thiab Taha were each awarded significant grants from sources such as NSF, NIH, and Adobe.

ACHIEVEMENTS
Dr. Shannon Quinn is among 23 early career scientists to win funding for research to accelerate the development of the next generation of imaging technologies as part of the inaugural year of Scialog: Advancing BioImaging, a three-year initiative supported by Research Corporation for Science Advancement, the Chan Zuckerberg Initiative and the Frederick Gardner Cottrell Foundation.

A paper on cyber deception for attacker’s intent recognition co-authored by Professor Prashant Doshi and his students is the winner of the best application paper award. More information on this award can be found at this link.

Dr. Bill Hollingsworth received the 2021 Creative Teaching Award from UGA and a 2021 Sandy Beaver Excellence in Teaching Award! From the Franklin College of Arts and Sciences at UGA.

Dr. Wenwen Wang received the 2021 M. G. Michael Award for Sciences from the Franklin College of Arts and Science at UGA.

The Ph.D. CS graduate student, Marcus Hill, has been chosen to participate in the SEC Emerging Scholars Career Preparation Workshop. The Southeastern Conference (SEC) Provosts established the Emerging Scholars Program.
New Faculty

Camille Cobb
Assistant Prof.
Security & Privacy
(August 2021)

Talia Ringer
Assistant Prof.
PLFMSE
(August 2021)

Makrand Sinha
Assistant Prof.
Quantum
(August 2023)

Elahe Soltanaghai
Assistant Prof.
Systems
(October 2021)

Leadership in the Field


The NSF and U.S. Department of Agriculture’s National Institute of Food and Agriculture awarded Illinois two of the seven new national AI institutes announced in 2020, with each to receive $20 million over 5 years. Vikram Adve leads the AI Institute for Future Agricultural Resilience, Management, and Sustainability (AIFARMS). Jian Peng and Saurabh Sinha are leading two of the four research thrusts for the AI Institute for Molecular Discovery, Synthetic Strategy, and Manufacturing (Molecule Maker Lab Institute). Additional CS faculty are involved in each institute.

AMATO, GROPP ELECTED TO KEY LEADERSHIP ROLES

Illinois CS Department Head Nancy M. Amato was named Chair of the Board of Directors for the Computing Research Association, starting in July 2021. Meanwhile, William D. Gropp, the Thomas M. Siebel Chair in Computer Science, was named President of the IEEE Computer Society, starting in January 2022.

Education Innovations

ICAN OPENS NEW POSSIBILITIES

With 13 new students accepted to the Fall 2021 cohort, the Illinois Computing Accelerator for Non-Specialists (iCAN) enters the second year of its mission to broaden participation in computing by providing non-computing college graduates a pathway to break into tech. Two students from the first iCAN cohort have now joined the Master of Computer Science degree program. http://cs.illinois.edu/ican

QUALIFIED MAJORS, MINORS HAVE GUARANTEED ADMISSION TO ONLINE MCS

Illinois CS is providing a pathway for any undergraduate on campus to receive a CS minor en route to an advanced degree. Undergraduates who complete a CS major or a CS minor and who graduate with a qualifying GPA are now guaranteed admission to the Online MCS or MCS in Data Science. This, coupled with a commitment to provide capacity in core CS courses to accommodate all students who are interested in pursuing a CS minor, enables all prospective U of I students to be confident that they will be able to enroll in CS courses at Illinois and, at the same time, start on a path towards advanced training in computing.

110
World-Class Faculty

MORE NSF FUNDING

Illinois was awarded more NSF Funding than any other University in 7 of the last 10 years

2268
Graduate Enrollment

1387
MCS Enrollment

100
MS Enrollment

461
PhD Enrollment

2329
Undergraduate Enrollment

#5
Computer Science Undergraduate and Graduate Ranking,
U.S. News & World Report

FACULTY BY RESEARCH AREA

(Counts recognize faculty doing research across multiple areas.)

Architecture, Compilers, and Parallel Computing 16
Artificial Intelligence 29
Bioinformatics and Computational Biology 10
Computers and Education 17
Database and Information Systems 12
Interactive Computing 11
Programming Languages, Formal Methods, and Software Engineering 18
Scientific Computing 10
Security and Privacy 16
Systems and Networking 16
Theory and Algorithms 19

Top Faculty Honors

Recent recognitions have included: ACM Fellow: Jose Meseguer; ACM SIGPLAN John C. Reynolds Doctoral Dissertation Award: Gagandeep Singh; ACM SIGIR Academy: ChengXiang Zhai; ACM SIGIR Gerald Salton Award: ChengXiang Zhai; ACM SIGSOFT Early Career Research Award: Lingming Zheng; CRA-WP Skip Ellis Early Career Award: Sanmi Koyejo; Hyperion HPC Innovation Award: Jian Peng; IEEE Fellow: Tarek Abdelzaher, Svetlana Lazebnik, Grigore Rosu; IEEE-CS Harry H. Goode Memorial Award: Josep Torrellas; IEEE Education Society Mac Van Valkenburg Early Career Teaching Award: Geoffrey Herman; IIT Delhi GOLD Award: Deepak Vasisht; Intel Rising Star: Christopher Fletcher, Bo Li; MIT Technology Review Innovator Under 35: Bo Li; N2Women Rising Star: Elahe Soltanaghai; NSF CAREER Award: Michael A. Forbes, Bo Li, Sanmi Koyejo; Sloan Research Fellowship: Sanmi Koyejo; Real-Time Systems Test-of-Time Award: Lui Sha.
Faculty Statistics

45 IEEE Fellows, 12 AAAS Fellows, 4 ACM Fellows, 5 APS Fellows
NAE Members: 6 active, 15 emeritus
115 Faculty members

Departmental News

- Prof. Lara Waldrop leads $75 million NASA mission to investigate Earth’s atmosphere
- Alumna Mimi Aung leads NASA’s Ingenuity helicopter to successful test flights on Mars
- Prof. Yuriii A Vlasov was elected to the National Academy of Engineering (NAE)
- Nick Holonyak, Jr., was awarded the 2021 Queen Elizabeth Prize for Engineering for the creation and development of LED lighting
- IBM and UIUC launch new $200 mm Discovery Accelerator Institute
- Toyota Research Institute launches research collaboration with ECE faculty
- Grad student Megan Culler won the 2019 IEEE-USA Jim Watson Student Professional Awareness Achievement Award, as well as IEEE Power and Energy Society (PES) Outstanding Student Scholarship Award
- Student-led Illini Solar Car team competed in national and international competitions with new 2nd generation vehicle

Student Statistics

2,089 Undergraduate Students
- 1,219 Computer engineering majors
- 870 Electrical engineering majors
- 584 First-year students (Fall ’21)
- 315 Female undergraduate students

688 Graduate Students
- 151 MEng/MEng Online students
- 138 Master’s students
- 399 PhD students
- 110 Female graduate students

Recent Honors

IEEE Tesla Award, Peter Sauer | IEEE Power & Energy Society Lifetime Achievement Award, Peter Sauer | IAMBE Fellow, Yoram Bresler | ACM Doctoral Dissertation Award, Chuchu Fan (PhD ’19) | ACM SIGMETRICS Achievement Award, R. Srikant | Six faculty members receive NSF Career Awards in ‘20-’21 | AIMBE Fellow, Gabriel Popescu | ACM Fellow, Nam Sung Kim | NAI Fellow, Xiuling Li | NTC Pioneer Award in Nanotechnology, Jean-Pierre Leburton
AREAS OF EXPERTISE
• Data science and data analytics
• AI and machine learning
• Natural language processing and computational linguistics
• Human-computer interaction and user experience
• Privacy, security, trust, and transparency
• Computer-supported cooperative work
• Health, medical, and bio-informatics
• Data curation and information modeling
• Digital libraries and digital humanities
• Computing for the social good

RESEARCH PORTFOLIO
Drawing on the resources of the University of Illinois and collaborations with international scholars and corporate partners, the iSchool’s research spans broad areas including science, business, education, and health care. Our faculty and staff serve as principal investigators and co-investigators on more than 60 projects totaling more than $109 million.

NEW FACULTY
The iSchool welcomed five new faculty this fall whose research areas span accessible computing and health informatics, big data analytics, cultural analytics, computational social science, digital humanities, diversity in the information profession, human-computer interaction, human-centered AI, machine learning, and text and data mining.

SELECT CURRENT GRANTS
• Illinois Cyber Security Scholars Program (Masooda Bashir)—NSF, $4,000,000
• Midwest Big Data Hub (Catherine Blake)—NSF, $2,883,274
• Collaborative Research: Do We Know Who We’re Failing? Algorithmic Bias in K-12 STEM Adaptive Learning (Nigel Bosch)—NSF, $987,015
• Identifying False HPV-Vaccine Information and Modeling Its Impact on Risk Perceptions (Jessie Chin)—NIH, $389,810
• Modeling the Heterogeneity of Heterogeneity: Algorithms, Theories and Applications (Jingrui He)—NSF, $415,836
• The Reading Time Machine: Transforming Astrophysical Literature into Actionable Data (Jill Naiman)—NASA, $506,912
• Novel Algorithms and Tools for Empowering People Who Are Blind to Safeguard Private Visual Content (Yang Wang)—NSF, $315,931

“The iSchool leverages the power of information to advance insight and discovery, inform decision making, and create and assess new solutions to society’s most pressing challenges.”
—Eunice E. Santos, Dean

63 PROJECTS
$109.3 MILLION
The Department of Computer Science at the University of Kentucky is one of the oldest CS departments in the country, established in 1966. We offer bachelor's, master's, and Ph.D. degrees in computer science. Our alumni go on to pursue a variety of careers and are currently succeeding in academia and companies like Google, Amazon, Microsoft, HP and others.

28 Faculty
34 Master’s
61 PhD
577 Undergraduates

News
Dr. Corey Baker led an eight-week Google Applied Machine Learning Initiative summer program for under-represented minority students sponsored by NACME.

Recent Hires
Dr. A.B. Siddique
Assistant Professor
Areas: AI, NLP, Machine Learning, Data Mining

Kevin Eby, Lecturer
Areas: SE, Embedded Systems.

Recent Department Research Highlights
7 NSF CAREER Awards
Seven faculty members from our department have received the prestigious NSF CAREER awards. Two recent career awards are:

Dr. Simone Silvestri His project titled “Energy Management for Smart Residential Environments through Human-in-the-loop Algorithm Design” won the CAREER award and aims to develop techniques for energy management in smart communities.

Dr. Nathan Jacobs His project titled “Learning and Using Models of Geo-Temporal Appearance” won the CAREER award and aims to develop computer vision technologies to capture spatial and temporal appearance trends.

2 NSF Mid Scale Infrastructure Awards
Dr. Brent Seales The project “EduceLab: Infrastructure for Next-generation Heritage Science” led by him was funded by NSF for $14M over 5 years to develop advanced multimodal imaging and data processing techniques to support discovery in the natural and heritage contexts.

Dr. Jim Griffioen Collaborating with RENCI, Clemson, DOE ESnet, and UIUC, he led the UK effort in the FABRIC project, which will develop an everywhere programmable national research infrastructure with in-network storage to support computer science research for moving vast amounts of data efficiently and securely and scientific discovery in multiple science domains.
Be the Future.

The Brendan Iribe Center for Computer Science and Engineering

CS Faculty Larry Davis, Dinesh Manocha, Ben Shneiderman, Ming Lin, Victor Basili, Hanan Samet, Jonathan Katz & Yiannis Aloimonos among the Top 1000 Scientists World Ranking By Guide2Research

RECENT HIRES

Bahar Asgari
Ph.D. from Georgia Tech - Computer Architecture

Laxman Dhulipala
Ph.D. from Carnegie Mellon - HPC and Scientific Computing, Theory

Jia-Bin Huang
Ph.D. from University of Illinois, Urbana-Champaign - Computer Vision

Pablo Paredes
Ph.D. from University of California, Berkeley - HCI and Wearable Computing

Tianyi Zhou
Ph.D. from University of Washington - AI, ML and Data Science

RECENT FACULTY AWARDS

Professor Daniel Abadi and Professor Emerita Bonnie Dorr - ACM Fellows

Assistant Professor Abhinav Bhatele - NSF CAREER Award

Assistant Professor Abhinav Shrivastava and Affiliate Professor Phil Resnik - Amazon Research Awards

Assistant Professor Xiaodi Wu - Air Force Office of Scientific Research Award

Affiliate Professor Leila De Floriani - IEEE Visualization Academy

Associate Professor Michelle Mazurek - 2020 DARPA Young Faculty Award

Assistant Professor John Dickerson - IEEE Intelligent System's “AI's 10 to Watch”

Assistant Professor Dave Levin - Google Explore CSR Award

Associate Professor Thomas Goldstein and Assistant Professor Furong Huang - 2020 J.P. Morgan Faculty Research Award

Professor Aravind Srinivasan - Washington Academy of Sciences Distinguished Career Award

Assistant Professor Dave Levin - Member, National Academies’ Forum on Cyber Resilience

Professor William Regli - Member, Computing Community Consortium

STUDENT ACCOMPLISHMENTS

Grads Denis Peskov and Kianté Brantley - 2020 Computing Innovation Fellows

Grad Uttaran Bhattacharya - Adobe Research Fellowship

Grads Soheil Behnezhad and Mahsa Derakhshan - Google Fellowship Award

Grad Eddie Schoute - IBM Ph.D. Fellowship Award

Grads Makana Castillo-Martin, Jason Fan, Nick Franzese, and Lillian Huang - 2020 NSF Graduate Research Fellowship

Undergrad Pavan Ravindra - 2021 Churchill Scholarship

Grad Joy Kitson - DOE Computational Science Fellowship

Undergrad Eric Robinson - 2021 NOAA Hollings Scholarship

Undergrads Naveen Raman and Naveen Durvasula - 2021 Goldwater Scholars

cs.umd.edu
RESEARCH AREAS

- Accessibility and Inclusive Design
- Computational Archival Science
- Computational Linguistics, Machine Learning, and Information Retrieval
- Data Privacy and Sociotechnical Cybersecurity
- Data Science, Analytics, and Visualization
- Digital Humanities
- Future of Work
- Health Informatics
- Human-Computer Interaction
- Information Justice, Human Rights, and Technology Ethics
- Library and Information Science
- Smart Cities and Connected Communities
- Social Networks and Online Communities
- Youth Experience, Learning, and Design Practices

NEW TENURED AND TENURE TRACK FACULTY OF 2021

Diana Marsh  
Assistant Professor  
Archives & Digital Curation

Susannah Paletz  
Associate Professor  
Future of Work, Social Networks & Online Communities

Victoria Van Hyning  
Assistant Professor  
Library Innovation, Information Justice, & Digital Humanities

ACADEMIC PROGRAMS

B.S. Information Science (1336 students, 31% female, 35% URM)  
M.S. Human Computer Interaction (122 students, 62% female, 27% URM)  
Master of Information Management (51 students, 47% female, 27% URM)  
Master of Library and Information Science (309 students, 82% female, 16.5% URM)  
Ph.D. (61 students, 69% female, 16% URM)  
(URM: Underrepresented minorities)

NEW M.P.S. in Game, Entertainment, and Media Analytics (GEM) Launched Fall 2021

The GEM degree trains students to apply analytics and data science methods in support of video games, streaming video, Over-The-Top (OTT) media, mobile games, eSports, traditional media, professional sports, and other current internet-based entertainment products.

NEW B.S. Social Data Science Launching Spring 2022

Joint with the Colleges of Behavioral and Social Science (BSOS) and the School of Public Policy (SPP), this program combines the disciplinary strengths of BSOS and SPP with the strengths in information management of the iSchool.

RESEARCH CENTERS

Advanced Information Collaboratory (AIC)  
Exploring the opportunities and challenges of “disruptive technologies” for archives and records management.

Center for Archival Futures (CAFe)  
Developing and disseminating human-centered approaches to creating the systems, processes, and institutions which enable the use and care of digital objects and data over time.

Computational Linguistics and Information Processing (CLIP)  
Designing algorithms and methods that allow computers to effectively and efficiently perform human language-related tasks, as well as using computational methods to improve our scientific understanding of the human capacity for language (with Computer Science, Linguistics, and the Robert H. Smith School of Business).

Human Computer Interaction Lab (HCIL)  
Transforming the experience people have with new technologies through understanding user needs and advancing user interfaces and design methodology (with American Studies, Computer Science, Education, English, Journalism, and Psychology).

Maryland Center for Social Data Science (SoDa)  
Conducting research, providing education, and working with partners to advance social data science and measurement (with the College of Behavioral and Social Sciences).

Trace R&D Center  
Pioneering research and development in the field of technology and disability, capitalizing on the potential that technologies hold for people experiencing barriers due to disability, aging, or digital literacy.

CURRENT GRANT HIGHLIGHTS

NSF SCC-IRG Track 1: Inclusive Public Transit Toolkit to Access Quality of Service Across Socioeconomic Status in Baltimore City. Vanessa Frias-Martinez (pictured), Chris Antoun, Jessica Vitak. 10/2020-9/2024, $2.3M.


ARL Additive Manufacturing Digital Curation and Data Management. Richard Marciano, J. C. Zhao. 10/2020-9/2025, $2.05M ($22.8M at UMD overall)

NSF CHS: Medium: Collaborative: Teachable Activity Trackers for Older Adults. Eun Kyoung Choe, Herrisa Kacorri, Amanda Lazar. 7/2017-7/2022, $1.08M.
Meet some of our newest Faculty members! 27 New Faculty Hires since 2016.

Sanorita Dey, Ph.D.        Assistant Professor  
Ramana Vinjamuri, Ph.D.   Assistant Professor  
Don Engel, Ph.D.          Assistant Professor  
Maya Larson Ph.D.         Professor of the Practice  
Murat Guner Ph.D.        Lecturer, Asst. GPD  
Roberto Yus, Ph.D.        Assistant Professor  
Shawn Lupoli              Senior Lecturer  

CSEE Highlights

* Beginning Fall 2021, CSEE now offers a NEW Computing Minor in collaboration with departments across all colleges of UMBC.
* Donna Ruginski, the Executive Director for Cybersecurity Initiatives for the College of Engineering and Information Technology, won the 2021 Cyber Warrior Woman Award from the Cybersecurity Association of Maryland, Inc.
* Prof. Tulay Adali, received a $3 million five-year grant from the National Institute of Mental Health (NIMH) for research supporting the diagnosis of mood disorders.
* Seven CSEE faculty are part of a partnership with the DEVCOM Army Research Lab (ARL) on a $68-million, five-year endeavor to strengthen Army AI technology.

UMBC and the State of Maryland launched the Maryland Institute for Innovative Computing at the July 2021 Cyber Summit.

CSEE Numbers at a Glance, 2021

* Enrollment- 2,284 Undergraduates, 836 Graduates  
* Degrees Granted- 327 Bachelors, 219 Masters, 15 Ph.D. Graduates  
* Faculty -36 Tenured and Tenure Track, 17 Teaching, 9 Research  
  -8 Fellows of professional societies  
  -13 (current or past faculty) CAREER awardees

CSEE Student Accomplishments

Jordan Troutman was selected as Valedictorian for the UMBC 2021 class. Troutman is now pursuing a Ph.D. in computer science at Stanford University as UMBC’s first Knight-Hennessy Scholar.

Frances Watson received a GEM Full Fellowship to attend the University of Southern California for a Master’s degree in Computer Science, beginning Fall 2021.

NSF Report: UMBC is the #1 baccalaureate institution for African American undergrads who earn Ph.D.s in the natural sciences and engineering, as well as doctorates in the life sciences, mathematics, and computer science.
New Faculty Hires
Three recent faculty hires signal the top-tier, senior-level talent we’re attracting, even in a highly competitive environment.

Francine Berman
Stuart Rice Honorary Chair & Research Professor
Public-interest technology

Cheryl Swanier
Senior Teaching Faculty
Human-computer interaction & computer science education

Ethan Zuckerman
Associate Professor
Digital public infrastructure

By the Numbers

#11 in Artificial Intelligence
up from #12 in 2018
U.S. News & World Report Graduate Rankings, 2018

#20 in Computer Science
up from #25 in 2018

1732 Undergraduate enrollment
396 Master’s enrollment
281 Doctoral enrollment

86 Tenure-stream, teaching, and research faculty
up 54% since 2016

$19.5M Research expenditures in FY21
Including $4M from industry

$22.9M New research awards in FY 21

Awards & Accolades 2020-21

CRA Distinguished Service Award James Kurose
IEEE Fellow Bruce Croft
ACM Fellows James Allan, Brian Levine
ACM Distinguished Member Andrew McGregor
NSF Career Awards Justin Domke, Mohammad Hajiesmaili, Mohit Iyyer, Cameron Musco
IEEE Taylor L. Booth Education Award Charles Weems
IEEE TCSE New Directions Award Yuriy Brun
ACM Ubicomp 2021 Distinguished Paper
Forsad Al Hossain (PhD), Tauhidur Rahman
ACM Ubicomp 2021 Distinguished Paper Jie Xiong
AAAI 2021 Distinguished Paper Justin Svegliato (PhD), Samer B. Nashed (PhD), Shlomo Zilberstein
IEEE ISM 2021 Best Paper Ramesh Sitaraman
ACM IGSC 2020 Best Paper Aimee Trivedi (PhD), Prashant Shenoy
ACM CSCW 2020 Best Paper Mahmood Jasim (PhD), Pooya Khaloo (PhD), Narges Mayhar, Ali Sarygahd
Research Areas
Artificial Intelligence
Biomedical Informatics
Computational Social Science
Computer Science Education
Databases and Data Mining
Digital Forensics
Graphics and Visualization
Human-Computer Interaction
Human-Robot Interaction
Machine Learning
Natural Language Processing

Networking
Operating Systems
Programming Languages
Robotics
Security and Privacy
Theory and Algorithms

UMass Lowell CS by the Numbers

<table>
<thead>
<tr>
<th>Metric</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSrankings.org, 2016 - 2021</td>
<td>#76</td>
</tr>
<tr>
<td>Faculty members</td>
<td>32</td>
</tr>
<tr>
<td>NSF CAREER awards</td>
<td>6</td>
</tr>
<tr>
<td>Last 5 years in research expenditures</td>
<td>$20.4M</td>
</tr>
<tr>
<td>New research awards in FY2021</td>
<td>$5.6M</td>
</tr>
<tr>
<td>Undergraduate majors, Fall 2021</td>
<td>926</td>
</tr>
<tr>
<td>Graduate students, Fall 2021</td>
<td>313</td>
</tr>
<tr>
<td>Degrees awarded in 2020 - 2021</td>
<td>191 BS</td>
</tr>
<tr>
<td></td>
<td>77 MS</td>
</tr>
<tr>
<td></td>
<td>11 PhD</td>
</tr>
</tbody>
</table>

Facilities

**Cyber Security Range**: 40 seat lecture theater, 20 workstations, real world security problems simulated in a controlled environment

**New England Robotics Validation and Experimentation (NERVE) Center**: Industrial manipulators, exoskeletons, mobile robots, unmanned aerial vehicles

Highlights

**NSF AI Institute for Collaborative Assistance and Responsive Interaction for Networked Groups (AI-CARING)**, joint with Georgia Institute of Technology, Carnegie Mellon University, and Oregon State University, starting October 2021

**DARPA Young Faculty Award**, S. Narain, October 2021

**First Place**, Transportation Technology Tournament 2021, Z. Bhuyan, Q. Chen, X. Sun, Y. Cao, B. Liu

**Program Chair**, Annual Conference of the North American Chapter of the Association for Computational Linguistics (NAACL) 2021, A. Rumshisky

**AAAI Fellow**, H. Yanco, elected February 2021
The Computer Science Department at the University of Memphis offers bachelor’s, master’s, and doctoral degrees in computer science, as well as an accelerated bachelor’s/master’s program and two graduate certificates (cybersecurity and data science). Our 22 faculty members are highly productive researchers. With over $25 million in active research grants, the Department has been ranked 55th nationwide among CS departments in federally funded research expenditures. Our faculty include 2 IEEE Fellows, an ACM Distinguished Speaker and two state-endowed chairs of excellence professors.

**SPRING ’21 TENURE-TRACK FACULTY HIRE**

**XIAOLEI HUANG, ASSISTANT PROFESSOR**  
PhD, Information Science  
CU Boulder, 2020  
Research Areas | Natural language processing, machine learning, public health

**ALUMNI HIGHLIGHT**

**SIDNEY D’MELLO (PHD ’09)** leads the NSF-funded AI Institute for Student-AI Teaming at CU Boulder. The five-year, $20 million grant is a multidisciplinary effort involving nine universities, as well as public school districts, private companies and community leaders. It will explore AI applications in education and workforce development, particularly among historically underrepresented students.

**RESEARCH HIGHLIGHTS**

- **THE CENTER FOR INFORMATION ASSURANCE, UNDER THE DIRECTION OF PROF. DIPANKAR DASGUPTA,** will lead a $2 million research-based Cybersecurity Education Innovation project funded by the Department of Defense’s National Centers of Academic Excellence in Cybersecurity program. The project will involve contributions from the University of West Florida, North Carolina A&T State University and The Citadel.

- **PROFESSORS AMY COOK (PI), VINHTHUY PHAN (CO-PI) AND ALISTAIR WINDSOR (CO-PI, MATHEMATICAL SCIENCES)** are leading a $299,000 National Science Foundation grant for “Improving the Quality of Teaching Assistant Feedback to Undergraduate Students in Introductory Computer Science Courses.”

- **PROFESSOR SAJJAN SHIVA** received funding for his project “Testing Requirements and Functionality of Machine Learning Systems Especially in Cyber Resilient Approaches” from the Department of Homeland Security, through the Air Force Institute of Technology’s Test and Evaluation Center of Excellence.

- **PROFESSOR XIAOLEI HUANG** was awarded grants totaling $28,000 from Adobe to help with his research. The grants will be applied towards the project “Time-aware Semantic Search for COVID-19 Scientific Literature.”

- **PROFESSOR DIPANKAR DASGUPTA** received an award in the amount of $490,000 from NCAEC for cybersecurity research.

- **LILLIAN & MORRIE MOSS CHAIR OF EXCELLENCE PROFESSOR SANTOSH KUMAR** received grants totaling more than $1 million from the National Institutes of Health and the National Science Foundation for mobile health research.

**OTHER HIGHLIGHTS**

- **RECENT DOCTORAL GRADUATES** Nazir Saleheen joined Google, Syed Monowar Hossain joined Facebook, Soujanya Chatterjee joined Amazon and Rummana Bari joined Spire Health (a high-tech Silicon Valley startup in Smart Health).

- **THERE HAVE BEEN NUMEROUS STUDENT-LED PUBLICATIONS IN THE PAST YEAR,** including in ACM CCS 2021 (Nazir Saleheen, Md Azim Ullah), ACM UbiComp 2021 (Rummana Bari, Sayma Akther), EDM 2021 (Anup Shakya), ICML 2021 (Lokesh Das), T-ITS 2021 (Navid Imran), SN Computer Science (Kishor Datta Gupta), UCNN 2021 (Kishor Datta Gupta), IEEE Access (Subash Poudyal), J. Complex and Intelligent Systems (Kishor Datta Gupta) and IEEE Transactions on AI (Kishor Datta Gupta).
A room – and maybe a house – without plugs or power cords. Researchers have developed a system to safely deliver electricity over the air, potentially turning entire buildings into wireless charging zones. The technology can deliver 50 watts of power using magnetic fields.

Shapeshifting computer chip defeats 500+ DARPA hackers. Called MORPHEUS, the chip that continuously encrypts foiled cybersecurity researchers who were offered tens of thousands of dollars to analyze it and three other secure processor technologies for vulnerabilities.

Efficient, globally distributed machine learning. Federated learning distributes model training over the devices of thousands of participants, and a group of researchers is building the full big data stack to make it a reality.

Robot that can see and move transparent objects. A new method using light-field sensing enables neural networks to properly segment transparent objects, and lets robot arms do things like build a tower of champagne glasses.

Digital learning transformation supports thousands of low-income students. U-M's Center for Digital Curricula enables K-12 students and teachers to collaborate in real time while completing assignments and making use of modern, digital learning tools.

Smart speakers protect user privacy. New microphone technology captures ultra- and infrasound, allowing smart speakers to perform tasks reliant on environmental noise without having to record human conversations.

New tool to analyze, improve live streaming services. Researchers have set out to improve design practices in streaming platforms, with a focus on the pathway between the broadcaster and the server – an under-studied component and frequent source of poor performance.

RESEARCH HIGHLIGHTS

NEW FACULTY

NIKHIL BANSAL
Patrick C. Fischer Professor of Theoretical Computer Science
Design and analysis of algorithms, discrete mathematics, machine learning, combinatorial optimization, and complexity.

MICHAL DEREZIŃSKI
Assistant Professor
Developing scalable randomized algorithms with robust statistical guarantees for machine learning, data science and optimization.

BENJAMIN FISH
Assistant Professor
Methods for machine learning and other computational systems that incorporate human values and social context.

WEI HU
Assistant Professor
Developing principles to make machine learning systems better in terms of reliability and efficiency.

ACADEMIC PROGRAMS

PhD, Computer Science and Engineering
MSE/MS, Computer Science and Engineering
MS, Data Science
BSE, Computer Engineering
BSE/BS, Computer Science
BSE/BS, Data Science
Minor, Computer Science
AREAS OF FACULTY RESEARCH

- Accessibility and Computing
- Archives and Digital Curation
- Collective Intelligence and Organizational Technology
- Critical Studies of Design and Computing
- Data Science, Analytics and Visualization
- Educational Technology and Learning Analytics
- Health Informatics
- Human Computer Interaction (HCI)
- ICTs and Social Change
- Information Economics
- Library and Information Science
- Privacy
- Science, Technology and Society
- Social Media and Social Computing
- Ubiquitous Computing

MASTER OF APPLIED DATA SCIENCE DEGREE GRADUATES ITS FIRST COHORT

The first group of Master of Applied Data Science (MADS) students graduated from the University of Michigan School of Information in August after spending two years in the fully online program studying data science at the intersection of people, information and technology.

NEW FACULTY IN 2021

Dallas Card
Assistant Professor
PhD, Carnegie Mellon University

Sabina Tomkins
Assistant Professor
PhD, University of California, Santa Cruz

Jeff Sheng
Assistant Professor/Research fellow
PhD, Stanford University

DEGREES OFFERED AND STUDENT ENROLLMENTS

<table>
<thead>
<tr>
<th>Degree</th>
<th>Enrollment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor of Science in Information</td>
<td>339</td>
</tr>
<tr>
<td>Master of Science in Information</td>
<td>501</td>
</tr>
<tr>
<td>Master of Health Informatics</td>
<td>75</td>
</tr>
<tr>
<td>Master of Applied Data Science (online)</td>
<td>640</td>
</tr>
<tr>
<td>PhD in Information</td>
<td>130</td>
</tr>
<tr>
<td>Total</td>
<td>1685</td>
</tr>
</tbody>
</table>

Enrollment estimate as of 9/30/21

2020–21 HONORS & ACCOMPLISHMENTS

- The Association for Computing Machinery Distinguished Members
  Kevyn Collins-Thompson, Barbara Ericson
- Association for Computing Machinery Fellow, Paul Resnick
- NSF CAREER Grants
  Ceren Budak, Patricia Garcia
- ACM CHI Conference 2021
  Two Best Papers, two Honorable Mentions
- Elizabeth Crosby Research Award
  Tawanna Dillahun
- Association for Information Systems Distinguished Member
  Lionel Robert

CURRENT NSF GRANT HIGHLIGHTS

- Race, Gender and Class Equity in the Future of Work: Automation for the Artisanal Economy — $1,550,000
- Collaborative Research: Mastery in Out-of-School-Time (MOST): Documenting STEM Learning to Expand Educational Pathways — $915,455
- The “Community Tech Workers”: A Community-Driven Model to Support Economic Mobility and Bridge the Digital Divide in the U.S.— $1,419,769
- Collaborative Research: Learning by Touch: Preparing Blind Students to Participate in the Data Science Revolution — $328,112

RESEARCH HIGHLIGHTS

- Data and Power: Archival Theory as a Framework for Data Preservation Practice
- Study shows young people want justice for bad social media behavior, more action from platforms
- Data breaches: Most victims unaware when shown evidence of multiple compromised accounts
- Study: People talk politics across online community groups with less venom
- Exploring gender transition and disclosure in social technology

DIVERSITY AND OUTREACH

- UMSI receives Dumas Progress in Diversifying Award
- UMSI research recognized for contributions to diversity and inclusion at CSCW
- UMSI to hire two new anti-racism faculty positions
- Fifth annual DEI awards for faculty, students and staff
OVERVIEW

- 20 tenured/tenure-track faculty members, including 2 NSF CAREER award recipients
- 8 full-time/part-time lecturers
- Over 950 students: 680+ undergraduates and 270+ graduates
- 4 B.S. programs, 5 M.S. programs, and 1 Ph.D. program

OTHER HIGHLIGHTS

- Marouane Kessentini received the most influential paper award for the last 10 years from the 29th IEEE/ACM International Conference on Program Comprehension (ICPC’21)
- Qiang Zhu served as PC Co-Chair for SSDBM 2021 and a Lead Guest Editor of a special issue of DAPD Journal
- Marouane Kessentini served as PC Co-Chair for SANER 2021
- Birhanu Eshete was featured in a podcast by Science Magazine to discuss his article in the magazine on making machine learning trustworthy
- CIS Department established new partnership with Amazon (Detroit) and Dearborn Police Department for education and research
- Sania Halawi (Director of Eng., Quicken Loans), Janel Howard-Gumbs (Senior Architecture, Ford), and Rachel Radzisewski (Global SA Manager, Amazon) joined the departmental Professional Advisory Board
- A new MS in Artificial Intelligence program was Launched
- ABET accreditation for the BS-CIS program was renewed for another six years
- Di Ma was appointed as Associate Dean for Graduate Education and Research for CECS
- Brahim Medjahed was appointed as Associate Dean for Undergraduate Education for CECS

RESEARCH HIGHLIGHTS

Research sponsors
NSF, Ford, eBay, ETS, MTRAC, NHTSA, IBM, Toyota, etc.

Selected recent grants
- Marouane Kessentini, “PFI–TT: Intelligent Software Refactoring Bot for Continuous Integration”, NSF, $250,000
- Marouane Kessentini, “Intelligent Dynamic Balancing and Scheduling of Software Containers Load in Embedded Devices”, Ford URP, $49,964
- Jin Lu, “MCA: New approaches to the detection of niche differentiation patterns in ecological communities”, NSF/UTA, $57,787
- Marouane Kessentini and Wencong Su, “IUCRC Planning Grant University of Michigan Dearborn: Center for Pervasive Personalized Intelligence Center”, NSF, $20,000
- Anys Bacha, “REU Supplement: CRII: SaTC: An Integrated Treatment of Ransomware Through Microarchitecture and Software Solutions”, NSF, $16,000

Selected recent publication venues
TSE, TBD, T-RELIAB, TDSC, TKDE, ASE, DAPD, ICDCS, ICSE, ICSME, SCAM, TOIT, S&P, PACT, ITSC, ICWS, EDGE, COLUD, CCS, USENIX SEC, TDSC, TEAC, etc.

CIS Faculty Led Interdisciplinary Research and Education Centers

Dearborn Artificial Intelligence Research (DAIR) Center
(Founding Director: Marouane Kessentini)

Cybersecurity Center for Education, Research and Outreach (CCER)
(Founding Director: Di Ma)

Learn more: https://umdearborn.edu/cecs/departments/computer-and-information-science
HIGHLIGHTS

- University of Minnesota researchers, including CS&E’s Vipin Kumar, are part of a new $25 million climate modeling center funded by the U.S. National Science Foundation (NSF) called Learning the Earth with Artificial Intelligence and Physics (LEAP).
- George Karypis was honored with the Distinguished Contributions Award during the 2021 Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD).
- Research by alumna Xia Ning (Ph.D. 2012) and Professor George Karypis was recognized with the prestigious 10-Year Highest-Impact award at the 2020 International Conference on Data Mining (ICDM).
- Assistant Professor Kangjie Lu has been selected for an NSF Faculty Early Career Development (CAREER) Award to support his project “Whole-Kernel Analysis Against Developer- and Compiler-Introduced Errors.”
- Sam Walczak, a M.S. in data science student, won the grand prize in the 2020-21 NFL Big Data Bowl, a test of contestants’ analytical prowess with football statistics.
- Alumnus Jeffrey Dean (B.S. 1990) was honored with the 2021 IEEE John von Neumann Medal in recognition of his “contributions to the science and engineering of large-scale distributed computer systems and artificial intelligence systems.”
- The University of Minnesota has been selected by the Toyota Research Institute to participate in the next five-year phase of a collaborative research program. Hyun Soo Park will lead AI research to understand drivers’ behavior to increase safe driving.
- A new collaboration between Minnesota researchers and Cisco Systems seeks to advance cutting-edge technologies that transform the way people access, manage, and protect data. CS&E faculty Stevie Chancellor, Feng Qian, Ju Sun, Loren Terveen, and Zhi-Li Zhang are all involved in this research.
- The Cowbot, an autonomous mower developed by Professor Volkan Isler, his students, and The Toro Company, was featured on the PBS Show, “The Prairie Sportsman.”

AT A GLANCE

<table>
<thead>
<tr>
<th>ENROLLMENT</th>
<th>DEGREES GRANTED</th>
<th>FACULTY</th>
<th>RESEARCH IMPACT</th>
<th>FACULTY AWARDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,193 Undergraduates</td>
<td>545 Bachelors</td>
<td>46</td>
<td>76 Papers with 1000+ Google Scholar citations</td>
<td>19 NSF CAREER Awardees</td>
</tr>
<tr>
<td>572 Graduates</td>
<td>131 Masters</td>
<td>16</td>
<td>$11.22M In research expenditures</td>
<td>12 IEEE Fellows</td>
</tr>
<tr>
<td>8% increase from 2020</td>
<td>23 Ph.D. degrees</td>
<td>12</td>
<td></td>
<td>3 ACM Fellows</td>
</tr>
</tbody>
</table>

More information about CS&E: cs.umn.edu  |  (612) 625-4002  |  cscicomm@umn.edu
819 undergraduate students
40 master’s students
70 doctoral students
202 bachelor’s degrees
16 master’s degrees
10 doctoral degrees

5-YEAR GROWTH TRENDS
86% in enrollment numbers
177% in female students
108% in underrepresented students

31 Tenure Track (3 new hires)
13 Instructional
3 Endowed Chairs
8 NSF CAREER Awardees
2 IEEE Fellows
1 ACM Fellow

Informatics, Analytics, Foundations
Software Engineering
Systems

$3.75M in expenditures
8 Average of publications per year per faculty

The University of Nebraska-Lincoln’s Department of Computer Science and Engineering officially became a School of Computing in 2021.

The elevation to a school will:
• Enhance core computing programs
• Create interdisciplinary opportunities
• Help meet local and national workforce needs
• Improve the research enterprise of the university
• Facilitate interactions with industry partners and community stakeholders

$2.5M annual investment into faculty and programs
200% projected enrollment increase by 2025

“Computing is now part of every aspect of our lives, including medicine, finance, agriculture, the humanities, government, and engineered systems. The School of Computing will prepare students for this new world.”

Founding Director:
Marilyn C. Wolf

School of Computing
computing.unl.edu
DEPARTMENT OF COMPUTER SCIENCE

19 Full-time Tenure Track/Tenured Faculty
6 Lecturers and Instructors
574 Undergraduate Students
83 Graduate Students (MS/MA CS and MS CSTE)

RECENT HIRES

Jorge Fondinno
Assistant Professor
PhD, University of Potsdam
Artificial Intelligence,
Knowledge Representation,
Automated Reasoning

Pei-Chi Huang
Assistant Professor
PhD, University of Potsdam
Cyber-Physical Systems,
Robotics with Machine Learning,
Real-time Computing and Scheduling Algorithms,
Wireless Communication/Networking Systems

Spyridon Mastorakis
Assistant Professor
PhD, UCLA
Systems, Security,
Edge Computing,
Internet of Things

Kwangsung Oh
Assistant Professor
PhD, University of Minnesota
Cloud Computing,
Edge Computing,
Data Analytic Systems

Agatha Owora
Instructor
MS, UCD
CS Education,
Game Design,
Data Analysis

Joaõ Santos
Lecturer
PhD, UNL
Computer Architecture,
Embedded Systems,
Robotics

Xin Zhong
Assistant Professor
PhD, NJIT
Image Processing and Analysis,
Image Watermarking,
Computer Vision,
Deep Learning,
Computational Intelligence

DEPARTMENT HIGHLIGHTS

• Computer Science undergraduate program rose 56 spots (now ranked 154) in US News Best Computer Science Undergraduate Program rankings.
• Online graduate certificate in Machine Learning was launched.
• Online graduate degree option available for Computer Science Teacher Education.
• New undergraduate Software Engineering concentration announced.
• CS faculty hosted over 40 faculty, post-docs, research assistants, and students from South Dakota, Montana, Nebraska, for NSF EPSCoR Track II PI meeting.

RESEARCH HIGHLIGHTS

• Spyridon Mastorakis, received NSF CRII: CNS: A Hybrid Software Defined Networking-Information Centric Networking Framework for the Reuse of Computing. He was also the recipient of NSF award for Gaitprints as Predictors of Disease and Disability for Effective Rehabilitation Engineering.
• Robotics, Networking, and Artificial Intelligence (RNA) laboratory faculty – Pei-Chi Huang, Spyridon Mastorakis, Xin Zhong, and Kwangsung Oh – recognized with multiple federal and state research grant awards.
• Mastorakis et al, received best paper award for Irregular metronomes as Assistive Devices to Promote Healthy Gait Patterns at the IEEE Consumer, Communications and Networking Conference.
• Parakh, Chundi, and Subramaniam received best paper award for Quantum Cryptography Exercise Schedules with Concept Dependencies at the Colloquium on Information Systems and Cybersecurity Education.
• Department advanced its research footprints in Artificial Intelligence and Computing Systems areas with Fondinno, Huang, Mastorakis, and Oh authoring several publications in multiple prestigious conferences including AAAI, IJCAI, ICRA, INFOCOM, and IPDPS.

DEGREES & CERTIFICATES

• BS in Computer Science (ABET accredited since 2002)
• Concentrations in Artificial Intelligence, Gaming, and Software Engineering
• BS/MS Fast Track Program
• MS/MA in Computer Science
• Online Graduate Certificate in Machine Learning
• MS in Computer Science Teacher Education
• Online degree option available
• PhD in Information Technology
• Concentrations in Artificial Intelligence, Computing Systems, and Human Centered Computing

Find out more at cs.unomaha.edu
SCHOOL OF INTERDISCIPLINARY INFORMATICS

19 Full-time Tenure Track and Instructional Faculty
343 Undergraduate Majors (2021)
79 Graduate Majors (2021)
469 Degrees Awarded (2012-2020)

NEW HIRES

Dr. Ada-Rhodes
PhD, Oregon State University
Robotics, AI, computational cognition, design, automation, decision-making

Dr. Joel Elson
PhD, University of Nebraska at Omaha
Human-computer trust, computer-mediated influence, and psychophysiological measurement

Dr. Martina Clarke
PhD, University of Missouri, Columbia
Usability evaluations of health information technology, needs assessment, and clinical workflow analysis

Dr. Sayonnha Mandal
PhD, University of Nebraska at Omaha
Regulatory requirements, quantum cryptography, and cybersecurity curriculum adv

NEWS

Dr. Kate Cooper started work on NIH project, E-PACERR: Enhancing Professionalism, Advocacy and Capacity for Excellence in Responsible Bioinformatics Research

Dr. Matt Hale, will be hosting the NSA sponsored Nebraska GenCyber Camp for middle-school girls in Summer of 2022

Dr. Ann Fruhling will be co-directing the new Center for Biomedical Research and Innovation

Cybersecurity BS and MS courses now offered in two modalities: in-person and totally online

Kaitlyn Baysa, BS in IT Innovation student, won the 2020 Big Idea! Pitch Contest. She is now in the MS in IT Innovation program.

DEGREE PROGRAMS

- BS and MS in Cybersecurity
  - Cyber Operations Track, Graduate Certificate
  - NSA CAE Cyber Defense (CD) and
  - Cyber Operation (CO) designations
- BS and MS in IT Innovation
- BS in Bioinformatics
- MS and PhD in Biomedical Informatics

ACADEMIC/RESEARCH CENTER AFFILIATIONS

- Nebraska University Center for Information Assurance (NUCIA)
- Center for Collaboration Science (CCS)
- Center for Biomedical Informatics Research and Innovation (CBIRI)
- National Counterterrorism Innovation, Technology, and Education Center (NCITE)

Find out more at si2.unomaha.edu
NEW FACULTY

Foluso Ayeni
PhD, Lecturer
Foluso Ayeni earned his PhD in Science and Mathematics from Southern University and A&M College. He is the Executive Secretary, Initiative and Partnerships of the African Society for ICTs and a member of the Pan-African Scientific Research Council.

Katelynn Kapalo
PhD, Assistant Professor
Katelynn Kapalo earned her PhD in Modeling and Simulation from Central Florida University. Her research interests focus on leveraging emerging technologies like augmented and virtual reality to better support fireground incident command and public safety officials in the context of pre-incident planning and community risk reduction efforts.

Chun-Hua Tsai
PhD, Assistant Professor
Chun-Hua Tsai earned his PhD in Information Science from the University of Pittsburgh. His research interest is in exploring fair, trustworthy, and transparent AI using data-driven, data visualization, HCI and HCC approaches, particularly for empowering marginalized groups and improving AI-literacy inequalities.

GRADUATE DEGREES & CERTIFICATES

- MS Management Information Systems (MIS)
- MS MIS/Master of Business Administration dual degree
- MS MIS/Master of Public Administration dual degree
- MS Data Science (interdisciplinary degree between College of IS&T, Business, Department of Mathematics)
- Graduate Certificates in Data Analytics, Data Management, Information Assurance, Systems Analysis and Design, Global Information Operations

UNDERGRADUATE DEGREES

- BS Management Information Systems (ABET accredited since 2002)
- Undergraduate certificates in Data Management, IT Administration, Systems Development

RESEARCH AREAS

- Open Source Community Health
- Citizen Science
- Data Analytics/Data Science/Modeling
- IT for Development
- IT Careers & Professional Development
- IT & Law Enforcement
- Disaster Recovery/Emergency Management
- Cybersecurity/Information Assurance
- Fair, trustworthy, transparent AIs

RESEARCH FUNDING

- NSF
- Ford Foundation
- Alfred P. Sloan Foundation
- Mozilla
- Department of Education
- Chan Zuckerberg Initiative
- NU Collaboration Initiative

Find out more at isqa.unomaha.edu
New Hires
The Department of Computer Science at UNLV welcomes our three new assistant professors.

Beiyu Lin
Data mining and machine learning

Corey Tessler
Schedulability of multi-threaded hard real-time and safety critical systems

Hussain Aljafer
Web service composition optimization

New Book
Jan Bækgaard Pedersen publishes the first ever textbook that teaches process oriented design and verification together in one book. ProcessJ is a new process-oriented language that is built on CSP semantics and thus can be verified using the formal verification tool FDR. Such a textbook has been desired by the process-oriented programming community for years.

New Programs
The Computer Science department is the major participant in two interdisciplinary graduate programs in data analytics and Cybersecurity. These programs are open to students with BS or BA in other disciplines that want to pursue advanced degrees in computer science applications.

Annual cybersecurity summer camp was held in July 2021 for Southern Nevada high school students. This camp is sponsored by NSA and NSF to promote K-12 students' cybersecurity awareness and increase their interests in cybersecurity careers. This was the third year of the camp run by Yoohwan Kim and Ju-Yeon Jo who have secured operating funds from NSA and NSF.

Department News
The department is the recipient of the following six new research awards:

A $3 million dollar grant titled “Alzheimer’s Clinical Trial InnOvatioN (ACTION)” from NIH is awarded to Jeff Cummings (Brain Health), Kazem Taghva (Computer Science), and Jorge Fonseca (Computer Science) to support a research observatory devoted exclusively to Alzheimer’s clinical trials and drug development.

https://appdev.cs.unlv.edu/

Andy Stefik was awarded three NSF grants (NSF 2121993, NSF 2106392, NSF 2048356). These awards are in collaboration with the University of Washington, St Louis University, and the University of Maine. The main objectives of these awards are to support online accessible blocks technology that can be used by students with disabilities, and to evaluate data science use across the social sciences. Total award is $3.6 millions of which $1.7 million supports Andy’s research.

Yoohwan Kim and Juyeon Jo have received a $1.13M grant from the Department of Energy (DoE) under NNSA MSIPP Program. It is a part of a $4.95M grant awarded to a research consortium consisting of UNLV and three other universities as well as three DoE national labs. The project will investigate Machine Learning techniques to protect infrastructure from cyber attacks.

Mingon Kang was awarded an NSF grant (AWD-02-0001725) in the amount of $500K to acquire a GPU cluster for accelerating ongoing multi-disciplinary research, spanning biomedical/clinical research, intelligent transportation systems, genomics, physics, and astronomy.
In August of 2020, the CSE department moved into the new engineering building where it occupies 23,000 square feet of the state-of-the-art research space, including 30 faculty offices and eight shared research labs, each more than 1,000 square feet.

**BY THE NUMBERS:**
- Undergraduate students: 850
- MS students: 39
- PhD students: 67
- Female: 20%
- Hispanic: 15%
- Faculty: 21
- Lecturers: 3

**RESEARCH:**
- $5.1M FY21 awards
- 1 NSF CAREER

**RANKING:**
- U.S. News & World Report: #106
- CS Rankings: #28 Robotics, #39 HPC, #55 HCI
- Overall #108

**RESEARCH HIGHLIGHTS IN THE NEWS:**
- UNR CERBERUS wins DARPA SubTChallenge
- K-12 Robotics Center opens
- Feng Yan wins NSF CAREER Award
- NSF-funded research improves reliability, efficiency of sensor networks
- Cybersecurity partnership established with Nevada National Security Site
- New tool allows computer scientists to support life scientists
- Nevada Cyber Club succeeds at National Cyber League Competition

more at unr.edu/cse/news
RESEARCH HIGHLIGHTS

- Dr. Aleksey Charapko is working on scalable distributed systems. His research focuses on planetary-scale storage and high-throughput, low-latency replication approaches for the cloud and edge.
- The Cognitive Assistive Robotics Lab (CARL) of Dr. Begum is working on developing robot perception and learning algorithms for seamless human-robot interaction in various assistive scenarios. The research at CARL is sponsored by NSF and includes collaboration with Brown University and UMass Lowell.
- The UNH SoftSec group led by Dr. Xu focuses on software security topics including automated software analysis, protection, and reverse engineering. The group’s research works are supported by NSF grants and the results are published in top conferences such as USENIX Security and PLDI.
- The Text Retrieval, Extraction, Machine Learning and Analytics (TREMA) lab of Dr. Dietz is developing algorithms for helping people find information about unfamiliar topics. Their methods use knowledge graphs and text retrieval with information extraction methods to create new Wikipedia-like articles. Laura Dietz has been awarded an NSF CAREER grant and serves on the steering committee of the Northeast Big Data Innovation Hub.
- Dr. Petrik’s research group develops safe and robust reinforcement learning algorithms in order to solve important environmental and sustainability challenges. Members of the group publish in top machine learning conferences and collaborate widely across the country and the world.
- The UNH AI Group, led by Dr. Wheeler Ruml, focuses on planning, with emphasis on heuristic graph search and applications to robotics. The group collaborates with the marine robotics group at UNH CCOM, and has recently started an NSF-BSF project on on-line planning with deadlines in collaboration with researchers in Israel and the UK.

STUDENT HIGHLIGHTS

- Enrollments: 352 undergraduates, 32 MS students, and 30 PhD students
- New BA program in Computer Science with tracks in Algorithms, Systems, and Cybersecurity as well as new undergraduate interdisciplinary programs in Analytics and Data Science
- Several current and former students work at the UNH InterOperability Laboratory as members of the executive and project management teams
- Wildcat Women in Computer Science is a student-led organization focusing on increasing participation of women in computing

cs.unh.edu
Computer Science at UNM is a diverse and growing department. We currently have 19 faculty, including 8 women. The department currently has enrollments of 139 undergraduates, 55 masters, and 75 PhD students. Computer Science at UNM is making a large impact on state-of-the-art research. The department’s expenditures from external research funding in fiscal year 2021 were $3.1 million dollars.

FACULTY NEWS

• UNM assistant professor of Computer Science Matt Lakin researches nanoscale computer systems using biomolecules. He is a 2021 recipient of the NSF CAREER Award for a project titled Robust Heterochiral Molecular Computing in Mammalian Cells. Through this project, Dr. Lakin plans to program the behavior of living cells through the use of DNA nanotechnology. Professor Lakin was also awarded the UNM SOE Junior Faculty Research Excellence award and was the Co-PI on two newly awarded NSF grants on synthetic cell research.

• UNM professor Melanie Moses modeled coronavirus moving through the fractal branching structures of the lung to model billions of lung cells using the high performance computing resources at UNM Center for Advanced Research Computing, led by UNM Professor Patrick Bridges. The Moses Biological Computation lab’s VolCAN project builds swarms of drones to monitor and ultimately help predict volcano eruptions. The team uses bio-inspired algorithms, theory and engineering to support field studies far away in Papua New Guinea, and close to home in Valles Caldera.

• UNM Associate Professor Leah Buechley received an NSF Future of Work Grant to develop new digital fabrication technology for ceramics in collaboration with New Mexico craftspeople.

STUDENT SPOTLIGHT

• Ten undergraduate students were each awarded $2500 as part of the VanDyke Software Scholarships. The 2021 awardees were: D M Raisul Ahsan, Sean Timm, Vasilios Kourakos, Duy Duong, Zachary Morrell, Siri Hargobind Khalsa, Brandon Harrington, Abigail Pribisova, Mark Adams, and John Cooper.

• The UNM Swarmathon team, advised by UNM Research Assistant Professor Matthew Fricke, won $5000 in the first phase of the NASA Space Robotics Challenge. The UNM team was among 22 teams around the world to qualify for the second phase of the competition.

• Diksha Gupta graduated last year with a PhD under the advisement of UNM professor Jared Saia, and is currently a research fellow at the National University of Singapore under Professor Seth Gilbert. She will be joining IBM Innovations Lab Singapore as a Research Scientist in November.
UNC Computer Science will advance AI education as a partner in NSF’s Artificial Intelligence Institute for Engaged Learning, which launched with a $20 million grant in 2021. Mohit Bansal, Snigdha Chaturvedi, Colin Raffel and Shashank Srivastava join researchers from three other universities and non-profit Digital Promise to create more equitable, inclusive educational experiences through advanced AI tools.

Cyber-physical systems researchers Samarjit Chakraborty, James Anderson, F. Don Smith and Parasara Sridhar Duggirala, working with General Motors, received an NSF grant worth $1.2 million to transform the software development process in modern cars, culminating in a fully autonomous vehicle.

Publications by UNC Computer Science personnel have been recognized by conferences in several research areas during 2020 and 2021, including computer vision and natural language processing (CVPR, EACL), embedded systems and Internet-of-Things (AIChallengeloT, Ubicomp), real-time systems (ECRTS, IEEE ISORC, RTCSA, RTNS), robotics (RSS) and virtual and augmented reality (IEEE VR).
New federal contract extends long-term partnership between SILS and EPA

The UNC School of Information and Library Science (SILS) has been awarded a federal contract to continue operating the Environmental Protection Agency (EPA) Research Triangle Park (RTP) Library through the year 2025.

The new contract, announced in early March, extends a relationship between the School and the EPA that has lasted more than 45 years. Through this unique partnership, SILS employs a full-time staff of professionals to operate the EPA-RTP Library, as well as manage agency-wide subscriptions to journals and other information resources. The partnership also provides SILS master’s students with internship opportunities that include stipends and full-tuition support.

More than 425 graduate students have interned at the EPA-RTP Library since the program began in 1975, and many have become leaders in the library and information science field and beyond.

SILS rises in latest U.S. News rankings

Matt Perault joined SILS as the Director of the Center on Technology Policy (CTP). CTP explores the policy issues that emerge from the impact of digital technology in our daily lives. Utilizing an interdisciplinary academic framework, CTP works to identify knowledge gaps and develop actionable policy frameworks to navigate the positive and negative effects of digital technology on society. By expanding the University’s offerings in technology policy analysis and by engaging with local and global tech communities, CTP will prepare students to critically evaluate technology policy as practitioners in the field.

Francesca Tripodi, Assistant Professor, recently published two papers. “Ms. Categorizes: Gender, notability, and inequality on Wikipedia,” which appears in the June edition of New Media & Society, offers new insights and analysis to help explain why women account for just 19% of the 1.5 million biographies about notable writers, inventors, and academics on Wikipedia. “ReOpen demands as public health threat: a sociotechnical framework for understanding the stickiness of misinformation” published by Computational and Mathematical Organizational Theory in August 2021, examines the central narratives circulating among Facebook group members effort to downplay the threat of COVID.

FACULTY PUBLICATIONS

Mohammad Hossein Jarrahi, Associate Professor, is lead author on two recent articles examining how new technologies are shaping the future of work. In “Flexible Work and Personal Digital Infrastructures,” published in the July 2021 edition of Communications of the ACM, reviews the benefits and risks of expanding flexible work arrangements for both employers and employees. "Algorithmic Management in a Work Context," published by Big Data & Society on July 1, explores how the rapid development and application of machine-learning algorithms can influence existing power and social structures within traditional work settings.
RESEARCH

Research initiatives are at the heart of CCI’s mission. Recently, CCI’s Research was ranked 35th in Funding and 13th in Citations, nationally by Academic Analytics. Research opportunities are varied and currently include projects in the Top-5 Computer Science concentrations, according to ITWorld.com:

- Artificial Intelligence and Machine Learning
- Cybersecurity and Privacy
- Bioinformatics and Genomics
- Computer Science Education
- Big Data Analytics

Research opportunities are open to Master’s and Doctoral candidates as well as undergraduates.

Fiscal Year 2020-21:

Funding: $8Mill

51 Awards

$\$ Per Award: $157K

DEGREES

- B.S. in Computer Science and Data Science
- B.A. in Computer Science
- M.S. in Computer Science, Cybersecurity, Bioinformatics and IT
- P.S.M. in Data Science and Business Analysis, Health Informatics
- Ph.D. in Bioinformatics, Computational Biology, Computing and Information Systems.

DEPARTMENTS

- Computer Science
- Software and Information Systems
- Bioinformatics and Genomics
- School of Data Science

NEWS

- CCI Wastewater Project Featured in the New York Times and other National Media
- CCI Lands Five Faculty in Top 2% of Researchers, Worldwide
New Hires

Asif Baba  
Clinical Associate Professor

Heng Fan  
Assistant Professor

Yuede Ji  
Assistant Professor

Abdelnasser Ouda  
Clinical Associate Professor

Tejasvi Parupudi  
Clinical Assistant Professor

Russel Pears  
Clinical Associate Professor

Chenxi Qiu  
Assistant Professor

Sayed Kushal Shah  
Clinical Assistant Professor

Shirin Shirvani  
Clinical Assistant Professor

Zeenat Tariq  
Clinical Assistant Professor

Research Highlights

- Dr. Sanjukta Bhowmick’s research focuses on studying the properties of large, dynamic complex networks and using high performance computing to analyze them. She is particularly interested in understanding how noise affects network analysis, and developing uncertainty quantification for network analysis.

- Dr. Serdar Bozdog's research program is devoted to developing integrative computational tools utilizing artificial intelligence, machine learning and data mining methods to analyze these multi-omics datasets.

- NSF CAREER Award recipient Hui Zhao. Zhao will use her grant to design networks-on-chips for GPU-accelerated systems, which are needed in applications requiring the processing of large amounts of data such as deep learning, graph analysis, big data and streaming applications. Her research is making the data communication in these systems more efficient.

Other Highlights:

- New degree programs since Fall 2020 (MS in Cybersecurity, MS in AI, MS in DE, BS in Cybersecurity, and BS in GIS+CS)

- Winner of 2021 CMD-IT University Award for Retention of Minorities and Students With Disabilities in Computer Science

Enrollment

I,340 B.S. Students  
I,015 M.S. Students  
109 Ph.D. Students

http://computerscience.engineering.unt.edu/
At a Glance …

COMPUTER SCIENCE and ENGINEERING at Notre Dame

RESEARCH THEMES

» AI and Machine Learning
» Algorithms and Theory
» Assistive Technologies
» Computer Architecture and Nanotechnology
» Computer Vision, Medical Imaging, and Biometrics
» Digital Humanities
» Human Computer Interaction
» Natural Language Processing
» Network and Data Science
» Scientific and High-performance Computing
» Security, Privacy, and Cryptography
» Software Engineering
» Visualization and Visual Analytics
» Wireless, Mobile, and Embedded Systems

RESEARCH AND GRADUATE STUDY HIGHLIGHTS

» 149 graduate students enrolled
» 18 Ph.D. graduates in 2021
» 65 new research awards ($11.9 million), $11.6 million expended

UNDERGRADUATE STUDY HIGHLIGHTS

» 127 B.S. graduates in 2021
» 501 majors (sophomore through senior year)

NEW FACULTY 2020-21

Diego Gómez-Zará
Human Collaboration across Online Platforms and Systems

Toby Jia-Jun Li
Human-Computer Interaction

Joanna Cecilia da Silva Santos
Secure Software Systems

Yanfang (Fanny) Ye
Cybersecurity, Data Mining, Machine Learning

Xiangliang (Lynn) Zhang
Machine Learning and Data Mining

RECENT NEWS

» Notre Dame joins Indiana coalition through the Center for Quantum Technologies
» Assoc. Prof. Tijana Milenkovic honored with CRA-E award for mentoring undergraduates in computer research
» CSE Junior Tarik Brown named 2021 Truman Scholar

» NSWC Crane, Notre Dame, IU, Purdue team up to provide Trusted AI workforce development and research
» Assoc. Prof. Walter Scheirer and researchers at Notre Dame use AI to unlock the secrets of ancient texts
» Computer science and engineering researchers design more secure mobile contact tracing
Major Faculty Awards

Lei Jiao
NSF CAREER

Ram Durairajan
2 NSF Awards

Brittany Erickson
2 NSF Awards

Daniel Lowd
DARPA Award

Boyana Norris
NSF Award

Humphrey Shi
IARPA Award

Department Highlights (2020 - 2021)

Student Statistics
- UG CIS & MACS Major enrolment: 525
- CIT Minor enrolment: 76
- UG Female students: 17.4%
- MS enrolment: 25
- PhD enrolment: 55
- PhD Graduates: 6
- MS Graduates: 15

Student Honors
- CRA Outstanding Undergraduate Researcher Award - Honorable Mention (Juno Mayer)
- UO VPR Fellowship (Jared Knofczynski)
- Adobe Research Fellowship (Amir Veyseh)

Faculty Statistics
- Tenured/Tenure-Track: 21
- Instructors: 5
- Research/Industry: 3

Faculty Highlight
Faculty recognized for various awards:
- UO Faculty Excellence Award (Li)
- Ripple Fellows (Jiao, Durairajan, Li)
- 3 Best Paper Awards @ ICCS & EGPGV (Childs)
- 2 Best Paper Awards @ EACL (Thien Nguyen)

Research Highlight
Research Expenditure in AY2020-2021: $5M

Major Funding Received ($5 million+)
NSF CAREER Award (Jiao), DARPA RED (Lowd), NSF SaTC, NSF CC*, ISOC (Durairajan), ARO (Thien Nguyen), NSF, SCEC (Erickson) ARO (Thanh Nguyen), NSF (Norris), IARPA (Shi), Industrial gifts (Nguyen, Shi)

Summer Schools and Events
- Zena Ariola has organized the programming language summer school at UO for the past 18 years. This increasingly-popular event has created a community for PL researchers. There were 227 people from 32 counties over 15 time zones, representing 129 universities and companies.
- Ram Durairajan organized Second (virtual) RISE (netwoRkIng SystEms) summer school.

Research Centers and Institutes
- NSF IUCRC Center for Big Learning
- Center for Cyber Security and Privacy, University of Oregon (CCSP)
- OACISS : Oregon Advanced Computing Institute for Science and Society
- The Neuroinformatics Center
- Center for Digital Mental Health

Partner for Ripple’s Research Initiative:
UO and CIS were selected as one of the first partners for Ripple’s University Blockchain Research Initiative (UBRI). Ripple’s philanthropic gift (2018-2023) provides scholarships, faculty fellowships, research support, industry engagement, and supports the Oregon Blockchain Student Club.

WWW.CS.UOREGON.EDU
Penn is the birthplace of the modern computer, the ENIAC, and recently celebrated its 75th anniversary. Our Computer and Information Science Department, located in the center of a vibrant Ivy League campus, has strong collaborations with Penn’s nearby Wharton School of Business, Perelman School of Medicine, Annenberg School of Communication, Carey School of Law, Graduate School of Education, School of Social Policy and Practice, and School of Arts and Sciences.

**Faculty:**
- 40 tenured and tenure-track
- 10 full-time teaching-track
- 6 research-track

**Students:**
- 180 PhD
- 650 Master’s (5 degree programs)
- 1098 undergraduates (6 degree programs)

**Continued Growth**
As part of Penn Engineering’s ambitious growth plans, our department is aggressively hiring, with multiple open positions. Areas of existing strength include programming languages and formal methods, databases, networks and distributed systems, machine learning and data science, natural language processing, robotics and vision, and computational social science.

**New Building**
We have broken ground on Amy Gutmann Hall, a new 120,000 square foot facility for data science and collaboration.

**New Faculty Members**


**Andrew Head**, Assistant Professor (January). *PhD 2020, UC Berkeley.* Human-computer interaction, programming languages, data science.

**Danaë Metaxa** (Fall 22), Assistant Professor. *PhD 2021, Stanford.* Human-computer interaction, bias and representation in algorithms.

**Mingmin Zhao** (Fall 22), Assistant Professor. *PhD, 2021, MIT.* Wireless sensing systems.

**Online Education Initiatives**
Our online Master of Computer and Information Technology degree, targeted at individuals in the workforce who have quantitative skills but do not have formal training in computer science, has grown to over 1500 students!

**Faculty Highlights**
- Michael Kearns was elected to the National Academy of Sciences.
- Vijay Kumar was elected to the American Academy of Arts and Sciences.
- Jonathan Smith returned to Penn after four years of service at DARPA.
- Norm Badler was named to the 2021 SIGGRAPH Class.
- Sebastian Angel and Anindya De received NSF CAREER Awards.
- Andreas Haeberlen was promoted to full Professor.
- Susan Davidson and Boon Thau Loo won Spira Awards for Excellence in Teaching.
New NSF Career Award: Adriana Kovashka

Dr. Kovashka’s project will develop a framework to learn computer vision models for detecting objects from weak, naturally-occurring supervision in the form of language (text or speech) and additional multimodal signals. The challenge of using such language-based supervision for training detection systems is that along with the useful signal, the speech contains many irrelevant tokens. Her project will benefit society by exploring novel avenues for overcoming this challenge and reducing the need for expensive crowdsourced labels for training. It can make object detection systems more scalable and thus more usable by a broad user base in a variety of settings. [More Info]

New Fairness in AI Research Award

Dr. Diane Litman and Kevin Ashley (Law) received a new NSF award: Using AI to Increase Fairness by Improving Access to Justice. Their project applies AI to increase social fairness by improving public access to justice. Although many AI tools are already available to law firms and legal departments, these tools do not typically reach the public and legal service practitioners.

New NSF Award brings robots into the classroom

Dr. Erin Walker is leading a newly NSF-funded project to study the use of robots to support collaborative learning in middle school math classrooms. Walker and colleagues will investigate if the robot’s gaze or gestures, combined with dialogue, can promote middle school students’ collaborative interactions and lead to more math learning. [More Info]

Best Paper Awards

IEEE International Conference on Mobile Data Management (MDM 2021):
- People’s Choice of Best Pitch Video: Rakan Alseghayer [More Info]
- Diversity and Inclusion: Rakan Alseghayer [More Info]

Efficient Deep Learning for Computer Vision CVPR Workshop 2021:

SIAM International Conference on Data Mining (SDM 2021):

Annual Meeting of the Assoc. for Computational Linguistics (ACL 2021):

International Conference on Natural Language Generation (INLG 2021):

Educational Data Mining 2021 Conference:

(*undergraduate students)

Other News

55 years:
In 2021, our department is celebrating 55 years of research and teaching excellence. We were formed in 1966 under the leadership of Dr. Orrin E. Taubbee who was the first Department Chair (yes, CRA’s Taubbee report is named after him!) We are one of the ten oldest CS departments in the US.

New major: Data Science (Fall 2021)
A joint effort among the Departments of Computer Science, Informatics and Networked Systems, Mathematics, and Statistics

Follow us on social media: @PittCompSci
New Faculty starting Fall 2021

Kaushik Seshadreesan is an Assistant Professor in the Department of Informatics and Networked Systems (DINS). He previously held postdoctoral positions at the Max Planck Institute for the Science of Light, and the Wyant College of Optical Sciences at the University of Arizona. Kaushik’s research broadly lies in quantum information science and technologies, quantum information theory, and quantum computing. Kaushik is interested in addressing research questions and challenges that lie across the different layers of a full quantum networking stack towards realizing the future quantum internet.

Na Du is an Assistant Professor in the Department of Informatics and Networked Systems. She received her Ph.D. in Industrial & Operations Engineering from the University of Michigan. Her research aims to improve human performance, safety, and well-being by applying human factors and data analytics to the analysis, design, and evaluation of technologies. Her research interests include human factors in smart cities, computational modeling of human behaviors, and human-centered design.

Research Highlights

Martin Weiss is the Economics and Policy Research Working Group Lead and Project Team Lead for the new $25 Million NSF-funded Spectrum Innovation Center (SpectrumX). Pitt is part of this project which will bring together spectrum experts from government agencies, research laboratories, industry, regulatory bodies, international organizations, and academia to develop policy and technical contributions to spectrum research, education, collaboration, and management.

Amy Babay is investigating ways to protect critical infrastructure that may have suffered under a natural disaster, which provides an easy inlet for malicious actors to launch cybersecurity attacks, thereby compounding the disruption or delaying system restoration. This 3-year project titled "Severe Impact Resilience: Framework for Adaptive Compound Threats", is with Johns Hopkins University, Colorado State University, George Mason University, the US Army Corps of Engineers Construction Engineering Research Lab and University of Cyprus.
Faculty Highlights

2021
- Chenliang Xu is awarded a James P. Wilmot Distinguished Assistant Professorship.
- James Allen is named a Fellow of the American Association for the Advancement of Science.
- Yuhao Zhu receives an NSF CAREER award.
- Ehsan Hoque and Zhen Bai are awarded a Google CSR grant for innovative work with undergraduates from historically underrepresented groups.
- Jiebo Luo receives national coverage for a series of papers on using social media data to study the COVID-19 pandemic.
- Rochester is ranked 8th in the US in Computer Vision in the 2020 CSRankings.

2020
- James Allen receives the Herbert Simon Award for Advances in Cognitive Systems.
- Jiebo Luo is appointed Editor-in-Chief of *IEEE Transactions on Multimedia*.
- Ehsan Hoque is named an “emerging leader” by the National Academy of Medicine.
- David Narváez is selected for a Computing Innovation Fellow postdoctoral appointment with Lane A. Hemaspaandra.
- Michael L. Scott receives the William H. Riker University Award for Excellence in Graduate Teaching.
- Chen Ding receives the College Award for Undergraduate Teaching and Research Mentorship.

Undergraduate and Graduate Highlights

2021
- Songyang Zhang and coauthors received the Best Long Paper award at NAACL.
- Jie Zhou is awarded Silver in the ACM Student Research Competition at PLDI.
- Ben Kane receives Honorable Mention in the NSF Graduate Research Fellowship Program competition.
- Raiyan Baten is featured as an inspiring researcher on ResearchGate.
- Boyu Zhang is selected as a finalist in the CRA Outstanding Undergraduate Researcher competition, and Yipeng Zhang and Ashely Tenesaca receive Honorable Mention.
- Computer Science Undergraduate Council receives Rochester’s Excellence in Programming Student Life Award.
- Neil Yeung and Jonathan Lai present their work in a *Data Skeptic* podcast.
- PhD alumna Amanda Stent is appointed Director of the new Davis Center at Colby College.
- PhD alumnus Rajeev Balasubramonian is named an IEEE Fellow.

2020
- Zhengyuan Yang receives the inaugural Twitch Research Fellowship.
- Laasya Bangalore is awarded Rochester’s Edward Peck Curtis Award for Excellence in Teaching by a Graduate Student.
- URWiC (UR Women in Computing) receives Rochester’s Meliora Values Award.
- Melissa Wen receives Honorable Mention in the NSF Graduate Research Fellowship Program.
- Lele Chen earns Best Paper Award at ACM SIGGRAPH VR/CAI.
- Wasifur Rahman receives Best Paper Award at ACM UbiComp.
- Yiming Gan receives a Best Paper Award at PACT.
- A paper by Yue Leng, Ci-Chun Chen, and others is chosen for *IEEE Micro*’s “Top Picks in Computer Architecture” issue.
DEGREES AWARDED AY 2020-2021

- BS in Computer Science (140)
- BS in Computer Engineering (43)
- BS in Cybersecurity (14)
- BS in Information Technology (65)
- MS in Computer Science (65)
- MS in Computer Engineering (8)
- MS in Information Technology (14)
- PhD in Computer Science and Engineering (20)

RESEARCH BENCHMARKS

Academic Analytics 2019
Comparison Group: US Public Institutions
Overall Rank: 21

Federal Grants: 74%
Journals: 77%
Awards: 88%
Citations: 69%
Conference: 73%

KEY FACTS AND RANKINGS

- The 2022 US News & World Report ranked our Computer Engineering program 57th place among public universities and 92 out of 154 among all universities, public and private.

- The 2021 US News & World Report ranked the graduate Masters of Science in Information Technology program #12 for online IT programs.

- CSE faculty members lead USF Institute for Artificial Intelligence (AI+X), USF Center for Cryptographic Research, and USF Quantum Initiative.

- Faculty members are currently executing $12 million in active external research grants from NSF, DoD, NIH, NIST, industry, and state sources. Twelve CSE faculty members are NSF CAREER awardees.

- USF CSE is in the top 10% (rank 21) of Computer Science departments at U.S. public universities, according to Academic Analytics (2019) data based on Scholarly Research Index of default weights for grants, articles, conferences, awards, and citations.

- USF CSE has a major initiative to broaden participation in computing through a three-year grant from NU Center for Inclusive Computing.

- CSE has an active Computing Partners Program with CAE, Johnson & Johnson, JPMorgan Chase & Co., Nielsen, Raymond James, OPSWAT, Cyberweb Hotels, and Monomer Software.

FACULTY RESEARCH AREAS

- Computer Vision and Pattern Recognition, Artificial Intelligence and Machine Learning, Robotics, Brain-Computer Interfaces, Computational Neuroscience, Affective Computing


- Computer Architecture, VLSI, Ubiquitous Sensing Networks, Distributed Computing, Parallel Processing, and Biomedical Devices

- Biomedical Imaging, Machine Learning, Databases, Visualization, Social Networks, and Efficient Computing Platforms
BY THE NUMBERS

FACULTY
85 Faculty Members
41 Tenure-Track
29 Research Faculty
15 Teaching Faculty

STUDENTS
4845 Students
1429 Undergraduate
3102 Master’s
314 Ph.D.

ACADEMY MEMBERS & SOCIETY FELLOWS
1 ACM Turing Award Winner
5 NAE
2 NAS
11 ACM
17 IEEE
15 AAAS
11 AAAI

MAKING AN IMPACT - INNOVATION FOR HUMANITY

NEWS HIGHLIGHTS

USC Games established the Gerald A. Lawson Endowment Fund, supporting Black and indigenous students

Trojans celebrated the groundbreaking of a new building for computer science at USC, a 116,000-square-foot facility focused on improving and benefiting society

USC computer science researchers are collaborating in new $20M NSF Institute to tackle tough challenges, such as food security, using AI and mathematics

The newly launched USC Center for Autonomy and AI will bring together researchers across USC Viterbi to work on projects including autonomous robotic systems and autonomous vehicle safety

ONGOING RESEARCH - $7 MILLION RESEARCH EXPENDITURES (FY 20-21)

Synthesis of Quantitative Network Analytics: From Left-of-Launch to Right-of-Boom
Pis: Mukund Raghothaman, Jyo Deshmukh, Srivatsan Ravi, Michael Collins (ISI)
National Science Foundation: $750,000

NeuroDB: A Neural Network Framework for Efficiently Answering Database Queries Approximately
PI: Cyrus Shahabi
National Science Foundation: $500,000

Detecting and Repairing Accessibility Failures in Web Applications
PI: William Halfond
National Science Foundation: $495,774

Improving Human-Robot Collaboration on Assembly Tasks by Anticipating Human Actions
Pis: Stefanos Nikolaidis (Computer Science), SK Gupta (Aerospace and Mechanical Engineering)
National Science Foundation: $749,693

Network-Enabled Cooperative Perception for Future Autonomous Vehicles
PI: Ramesh Govindan
National Science Foundation: $606,637

ACOLADES 20-21

NSF CAREER AWARD
Aleksandra Korolova, Haipeng Luo, Heather Culbertson, Jyo Deshmukh, Xiang Ren

ACM DISTINGUISHED MEMBERS
Jernej Barbic, Yan Liu

AAAS FELLOWS
Yolanda Gil, Leana Golubchik

ACM FELLOWS
Sven Koenig, Maja Matarić, Michael Zyda

IEEE FELLOWS
Yolanda Gil, Craig Knoblock

NOTABLE ACHIEVEMENTS

#1 Top game design program for undergraduates awarded to USC Games, Princeton Review

10th In the world based on publications, Guide2Research

#2 Online computer science graduate program, US News and World Report

82% Increase in student population since 2015

21 NSF CAREER awards held by current faculty

EXPANDING EXPERTISE: FOUR NEW FACULTY MEMBERS

ROBIN JIA
Ph.D. Stanford University
Natural language processing, robustness, machine learning

JESSE THOMASON
Ph.D. University of Texas at Austin
Language grounding and natural language processing for robotics

VATSAL SHARAN
Ph.D. Stanford University
Machine learning, statistics, theoretical computer science

SWABHA SWAYAMDIPTA
Ph.D. Carnegie Mellon
Biases and interpretability in natural language processing (starting August 2022)
The School of Computing Sciences and Computer Engineering at The University of Southern Mississippi is comprised of undergraduate programs in Computer Science, Computer Engineering, and Information Technology, and graduate programs in computer science and computational science. We offer undergraduate certificates in cybersecurity, networking and software engineering.

We are committed to providing a student-centered learning environment with a focus on inclusion, and 25% of our undergraduates identify with a racial minority group that is historically under-represented in computing.

Our faculty are active in funded research in artificial intelligence, machine learning, virtual/augmented reality, bio-informatics, cybersecurity, and broadening participation in computing.

To provide more equitable access and broaden participation, we are partnering with the Mississippi Coding Academies to implement and study alternative routes to technical skills training and certifications in computing and cybersecurity.

New Faculty in Fall 2021

Nick Rahimi, Assistant Professor
PhD, Southern Illinois University

Charan Gudla, Assistant Teaching Professor
PhD, University of Southern Mississippi

Chad McDaniel, Instructor
MS, Mississippi State University

Mandrita Banerjee, Visiting Assist. Professor
PhD, University of Texas, San Antonio
Since 2006, current and former faculty members received:
8 NSF CAREER,
1 AFOSR YIP,
and 5 NSF CRIR awards.
4 faculty members are IEEE fellows.

Achievements & Research Highlights

Selected grants since Sept. 1, 2020

$416K NSF, Fairness in Web Database Applications, Gautam Das and Shirin Nilizadeh

$39K NSF, A MultiLayer Network (MLN) Community Infrastructure for Data, Interaction, Visualization, and softwareE (MLN-DIVE), Sharma Chakravarthy

$122K USDA ARS, Wireless Monitoring System Insect Tracking Data Analysis, Gautam Das

$99K NSF, KeenEye: Enhancing Scenario Exploration, Allison Sullivan

$500K NSF, A Transparent and Customizable Android Container-Based Virtualization Architecture for Dynamic Malware Analysis, Jinyong Wang

$1.2M US Department of Education, GAANN Doctoral Fellowships in Computer Science specializing in Internet-of-Things, Ishfaq Ahmad

Over $5M research expenditure in 2021

CSRankings.org Papers 2021:
- 4 AAAI, 2 CCS, 2 EuroSys, 2 FAST, 1 HPCC, 1 HPDC, 1 ICCV, 1 ICDE, 3 ICML, 2 ICSE, 1 IJCAI, 1 MobiCom, 2 PLDI, 2 SIGMOD, 2 USENIX Security, 3 VLDB, 1 WWW

$385K NIST, Explaining and Debugging Machine Learning Models by Neighborhood Exploration, Jeff Lei

$250K NSF, Continuous Facial Sensing and 3D Reconstruction via Single-eye Wearable Biosensors, VP Nguyen

$150K NSF, Implementing an integrated, wireless monitoring network to enhance decision-making in communities impacted by environmental and industrial change, Yonghe Liu

$175K NSF, Sustaining Cognitive Flow in Physical Making, Cesar Torres

$100K SONY, BrainSD: A Novel Wearable Headset for Epileptic Seizure Detection, VP Nguyen

New Faculty Members

Jacob Luber
ASSISTANT PROFESSOR

Abhishek Santra
SENIOR LECTURER

R-1 University
Carnegie Classification of Institutions of Higher Education

Texas Tier One University
Hispanic Serving Institution

#12 African-American Bachelor’s Degrees
#13 African-American Master’s Degrees
#15 Minority Students Master’s Degrees

#1 "Best For Vets: Colleges" 2021 List
Diverse Issues in Higher Education

3rd Fastest-Growing Doctoral Public Institution
Chronicle of Higher Education Almanac

CSRankings.org
(2017-2021, all venues)
- #60 Overall
- #23 Operating Systems
- #23 High-Performance Computing
- #30 Mobile Computing
- #32 Databases
- #45 Computer Security
- #48 Software Engineering
- #63 AI, Machine Learning & Data Mining

Students, Enrollment, and Community

Fall 2021 3040 STUDENTS 1818 Bachelor’s 1071 Master’s 151 Ph.D.

Interdisciplinary conference for PEvasive Technologies Related to Assistive Environments (PETRA)
Professor Fillia Makedon and her colleagues have been organizing the conference since its inception in 2008. The latest conference was held online June 29 – July 1, 2021.

Senior Design industry sponsorship program
45+ sponsored projects and over $227,800 in pledged funding since Spring 2016. An additional $32,500 pledged for Fall 2021.

Grants for underrepresented students in computing
The CSE Department collaborated with CSE@UNT to host the 2nd OurCS@DFW (an annual regional research workshop for women and URM undergraduate students and high-school students, funded by Google’s exploreCSR program) and the 2nd SCRF (annual Student Computing Research Festival) in February 2021.

cse.uta.edu @cseuta @cseutarlington linkedin.com/school/cseuta
2021–2022
COMPUTER SCIENCE

Supplying the people and ideas that shape the digital frontier. UT Computer Science offers a unique opportunity for students to achieve excellence in the fundamentals of computer science and practical technical skills through rigorous classes, hands-on research and technology development. Its pioneering researchers create scientific knowledge and leading edge technologies that change the world.

SIX NEW FACULTY

Aditya Akella
Professor

Shuchi Chawla
Professor

Mikyung Han
Associate Professor of Instruction

Ken McMillan
Professor

Amy Pavel
Assistant Professor

Kia Teymourian
Assistant Professor of Instruction

FACULTY

72 Faculty
2 Turing Awards
3 Simons Investigator Award
15 Sloan Fellows
28 National Science Foundation CAREER Awards
5 members of national academies
25 university teaching award recipients
25 Research Excellence Awards
4 American Association for Advancement of Science Fellows

UNDERGRADUATE PROGRAM RANKINGS

10 Nationally
6 Programming Languages
6 Software Engineering
9 Artificial Intelligence
9 Computer Systems
10 Theory

GRADUATE PROGRAM RANKINGS

10 Nationally
7 Theory
8 Artificial Intelligence
8 Programming Languages
8 Systems
10 Theory

15,000+ ALUMNI

RESEARCH


CENTERS, INSTITUTES, AND CONSORTIA

Texas Computing | Texas Robotics | Machine Learning Laboratory | Robotics Center of Excellence | Artificial Intelligence Laboratory | Data Mining Laboratory | Center for Information Assurance and Security | Center for Computational Biology and Bioinformatics | Center for Computational Geosciences and Optimization | Center for Numerical Analysis | Computer Engineering Research Center | Laboratory for Advanced Systems Research | Networking Research Laboratory | Personal Autonomous Robotics Lab | Virtual Reality Lab | Oden Institute for Computational Engineering and Sciences | Computer Graphics Laboratory | Texas Advanced Computing Center

CS.UTEXAS.EDU
The Computer Science Department at UT Dallas is one of the largest in the US with approximately 5,150 students and a distinguished faculty that has won numerous awards.

Research Highlights

- Broad areas of research: AI, ML, Data Science, Software Engineering, Cyber Security, Networks, Systems, Theory.
- Over $45 Million total external funding over the last 5 years.
- Faculty includes 15 NSF CAREER Award Winners.
- CS Faculty direct 4 research institutes, 6 research centers, and one education/outreach center.
- CS Dept. ranked #8 in NLP, #5 in Software Engineering, and #7 in Embedded and Real-Time Systems in CSrankings.org (’16-’20 period).
- Prof. Murat Kantarcioglu named AAAS Fellow for Work in Science, Technology.
- Prof. Bhavani Thuraisingham named a fellow of the Association for Computing Machinery (ACM), and the National Academy of Inventors (NAI).
- Prof. Zygmunt Haas’ paper among the top 10 most cited papers in networks on Google Scholar.
- Prof. Zygmunt Haas received the ICOIN 2021 Best Paper Award.
- Prof. Yang Wei received ACM SIGSOFT Distinguished Paper Award at FSE 2021.
- Prof. Andrian Marcus’s Paper awarded ACM SigSoft Distinguished Paper Award at ICSE 2020.
- Prof. Bhavani Thuraisingham received the Special Recognition Award at the IEEE Cyber Security Cloud Conference sponsored by the IEEE Technical Committee on Smart Computing
- Prof. B. Prabhakaran’s research team led the First-Ever Trans-Pacific Collaborative Mixed Reality Plant Walk.
- Prof. Latifur Khan named Fellow of British Computer Society and Institution of Engineering and Technology (IET).
- Professors Andrian Marcus and Eric Wong both received Most Influential Paper (MIP) awards for papers they published in 2010.

Student Numbers/Growth/Education Highlights

- Approximately 5,150 total students (4,000 Undergraduates, 1,010 Master’s Students, 140 PhDs).
- Awarded approximately 750 Bachelors, 550 Masters, and 30 PhDs degrees in 2019-2020.
- Nearly 100 teams completed industry-sponsored senior-design, capstone projects.
- Platinum sponsor of Grace Hopper Conference; sent 50 Students to GHC 2021.
- More than a dozen CS student organizations under the umbrella of the student chapter of the ACM.
- Student groups include: Women Who Compute, AI Society, VR Society, Cyber Security Group.
- Center for CS Outreach runs one of the largest university-based K-12 outreach program.
- NSA Center of Excellence in Cyber Security Education, Research and Cyber Operations.
- New major in Data Science offered jointly with the School of Natural Sciences and Mathematics.
- Ranked #4 nationally for the total number of students, #11 for the number of female students.
- Ranked #11 nationally for the no. of Hispanic students, #14 for African American students.
- 2022 U.S. News & World Report Best Colleges rankings place UT Dallas CS at No. 71 and Software Engineering at No. 16.
- UniversityHQ ranks UT Dallas CS in the Top 50 Best Computer Science Schools and Colleges in the US.

Organizational News

- Center for Research in Machine Learning recently founded by Drs. Gogate, Ruozzi, and Natarajan.
- Center for Applied Artificial Intelligence and Machine learning founded by Dr. Doug DeGroot and Dr. Gopal Gupta.
DEPARTMENT HIGHLIGHTS

Professor Raquel Urtasun launched Waabi, an autonomous vehicle company, with one of the largest rounds of initial financing ever secured by a Canadian startup, totaling more than $100 million.

The new Acceleration Consortium, led by Professor Alán Aspuru-Guzik, is a global coalition of academia, industry and government that uses artificial intelligence and robotics to accelerate the design and discovery of materials that don’t yet exist.

A pilot program co-led by Professor Sheila McIlraith and Professor, Teaching Stream Diane Horton will embed ethics modules into a cross-section of existing undergraduate CS courses at the University of Toronto, with the aim of teaching students the skills to identify potential ethical risks in the technologies they are learning to build.

JALI Research, a startup spun out of the Department of Computer Science, developed the hyperrealistic facial animations seen in the dystopian action role-playing game Cyberpunk 2077. The technology allowed characters in the game to convincingly deliver dialog in different languages.

Professor Lisa Strug is the inaugural academic director of the newly established Data Sciences Institute (DSI), a central hub and incubator for data science research, training, and partnerships at the University of Toronto.

Department of Computer Science undergraduate students of the U of T AI student group hosted the first annual ProjectX undergraduate research competition, challenging teams from around the world to apply machine learning solutions to issues posed by climate change.

BY THE NUMBERS

<table>
<thead>
<tr>
<th>UNDERGRADUATE</th>
<th>FACULTY</th>
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<tbody>
<tr>
<td>3,862 CS1</td>
<td>89</td>
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<tr>
<td>1,846 CS Major/Specialist</td>
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<tr>
<td>20,000 Course Enrolments</td>
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<th>GRADUATE</th>
<th>FACULTY</th>
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<tr>
<td>86 MSc</td>
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<tr>
<td>152 MSc Applied Computing</td>
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<tr>
<td>319 PhD</td>
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FACULTY AWARDS & HONOURS

- University Professor Allan Borodin — Order of Canada (November 2020)
- Associate Professor Tovi Grossman — E.W.R. Steacie Memorial Fellowship (November 2020)
- Professor Emerita Renée J. Miller — Lifetime Achievement Award, CS-Can/Info-Can (January 2021)
- Assistant Professor Roger Grosse and Associate Professor Tovi Grossman — Sloan Research Fellowships (February 2021)
- Professor Toni Pitassi — Distinguished Achievements Award, EATCS (March 2021)
- Professor Emeritus Hector Levesque — Allen Newell Award, ACM-AAAI (May 2021)
- Professor Emeritus John Mylopoulos — Lifetime Achievement Award, CAIAC (May 2021)
- Assistant Professor David Levin — Graphics Interface Early Career Researcher Award, CHCCS (May 2021)
- Assistant Professor Gennady Pekhimenko and Assistant Professor Nandita Vijaykumar — International Symposium on Computer Architecture (ISCA) Hall of Fame (August 2021)
- University Professor Emeritus Geoffrey Hinton — Dickson Prize in Science, Carnegie Mellon University (September 2021)
Center for Inclusive Computing Launch

The School of Computing has officially launched the Utah Center for Inclusive Computing (UCIC), which aims to significantly boost the percentage of students from populations currently underrepresented in computing. UCIC is creating new pathways in the undergraduate majors, recognizing that one-size-fits-all programs do not suit every student. UCIC provides staff and TA support to improve recruiting and retention and is developing programs to improve academic preparation of entering students. UCIC was founded with an Implementation Grant from Northeastern University’s Center for Inclusive Computing.

SoC by the numbers

61 Faculty
- 48 tenure-track
- 9 lecturing
- 4 research

1250 Students
- 185 PhD
- 190 masters
- 875 undergraduates

Faculty Awards
- 10 IEEE Fellows
- 2 ACM Fellows
- 12 Fellows of other orgs (includes AAAS, ACL, AIMBE, SIAM, TED)
- 9 Major ACM or IEEE Awards
- 1 Sloan Fellow

Faculty and Student Awards

2021 CRA/CCC Computing Innovation Fellow Shweta Jain is working with Professor Blair Sullivan on parameterized and practical graph algorithms.

Vivek Gupta, a PhD student working with Professor Vivek Srikumar, has received a 2021 Bloomberg Data Science Fellowship.

Elaine Cohen was appointed as University of Utah Distinguished Professor, the highest honor for a faculty member.

Tucker Hermans received a Sloan Fellowship Award.

2021 NSF Career Award Recipients

Aditya Bhaskara
Assistant Professor
CAREER: Models and Algorithms for Beyond Worst-case Analysis of Learning

Rogelio Cardona-Rivera
Assistant Professor
CAREER: Plan-based Simulation of Human Story Understanding

Shandian Zhe
Assistant Professor
CAREER: Embedding High-Order Interaction Events: Models, Algorithms, and Applications

New Faculty

Manish Parashar
Professor
Director of SCI Institute

Sameer Patil
Associate Professor

Brent Stephens
Research Assistant Professor

Our faculty will continue to grow in 2021-2022. We are searching for an additional eleven faculty members. www.cs.utah.edu/faculty-hiring/
UVM's Department of Computer Science has helmed groundbreaking and critical research in recent months and welcomed several new faculty members. Read on for more!

**RESEARCH HIGHLIGHTS**

Dr. Josh Bongard was awarded the Cozzarelli Prize in Engineering and Applied Sciences. This international distinction is awarded annually to six research teams whose PNAS articles have made outstanding contributions to their fields. Using AI, a cell-based construction kit, and frog stem cells, Dr. Bongard and his co-authors designed and evolved in silico structures capable of locomotion, object manipulation, object transport, and collective behavior.

**NEW MAJOR RESEARCH FUNDING:**

- **Predicting Livestock Disease Transmission Dynamics under Alternate Biosecurity Risk Management Interventions and Behavioral Responses of Livestock Producers.** Disease risk in livestock depends on the extent to which producers can adopt biosecurity measures as well as the ability of governmental agencies to anticipate and control the diffusion of pathogens. This project addresses a fundamental challenge posed by the lack of integrated models of pathogen introduction, diffusion dynamics, and behavior of livestock producers. Investigators on this $2.47M project include Secondary CS Faculty member Asim Zia (PI), and Laurent Hebert-Dufresne and Nick Cheney (UVM CS).

- **Leveraging AI to Guard Online Open Source Networks (LAGOON).** This collaborative DARPA project between UVM CS and Galois, Inc. looks at the social-cyber-security of open source projects. The aim is to measure how toxicity and harassment in online software communities can lead to disengagement of maintainers and even security issues in the software itself. Investigators on this $500K project include Adjunct Faculty David Darais (PI, Galois), and Laurent Hebert-Dufresne and Nick Cheney (UVM CS).

**FACULTY DISTINCTIONS**

Dr. Lisa Dion received the VT Chamber of Commerce 2020 Athena Young Professional Award. Lisa received this in recognition of her work as founder of VT's only Girls Who Code club, as co-creator of a statewide CS Education program, and as a promoter of diversity and inclusion in STEM.

Dr. Laurent Hebert-Dufresne was appointed to the American Physical Society Outstanding Referees Program. An international distinction, the Outstanding Referee program annually recognizes approximately 150 referees for their invaluable work. Comparable to Fellowship in the APS and other organizations, this is a lifetime award. The selection this year was made from 40 years of records from over 78,400 referees.

Dr. Peter Dodds was elected to the 2021 Fellows of the Networks Science Society. This Fellowship recognizes researchers who have made outstanding and significant contributions to network science research. Only up to 7 are awarded annually on basis of exceptional life-long individual contributions to any area of network science research and to the community of network scientists (locally and globally).
7 NEW RESEARCH FACULTY

H. Jabbari (2019)  
Computational Biology

B. Haworth (2020)  
Graphics Simulations

S. Chester (2019)  
Parallelism Databases

I. Numanagić (2019)  
Computational Biology

M. Nacenta (2020)  
HCI Visualization

T. Schneider (2021)  
Graphics Simulations

S. Somanath (2020)  
HCI Design

FACULTY SPOTLIGHT

32 Faculty members (25 Research Stream, 7 Teaching Stream); 100% of research faculty currently funded by the Natural Sciences & Engineering Research Council of Canada (NSERC); Research strengths in Computational Biology, Computer Music, Databases, Graphics, HCI and Information Visualisation, Machine Learning, Networks and Distributed Applications, Software and Systems Engineering, Theoretical Computer Science and Visual Computing.

According to csrankings.org, #8 in Canada for high-quality research output (2016-2021)

DISTINCTIONS

ACM Fellow, V King (Randomised Algorithms); CRC Tier 1, M Storey (Human & Social Aspects of Software Engineering); CRC Tier 2, I Numanagić (Computational Biology and Data Science); Discovery Accelerator, M Nacenta (HCI); JP Morgan Chase Faculty Award, N Mehta (Theoretical Machine Learning)

STUDENT SPOTLIGHT


Victoria, BC, Canada  
https://www.uvic.ca/engineering/computerscience/
GROWTH AND TRANSFORMATION

UVA COMPUTER SCIENCE CONTINUES TO MAKE SIGNIFICANT INVESTMENTS IN RESEARCH AND EDUCATION. BUILDING ON OUR EXISTING STRENGTHS, WE ARE INTENSIFYING OUR RESEARCH IN CROSS-CUTTING TOPICS, SUCH AS SOFTWARE ENGINEERING AND TRUST, IN AREAS SUCH AS CYBER-PHYSICAL SYSTEMS AND INTELLIGENT SYSTEMS.

2020-2021 HIGHLIGHTS
- Computer science faculty will lead the UVA team of biocomplexity researchers in a new $20 million, multi-university National Science Foundation National AI Research Institute.
- New Spectre vulnerability affecting computers globally is discovered by team of UVA computer science researchers.
- Four faculty named NSF CAREER Award winners.
- Cavalier Autonomous Racing Club is representing UVA in the first ever Indy Autonomous Challenge.
- Cyber Defense Team wins third consecutive National Collegiate Cyber Defense Competition.
- UVA’s Biocomplexity Institute, led by computer science faculty, awarded $10 million National Science Foundation “Expeditions in Computing” grant to revolutionize real-time epidemiology for controlling future disease outbreaks, like COVID-19.

INCREASE IN UNDERGRADUATE DEGREES AWARDED, 2014-2020:
- 30 NEW TENURED OR TENURE-TRACK FACULTY SINCE 2012-2013
- 83% GRADUATE PROGRAM GROWTH, 2014-2020:
- 241% GROWTH IN RESEARCH EXPENDITURES

FY2021 EXPENDITURES
- $19.6 MILLION

RESEARCH FOCUS AREAS:
- CYBER-PHYSICAL SYSTEMS
- ARTIFICIAL INTELLIGENCE
- CYBERSECURITY
- SOFTWARE ENGINEERING
- HUMAN-COMPUTER INTERACTION
- COMPUTER SCIENCE
- COMPUTER SYSTEMS
- THEORY

FY2014-FY2021 RESEARCH GROWTH IN
APPLIED RESEARCH INTELLIGENT SYSTEMS.

2014-2020:
- 83% INCREASE IN GRADUATE PROGRAM GROWTH
- 241% GROWTH IN RESEARCH EXPENDITURES

TENURED OR TENURE-TRACK FACULTY SINCE 2012-2013:

CHRISTOPHER BARRETT
ASSOCIATE PROFESSOR
Ph.D.: Carnegie Mellon University
- Computational Complexity
- Cryptography and...
Research Highlight: Theory of Computation

1st approximation algorithm to break the 50% threshold on the metric Traveling Salesperson Problem (STOC Best Paper, EATCS Presburger Award for Young Scientists)
Nathan Klein, Shayan Oveis Gharan, Anna Karlin

Proof of the security of indistinguishability obfuscation based on well-founded assumptions (STOC Best Paper)
Rachel Lin & collaborators

Balanced allocations, or “power of two choices” (ACM Paris Kanellakis Theory & Practice Award)
Anna Karlin & collaborators

Fast algorithms for solving convex optimization problems (Packard Fellowship for Science & Engineering)
Yin Tat Lee

FACULTY ARRIVALS

Leilani Battle / Data Management & Visualization
Abhishek Gupta / Robotics & Machine Learning
Vikram Iyer / Wireless Sensing & Communication
Ranjay Krishna / Computer Vision & Human-Computer Interaction
Jeff Nivala / Molecular Programming
Simon Peter / Cloud Computing Systems
Ludwig Schmidt / Machine Learning
Yulia Tsvetkov / Natural Language Processing

EXAMPLES OF ENDURING IMPACT

Golden Goose Award — “The Fast and the Curious: How Computer Scientists' Hunch Transformed the Automotive Industry”
Tadayoshi Kohno, Stephen Checkoway* (B.S., ’05), Karl Koscher (Ph.D., ’14), Stefan Savage* (Ph.D., ’02) / Security & Privacy *UCSD team members

ICDT Test of Time Award — “Knowledge Composition Meets Database Theory: Compiling Queries to Decision Diagrams”
Dan Suciu / Data Management

IEEE InfoVis Test of Time Award — “Narrative Visualization: Telling Stories with Data”
Jeffrey Heer / Data Visualization

Longuet-Higgins Prize (Test of Time) — “Baby Talk: Understanding and Generating Simple Image Descriptions”
Yejin Choi / Natural Language Processing

SELECTED FACULTY RECOGNITION

National Academy of Sciences
Anna Karlin / Theory of Computation

ACM Fellow
Dieter Fox / Robotics
Arvind Krishnamurthy / Systems

IEEE Fellow
Michael Ernst / Software Engineering

ACM Grace Hopper Award & Moore Inventor Fellow
Shyam Gollakota / Wireless Sensing & Communication

ACM Eugene L. Lawler Award for Humanitarian Contributions
Richard Anderson / Technology for the Developing World

ACM SIGACT Distinguished Service Award
Paul Beame / Theory of Computation

ACM SIGPLAN Robin Milner Young Researcher Award
Emina Torlak / Programming Languages

CHI Academy
Jeffrey Heer / Data Visualization

National Science Foundation CAREER Award
Hannaneh Hajishirzi / Natural Language Processing
René Just / Software Engineering
Jamie Morgenstern / Machine Learning

SELECTED STUDENT RECOGNITION

NSF Graduate Research Fellowship honorees
Joy He-Yueya / Awardee
Ximing Lu / Runner-up
Parker Ruth / Finalist

CRA Outstanding Undergraduate Researcher Awards
Ishan Chatterjee
Kyle Johnson
Maruchi Kim
Alyssa Marie La Fleur
Ethan Weinberger

Research Highlight: Theory of Computation

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Anna Karlin & collaborators

Fast algorithms for solving convex optimization problems (Packard Fellowship for Science & Engineering)
Yin Tat Lee

Learn more / Visit our website
ADVANCES IN DIGITAL FABRICATION

Assistant Professor Nadya Peek received grants from the Moore Foundation, Sloan Foundation, and the National Science Foundation to support several different projects related to developing low-cost and accessible tools for making. Collaborators with Peek include faculty and researchers in the UW’s departments of Computer Science & Engineering, Electrical & Computer Engineering, Chemical Engineering, Chemistry, the University of California Santa Barbara, and students in her research lab, Machine Agency.

GRADUATE RESEARCH FELLOWSHIPS

HCDE PhD students Jay Cunningham, Neily Herrera Tan, and Emma McDonnell received National Science Foundation Graduate Research Fellowships, and PhD student Akeiylah DeWitt was recognized with an Honorable Mention. These fellowships support the students in their research related to accessibility, privacy and personal data, and human-centered AI.

HCDE Research Areas

- Influencing behavior, thinking, and awareness
- Design for emergent collaborations and organizations
- Low-resource and underserved populations
- Material and embodied technologies
- Data science and data visualization
- Learning in professional and technical environments

CENTER FOR AN INFORMED PUBLIC

HCDE Associate Professor Kate Starbird is a faculty co-founder and Director of the UW’s Center for an Informed Public, an interdisciplinary coalition of researchers from the Information School, HCDE, the School of Law, and numerous other academic and community partners. The Center aims to translate research about misinformation and disinformation into policy, technology design, curriculum development, and public engagement.

Human Centered Design & Engineering

HCDE STUDENTS AND FACULTY PRIORITIZE EQUITY AND EMPATHY IN THE CONSTRUCTION OF THE FUTURE. WE CONNECT COMPLEX METHODOLOGIES, SYSTEMS, AND TECHNOLOGIES TO CRITICAL NEEDS IN EVERYDAY LIFE.

HCDE Students

230 Bachelor of Science
305 Master of Science
66 Doctor of Philosophy
34 Certificate in User-Centered Design

69% Women students
44% BIPOC students
11% First-generation college students

HCDE Faculty

18 Tenure/tenure-track
61% women

8 Career teaching professors
63% women

NEW FACULTY 2020-2021

Dr. Sucheta Ghoshal
Assistant Professor

Dr. Sarah Coppola
Assistant Teaching Professor

UNIVERSITY OF WASHINGTON
ACCOLADES

Chirag Shah
Tanu Mitra
Jacob O. Wobbrock

Associate Professor Chirag Shah was elected chair of the newly formed ASIS&T Special Interest Group (SIG) AI. SIG AI provides a forum for discussion about research, development and use of artificial intelligence in information science and technology. Its interest areas include AI ethics, algorithmic bias, human-AI interaction and other aspects of AI design and implementation.

Assistant Professor Tanu Mitra was awarded the Adamic-Glance Distinguished Young Researcher Award at the International AAAI Conference on Web and Social Media (ICWSM 2021). This award is presented annually to a young researcher who has distinguished themselves through innovative research in the area of computational social science.

For 2010–2020, Jacob O. Wobbrock was deemed the “Most Influential Scholar in Human-Computer Interaction” by AMiner, the algorithmic citation-ranking system. The metric is calculated using the number of citations and the author’s order in selected papers.

Professor Amy J. Ko was recognized with an honorable mention in the UW Awards of Excellence, which celebrate outstanding faculty, staff, students. Ko’s recognition came in the Marsha L. Landolt Distinguished Graduate Mentor Award category, given to standout faculty mentors annually since 1999.

The UW recognized five iSchool students in the 2021 Husky 100, awarded to students who demonstrate leadership and commitment throughout their time at the UW.

NEWS & IMPACT

The UW iSchool-based Center for an Informed Public and partners in the Election Integrity Partnership (EIP) released their report, “The Long Fuse: Misinformation and the 2020 Election.” A nonpartisan research coalition, the EIP worked to understand and counteract misinformation during the 2020 U.S. election and its aftermath.

More than 1,000 middle and high school students and educators participated online in MisinfoDay 2021, a series of workshops exploring how to spot misinformation, fact-check claims and sources, and understand the tactics used to spread disinformation.

Professors Karen Fisher and Jacob O. Wobbrock won Google Awards for Inclusion Research grants for The Ability-Based Design Mobile Toolkit: Enabling Accessible Mobile Interactions through Advanced Sensing and Modeling and Empowering Syrian Girls through Culturally Sensitive Mobile Technology and Media Literacy, respectively.

Associate Professor Bill Howe was awarded a $200,000 grant by Cisco Systems, Inc. for Ethical AI in the Public Sector: Towards A Semi-Synthetic Data Fabric for AI Evaluation.

Assistant Professor Alexis Hiniker was awarded a Jacobs Foundation fellowship for Designing Digital Assistants for Prosocial Communication. The program is highly competitive, with 10-15 chosen from hundreds of submissions.

DIVERSITY IN TECH

39% of Informatics students are women, helping to close the gender gap in STEM fields.

LEADING-EDGE RESEARCH

$7,507,434 in research funding for fiscal 2020-21.

EXPANDING ACCESS

28% of the first cohorts in the iSchool’s fully online Master of Science in Information Management (MSIM) program are from underrepresented minority groups. The iSchool began offering online MSIM options in 2021.
The University of Waterloo’s David R. Cheriton School of Computer Science is the largest academic concentration of computer science researchers in Canada. We have more than 100 faculty members, 60 administrative, instructional and technical staff, 4,000 undergraduate students and 400 graduate students.

### Research Areas

- Algorithms and complexity
- Artificial intelligence
- Bioinformatics
- Computer algebra and symbolic computation
- Computer graphics
- Cryptography, security, and privacy
- Data systems
- Formal methods
- Health informatics
- Human computer interaction
- Machine learning
- Programming languages
- Quantum computing
- Scientific computation
- Software engineering
- Systems and networking
- Theoretical neuroscience

### New faculty members

- **Diogo Barradas**
  - Censorship-resistant communication

- **Wenhu Chen**
  - Natural language processing, deep learning, knowledge representation and reasoning

- **Meng Xu**
  - System and software security

- **Ihab Ilyas**
  - 2020 ACM Fellow for contributions to data cleaning and data integration

- **Ming Li**
  - 2020 Lifetime Achievement Award in Computer Science, CS-Can | Info-Can

- **Mei Nagappan**
  - 2020 Outstanding Early Career Researcher Award, CS-Can | Info-Can

- **M. Tamer Özsu**
  - 2022 IEEE Innovation in Societal Infrastructure Award

- **Eric Blais**
  - Ontario Early Researcher Award

- **Jeffrey Shallit**
  - Elected to Finnish Academy of Science and Letters

- **Sergey Gorbunov**
  - Raises $3.75 million USD for Axelar, his blockchain start-up, secures $25 million USD in Series A funding

- **Shalev Ben-David and Eric Blais**
  - Best Paper Award, FOCS 2020
  - Work extends Yao’s minimax theorem

- **N. Asokan, Jian Liu, Wenting Li, Ghassan Karame**
  - 2019 Best Paper Award, IEEE Transactions on Computers

- **Ahmed Alquraan**
  - 2021 IBM PhD Fellowship, one of 16 recipients internationally

- **Mike Schaekermann**
  - 2020 Distinguished Dissertation Award, CS-Can | Info-Can

- **Abbas Abou Daya, Mohammad A. Salahuddin, Noura Limam and Raouf Boutaba**
  - 2021 IEEE CNOM Best Paper Award

- **Iman Akbari with Mohammad A. Salahuddin, Leni Ven, Noura Limam, Raouf Boutaba, Bertrand Mathieu, Stephanie Moteau and Stephane Tuffin**
  - ACM SIGMETRICS 2021 Kenneth C. Sevcik Outstanding Student Paper Award

- **Peter Forsyth with Ken Vetzal and Graham Westmacott**
  - 2021 Brockett–Shapiro Actuarial Journal Award

- **Ildar Gainullin, Jason Yuen and Wesley Leung**
  - 2021 ICPC North America Division Champions, will advance to 45th ICPC World Finals
DEGREE PROGRAMS OFFERED

Undergraduate Programs
- BS in Computer Science (ABET accredited)
- BS in Cybersecurity (ABET accredited; CAE designated)
- BS in Software Design and Development
- Interdisciplinary BS

Graduate Programs
- MS in Computer Science
- MS in Cybersecurity

Certificate Programs
- Cybersecurity
- Database Systems

SELECTED FACULTY GRANTS
- Ashok Srinivasan: A data analytics framework for the application of pedestrian dynamics to public health, (Nih/NLM, $394,525)
- Ashok Srinivasan: Collaborative: RAPID: Leveraging New Data Sources to Analyze the Risk of COVID-19 in Crowded Locations, (NSF, $200,000)
- Ashok Srinivasan: Cyberinfrastructure for Pedestrian Dynamics-Based Analysis of Infection Propagation Through Air Travel (NSF: $500,000)
- Caroline Sangeetha John: Security-Aware In-Memory Neural Networks for Cyber-Physical Systems (Cyber Florida: $750,000)
- Ezhil Kalaimannan and Caroline Sangeetha John: NSF CyberCorps: Scholarship for Service grant program “Argo Cyber Emerging Scholars (ACES): Developing a Cybersecurity Community of Practice” (NSF: $2.3 million)
- Sikha Bagui: Center for Inclusive Computing ($60,000)
- Sikha Bagui and Brian Eddy: Computer Science For All (NSF: $300,000)
- Sikha Bagui: Robust Automated Risk Detection and Mitigation System for Network Intrusion Detection Systems (NSA: $375,000)
- Anthony Pinto: NSA-DHS CAE Regional Resource Center ($323,000)
- Anthony Pinto: NSA GenCyber ($200,000 combined total over 3 years)
- Anthony Pinto: DoD Cyber Scholarship Program ($66,700)
- Anthony Pinto: NSA CAE Regional Hub and Consortium ($290,000)

STUDENT HIGHLIGHTS
- Undergraduate and graduate students are co-authors on peer-reviewed conference and journal publications.
- Undergraduate and graduate students present at regional/national/international conferences.
- CodeFest: Weekend-long event that invites students from around the region to come together and work with professional mentors to develop a product. A great way for students to learn and network with other students, professors, and community leaders.
- Students regularly place in competitions:
  - Southeast Collegiate Penetration Testing Competition – 2nd place (October 2020)
  - Southeast Collegiate Cyber Defense Competition – 2nd place (March 2020)
  - ITEN Wired Cyber Challenge – 1st place (October 2019)
  - ACM Programming Competition, South East Region.

STUDENT ORGANIZATIONS
- ACM
- ACM-W
- AIDA (AI and Data Analytics)
- WiCys
- Cybersecurity Club
Computer Sciences Department

Highlights of Research Initiatives:

Somesh Jha and colleagues were awarded a US Department of Defense Multidisciplinary University Research Initiative (MURI) Award to develop a team that is robust against active human and Machine Learning adversaries.

Miron Livny will lead the Partnership to Advance Throughput Computing (PATh), a National Science Foundation initiative to advance computing technologies and extend adoption of these technologies by researchers and educators.

Suman Banerjee and team have received a National Institute of Standards and Technology (NIST) award to create augmented reality headsets for first responders.

Jelena Diakonikolas and Shivaram Venkataraman are actively pursuing an increase in participation in research by students from underrepresented and minority backgrounds thanks to funding from an exploreCSR grant from Google.

Michael Ferris and colleagues are developing a vaccine fairness recommendation engine that will support equitable decision making about vaccinations.

Education:

A new Ethics in Computer Science course prepares students to tackle ethical challenges in tech.

The Data Science major, established in Fall 2020, is the fastest growing major on campus and opens up a wide variety of opportunities both in coursework and careers.

Faculty Award Highlights:

Andrea Arpaci-Dusseau and Remzi Arpaci-Dusseau: ACM fellows for contributions to storage and computer systems

Suman Banerjee: ACM Fellow for contributions to design, implementation, and tools of wireless system

Jin-Yi Cai: Gödel Prize for theoretical computer science

Yingyu-Liang: NSF Career Award for better understanding, robustness, and efficiency of deep learning

Meet our newest faculty:

Yudong Chen
Machine Learning

Josiah Hanna
Robotics & Machine Learning

Yong Jae Lee
Computer Vision & Machine Learning

Ming Liu
Networks & Systems

Ranked in the top ten by CSRankings.org for:

- Computer Architecture
- Databases
- Logic and Verification
- Machine Learning and Data Mining
- Operating Systems
- Programming Languages
- Visualization

School of Computer, Data & Information Sciences (CDIS)

Our new building project has launched! To be completed January 2025, Computer Sciences, the Information School, and Statistics will be together under one roof. This will enable broad collaborations, magnifying the power of discovery across the university in medicine, engineering, agriculture, business, and beyond.

Visit our website: cs.wisc.edu
UWM receives support from equity innovators, including BRAID (Building, Recruiting, And Inclusion for Diversity) and NCWIT (National Center for Women & Information Technology) to offer Girls Who Code, take students to national conferences, provide research experiences and enhanced services, and offer regionally targeted scholarships.

**PROGRAMS:**

- Bachelor of Arts in Computer Science
- Bachelor of Science in Applied Computing
- Bachelor of Science in Applied Mathematics & Computer Science
- Bachelor of Science in Computer Engineering
- Bachelor of Science in Computer Science
- Master of Science in Computer Science (thesis option)
- Master of Science in Computer Science (professional, non-thesis option; online and in person)
- PhD in Biomedical and Health Informatics (the only program of its type in Wisconsin)
- PhD in Engineering (concentration in computer science)

**AREAS OF IMPACT:** UWM’s location in the industrial and economic heart of the state provides industry-linked benefits.

- **Northwestern Mutual Data Science Institute: $40 Million National Hub for Technology**
  
  This groundbreaking partnership contributes to the formation of a technology ecosystem and advances southeastern Wisconsin as a national hub for technology, research, business and talent development, while creating an organic pipeline of tech talent in the area. UWM is a lead university partner.

- **Connected Systems Institute at UWM: Lead Support of $1.7 Million from Rockwell Automation + $1.5 Million from Microsoft**
  
  Researchers and industry partners conduct advanced research related to digital manufacturing and prepare a skilled workforce; CSI is a center of excellence, focused on advancing all aspects of manufacturing best practices, including technical topics surrounding IT/OT convergence, and the IIOT.

- **3D Imaging + Data Science**
  
  Zeyun Yu’s data-driven blend of engineering and healthcare has applications in wound care, spinal modeling and various diagnostics including breast tumor classification, retinal imaging, and lung nodules. His work has been supported by the National Institutes of Health, the Clinical & Translational Science Institute of Southeast Wisconsin, GE Healthcare, the Marshfield Clinic Research Institute and several hospitals.

**HIGHLIGHTS**

- **UWM is a Founding Partner** in Moonshot for Equity, with EAB, and launched the Fund for Diversity in Tech Education with support from Microsoft CEO and Computer Science alum Satya Nadella and his wife Anu.
- **UWM is an R1 Institution**, as designated by the Carnegie Classification of Institutions of Higher Education (one of only two in Wisconsin; the only one in Southeastern Wisconsin).
- **Biomedical and Health Informatics PhD at UWM is the Only Program of its Kind in Wisconsin.**
  
  - Launched in partnership with the Medical College of Wisconsin.
  - Interdisciplinary program combines medical science with information technology to advance patient care, public health, life sciences research and health professional education.
  - Since 2013, students have collectively published more than 200 peer-reviewed articles and given more than 40 presentations and have gone on to pursue careers in public policy, public health, cancer research and data analytics; one was recently selected for a postdoctoral fellowship with the Centers for Disease Control and Prevention.
- **ABET Accreditation**: UWM’s Bachelor of Science Programs in Computer Science and Computer Engineering are accredited by ABET.
- **Student Connections:**
  
  - **BRAID (Building, Recruiting, And Inclusion for Diversity)**: UWM is one of 15 universities across the nation selected to join in 2014.
  - **Girls Who Code**: Now in its fifth year at UWM, GWC inspires the next generation of women to pursue careers in technology. Offered in spring and fall, GWC averages 50 pre-college participants per session.
- **Distinguished Alumni:**
  
  - Microsoft CEO, Satya Nadella, chose UWM for his Master of Science in Computer Science degree.
  - Katie Sycara, Research Professor, Carnegie Melon University.
  - Anhai Doan, Vilas Distinguished Achievement Professor, Gurindar S. Sohi Professor, Department of Computer Science, University of Wisconsin
10 NEW FACULTY MEMBERS

Jonathan Sprinkle
CPS

David Hyde
Computational Physics & Graphics

Forrest Laine
Autonomous Robots & Systems

Meiyi Ma
CPS Machine Learning

Kevin Leach
Cybersecurity

Yu Huang
Software Engineering

Soheil Kolouri
Machine Learning Image Modeling

Jie Ying Wu
Medical Robotics Machine Learning

Shervin Haji-Mirzaei
Green Computing

Dana Zhang
Data Science Blockchain

ORGANIZATIONAL NEWS

Destination Vanderbilt: Computer Science
Ten new computer science faculty members have been appointed during the first year of the Destination Vanderbilt: Computer Science initiative as part of a $100 million university excellence initiative to recruit new faculty. This multi-year CS faculty recruitment and hiring process is for 20+ tenure/tenure-track positions at the Assistant, Associate, and Full Professor levels, but with preference at early-career appointments. Their research areas will span artificial intelligence and machine learning, cyber-physical systems, big data, cybersecurity, robotics, and health care, including smart devices and imaging.

Interdisciplinary Data Science minor
Vanderbilt University has added an undergraduate minor in data science beginning in the fall 2021 term. The new transdisciplinary, interdisciplinary data science minor can be paired with any major. CS offers programming and machine learning courses as part of the minor, which allows students to learn various data analysis techniques, as well as gain scientific computing, programming, and data management skills.

HIGHLIGHTS

Computing the biome
Sensing and Predicting Biotechs with AI works in tandem with a large Microsoft project called Premonitor that follows successful proof-of-concept tests that included Vanderbilt engineers. The convergence team, led by Janos Szitapanovits, E. Bronson Ingram Distinguished Professor of Engineering and director of the Vanderbilt Institute for Software Integrated Systems, is creating a data platform for monitoring and predicting biothreats in a major city. The project is a Phase 2 NSF Convergence award.

$20M AI Institute
Vanderbilt University engineering and education faculty are part of a new $20 million research institute funded by the NSF that aims to create artificial intelligence tools to advance human learning and education. The NSF AI Institute for Engaged Learning is a multi-institute project with Vanderbilt, led by Cornelius Vanderbilt Professor of Engineering Gautam Biswas and partner institutions that will work to design and develop AI tools to radically improve STEM learning. The Vanderbilt share of the five-year project is $4.15M.

NASA: Air taxis
Vanderbilt engineers are part of a NASA-funded, multi-institution effort to develop safety systems for a mode of transportation that doesn’t exist yet—small, commercial, autonomous planes that move people by air in large, crowded cities. The task has machine learning at its core. These vehicles resemble a cross between a helicopter and a small plane. Their lighter, pilotless profile makes them susceptible to certain types of risk. Gautam Biswas will lead Vanderbilt engineers who will focus on vehicle degradation and faults.

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VentureWell grant
Intelligent Systems, an indoor real-time air quality monitoring and predictive startup founded by Tim Darragh, a Ph.D. student in computer science and a NASA fellow, has won a stage 2 grant from VentureWell. Intelligent Systems is the first Vanderbilt team to be accepted into this program. VentureWell funds and trains faculty and student innovators to create successful, socially beneficial businesses. Darragh grew Intelligent Systems through the Wardy’s, Vanderbilt’s Innovation Center.

STUDENT NUMBERS & GROWTH

<table>
<thead>
<tr>
<th>Level</th>
<th>2020</th>
<th>2021</th>
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<tbody>
<tr>
<td>Ph.D.</td>
<td>82</td>
<td>98</td>
</tr>
<tr>
<td>Master's</td>
<td>28 *32 online</td>
<td>58 *89 online</td>
</tr>
<tr>
<td>Bachelor's</td>
<td>684</td>
<td>726</td>
</tr>
<tr>
<td>Master's</td>
<td>826</td>
<td>972</td>
</tr>
</tbody>
</table>

AVERAGE ANNUAL ENROLLMENT GROWTH OVER 1 YEAR

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</table>

Vanderbilt University is committed to principles of equal opportunity and affirmative action. Vanderbilt and the Vanderbilt logos are registered trademarks of The Vanderbilt University.
CYBERSECURITY
- Signed DoD Cyber Crime Center (DC3) Education Partnership Agreement between DoD and VCU for excellence in digital forensics
- National Security Agency designations
  - Center of Academic Excellence in Cyber Research
  - Center of Academic Excellence in Cyber Defense Education

DEGREE PROGRAMS
Undergraduate
- B.S. in Computer Science (the first ABET-accredited CS program in Virginia)
  - Concentration in Cybersecurity
  - Concentration in Data Science
  - Concentration in Software Engineering
- Accelerated B.S./M.S. in Computer Science
- Post-Baccalaureate Certificate in Computer Science

Graduate
- M.S. in Computer Science (with options to specialize in data science and/or cybersecurity)
- Ph.D. in Engineering with a Concentration in Computer Science
- Ph.D. in Computer Science
- Dual Ph.D. in Engineering with a Concentration in Computer Science with the University of Cordoba, Spain (graduates receive doctorates from both institutions)
- Post-Baccalaureate Certificate in Cybersecurity (based on four courses)
- Post-Baccalaureate Certificate in Data Science (based on four courses)

Computing for All
- Fundamentals of Computing certificate for students with no technical background (based on four online courses)
- Digital Generalist Credential (based on three Fundamentals courses; offered with the Capital CoLAB)

STATISTICS
- 626 undergraduate students and 79 graduate students
- 19 tenured and tenure-track faculty; 5 teaching faculty

EVENTS
Yearly events that attract hundreds of students, including:
- RamHacks
- Northeast Regional Global Collegiate Penetration Testing Competition
- High school programming contest

RESEARCH HIGHLIGHTS
- Designed the fIDPnn algorithm, which won first place in the Critical Assessment of Protein Intrinsic Disorder Prediction (CAID) world challenge in 2020 and was published in Nature Communications in 2021.
- Discovered several cybersecurity vulnerabilities in the Siemens, Rockwell Automation and Automation Direct industrial equipment used in the US critical infrastructure such as nuclear plants and power grid stations

STUDENT SUCCESS
- Female undergraduate and graduate students received full support to participate in the Women in Cybersecurity (WiCyS) conference and won the Best Poster Award.

FELLOWS
- Computer science faculty includes two IEEE Fellows and three AIMBE Fellows.

More information about VCU Computer Science Department can be found at egr.vcu.edu/departments/computer
Growth on All Fronts

- Over the next 3 years the department will occupy over 100K sf in new space as part of two new building on the main campus in Blacksburg and a new Innovation Campus building in Alexandria.
- Faculty size is projected to grow to 90+ in 5 years.
- New tenure-track faculty members joining in 2021-22:
  - Debswapna Bhattacharya, Associate Professor, Missouri-Columbia (2016), bioinformatics
  - Chris Brown, Assistant Professor, PhD NCSU (2021), software engineering
  - Peng Gao, Assistant Professor, PhD Princeton (2019), security
  - Shaddi Hasan, Assistant Professor, PhD UC Berkeley (2019), networking, systems
  - Liting Hu, Assistant Professor, PhD GT (2016), systems
  - Eugenia Rho, Assistant Professor, PhD UC Irvine (2020), HCI
  - Dan Williams, Assistant Professor, PhD Cornell (2013), systems
  - Yalong Yang, Assistant Professor, PhD Monash (2019), HCI
  - Dawei Zhou, Assistant Professor, PhD UIUC (2021), ML
- Planning to fill 8+ tenured/tenure-track and 5 teaching faculty positions this year

Faculty, Staff, and Students

- 67 faculty: 56 tenured/tenure-track, 2 professors of practice, 3 instructors, 6 collegiate faculty
- 6 research scientists, 15 courtesy and affiliate faculty
- 19 administrative and support staff, 13 administrative & professional faculty
- Undergraduate program: 1384 majors (sophomore, junior, senior), 16% women; 365 BS degrees awarded in 20/21
- Graduate programs: 404 Masters and 214 PhD students, 27% women; 90 Masters and 33 PhD degrees awarded in 20/21

Research and Professional Service Highlights

- $11M in research expenditures in FY21
- NSF CAREER award: Matt Hicks and Francisco Servant
- SIGCSE Award for Outstanding Contribution to Computer Science Education: Steve Edwards
- SIGIR Academy induction: Ed Fox
- Harrold and Notkin Research and Graduate Mentoring Award: Barbara Ryder
- IEEE Fellow: Kirk Cameron
- Paper recognitions at CODASPY, ICWE, ICSE, IDC, SIGSPATIAL, VL/HCC, WEB3D
- Conference leadership roles at Big Data, CSCW, EMNLP, ITC, HCOMP, IMX, WiOpt
Quick Facts

ESTABLISHED

1890

CAMPUSES

Bremerton, Everett, Pullman, Tri-Cities, Vancouver, Global

FIELDS OF STUDY

5

$10 MILLION Research Expenditures

ENROLLMENT

UNDERGRADUATES 1,998
GRADUATE 203

In-State

84.9%

Underrepresented Minorities

34.5%

1st Gen

33.5%

Degrees Conferred FY20

Undergraduate 343
Graduate 98

Early Career Development & Young Investigator Awards

14

Professional Society Fellows

10

QUICK LINKS

Apply | Give | Visit | Accessibility
The WSU Connected and Autonomous Driving Laboratory — led by Professor Weisong Shi — proposed an open-source project called HydraOne, a small, low-cost but fully functional platform to support deployment of intelligent connected vehicle research, as well as its outdoor counterpart, ZebraT.

Wayne State University announced a partnership with the University of North Texas and Clarkson University to form the Center for Electric, Connected and Autonomous Technologies for Mobility (eCAT), a National Science Foundation Industry-University Cooperative Research Center (IUCRC) tasked with developing sustainable mobility technologies such as electrification, smart infrastructure, and resilient edge computing systems for autonomous driving.

Ph.D. candidate Tayebeh Bahreini was selected to participate in the 2020 Rising Stars in Electrical Engineering and Computer Science Workshop at the University of California, Berkeley, and in the 8th Heidelberg Laureate Forum.

Associate Professor Daniel Grosu was recently appointed associate editor for the IEEE Transactions on Parallel and Distributed Systems and the ACM Computing Surveys.

Severity Predictors Integrating Salivary Transcriptomics and Proteomics with Multi Neural Network Intelligence in SARS-CoV2 Infection in Children
PI: Dongxiao Zhu
NIH: $1,433,469

PIs: Nathan Fisher, Daniel Grosu
NSF: $1,249,998

Prostate Cancer Biomarker Discovery and Drug Repurposing Using Cross-Cancer Learning
PI: Suzan Arslanturk
Co-PI: Sorin Draghici
DoD: $863,222

CAREER: Protocols for Low-Power Wide-Area Networks in White Spaces
PI: Abusayeed Saifullah
NSF: $550,531

CICI:RSARC:Infrastructure Support for Securing Large-Scale Scientific Workflows
PIs: Shiyong Lu, Fengwei Zhang
SUNY NY: $499,786

CAREER: A Parallel and Efficient Computational Framework for Unified Volumetric Meshing in Large-Scale 3D/4D Anisotropy
PI: Zichun Zhong
NSF: $395,416

FACTS AND FIGURES

UNDERGRADUATE STUDENTS INCLUDING 282 NEW STUDENTS
1,087

DEGREES AWARDED IN 2020
192

UNDERGRADUATE ENROLLMENT FROM 2020 TO 2021
9.5%

B.S./M.S./Ph.D. in Computer Science
B.S. in Information Technology
M.S. in Data Science & Business Analytics
M.S. in Robotics
Graduate Certificate in Mobility

19 INBOUND EXCHANGE STUDENTS FROM 6 INTERNATIONAL UNIVERSITIES SINCE 2016

CSRANKINGS

RESEARCH AREA
Embedded & Real-Time Systems
Visualization
Computer Graphics
Software Engineering
Computer Vision
Artificial Intelligence
Machine Learning & Data Mining

U.S.
#3
#25
#35
#45
#55
#75
#86

WORLDWIDE
#7
#51
#92
#114
#142
#182
#206

CSRANKINGS
Computer Science

Computer science enables students to ask new questions and seek new answers in a wide range of fields, such as art, literature, biology, economics, and sociology. Students at Whitman benefit from small classes, which give opportunities to work closely with faculty, learn and create with other students, practice explaining technical ideas, and consider the role of computing in society. Our curriculum provides a rigorous introduction to the foundations of computer science as well as contemporary applications. Senior year culminates with a team capstone project for a client and an oral exam of core computing concepts and their application in each team’s capstone.

Course Highlights

- Introduction to Data Science
- Intelligent User Interfaces
- Human-Computer Interaction
- Computer Systems Programming
- Theory of Computation
- Databases with Web Apps
- Simulation Methods
- Software Design
- Capstone Project I and II

Student Highlights

- Abelrahman Elawedly – Accessibility with eye- and motion-tracking (funded by Teach Access Grant)
- Claire Weissman – Best Scientific Visualization Research Poster, IEEE Vis 2020
- Leila Peterson - MulticoreWare R&D intern to build vector programming software

Recent graduates are employed by Microsoft, Google, Juniper, Oracle, Ingeniux, Boeing, Chase, ...

Department Highlights

- Immersive Stories Lab – visualize data and tell stories on a motion-tracked projection stage
- WINcubator – launch your idea for a new business and collaborate with student entrepreneurs

Growth

Since its founding in 2014, the CS Department has grown from its first two majors graduated in 2018, to 13 majors graduated in 2019, 16 in 2020, and at least 20 in 2021. Advertisement of new tenure-track position(s) forthcoming, research area open.

https://www.whitman.edu/academics/majors-and-minors/computer-science
Recent Hires (Tenure-Track)

Rohit Bhattacharya (Fall 2021)
Ph.D. Johns Hopkins University
Machine learning and statistics, causal inference, graphical models, missing data, oncogenomics

Samuel McCauley (Fall 2019)
Ph.D. Stony Brook University
Algorithms and data structures, hashing and randomization, similarity search, I/O-efficient algorithms, scheduling

Kelly Shaw (Fall 2019)
Ph.D. Stamford University
Parallel architecture, Internet of Things, memory systems, workload characterization of emerging systems

Shikha Singh (Fall 2019)
Ph.D. Stony Brook University
Algorithmic game theory, algorithms and data structures, combinatorial optimization, complexity theory

Aaron Williams (Fall 2019)
Ph.D. University of Victoria
Algorithms, combinatorics, computational complexity, puzzles and games, history of video games

Highlights

• Eight undergraduate students and three faculty attended the Grace Hopper Celebration of Women in Computing and the ACM Tapia Celebration of Diversity in Computing in 2020.

• Madeline Burbage ’22 was a winner of the ACM student research competition at GHC; Kiersten Campbell ’21 was a nominated finalist in the CRA undergraduate research awards; Prof. Duane Bailey was awarded *Best textile, sculpture, or other medium* at the 2021 Mathematical Art Exhibition Awards.

• During the summer of 2021, 19 undergraduate research assistants were supervised by eight members of the CS faculty.

• Over the last four years the number of Williams students majoring in Computer Science has more than tripled. The department plans to hire again in 2021-22.
Newly Tenured and Promoted Faculty, New Tenure-Track Faculty Hires (and Previous Position)

Lane Harrison  Assoc Prof
Yanhua Li  Assoc Prof
Brandon Bohrer  PhD CMU
Xiaozhong Liu  Assoc Prof IndianaU

Department Highlights

- New faculty funding awards continue to be at record levels for the department with over $28M of new external funding over the past two years.
- Department faculty created a new Masters of Cybersecurity degree as well as a professional Master of Computer Science degree.
- Jacob Whitehill received an NSF CAREER award for his project entitled “Developing New Scientific Instruments for Classroom Observation: A Multi-modal Machine Learning Approach.”
- The department hired two new full-time teaching faculty: Shubbhi Taneja (Asst Teaching Prof) and Torumoy Ghoshal (Asst Teaching Prof of Data Science).
- Rodica Neamtu has been appointed to an Associate Professor of Teaching position as part of the first class of 15 tenure-track teaching faculty at WPI.
- WPI was again ranked as a top Computer Science program by College Factual.

Department Facts and Figures

- As the Hub of WPI Interdisciplinary Programs, department faculty work with faculty in nine other departments to offer eight computing-related degree programs in Bioinformatics & Computational Biology (BCB), Cybersecurity, Data Science (DS), Interactive Media & Game Development (IMGD), Learning Sciences & Technologies, Neuroscience, Robotics Engineering (RBE) and Systems Engineering.
- The department has 28 tenured/tenure-track faculty with an additional 7 full-time teaching faculty.
- The department has nearly 900 undergraduate majors. Between Computer Science, IMGD, RBE, BCB and DS there are over 1450 (roughly 30% of WPI) undergraduates pursuing computing-related degrees. The department has roughly 140 Computer Science graduate students and there are over 500 graduate students pursuing computing-related degrees.

Institutional News

- Construction is nearly complete on a new academic building, which will be the home of many interdisciplinary programs involving Computer Science. Occupancy in the new building will be in January 2022.
- WPI enrolled a record number of approximately 1400 first-year students in the Fall of 2021.
Discord Server

1,820 Members

Sponsored Research

$8,952,890

NEW FACULTY 2021

Lingwei Chen, Ph.D.
Assistant Professor
Machine learning, adversarial learning, and cybersecurity

KEEPING CONNECTED

In the face of a global health crisis, the Department of Computer Science and Engineering has looked to new ways to facilitate learning and keep our campus community connected. Since March 2020 the department’s discord server has provided a venue for faculty and teaching assistant office hours, help rooms, technical support, intern and job opportunity announcements, department information, and social connections. The server now serves more than 1,820 members, including many alumni and university partners.

AWARDS

U.S. News & World Report has named Wright State University’s undergraduate computer science program among the best in the nation for 2021–2022.

U.S. News & World Report
Recent Highlights at Yale CS

Charalampos Papamanthou
Associate Professor
Computer Security, Applied Cryptography

Yongshan Ding
Assistant Professor
Computer Architectures, Quantum Computing, Error Correction

Ben Fisch (July 2022)
Assistant Professor
Applied Cryptography, Security and Privacy, Blockchain

Rex Ying (July 2022)
Assistant Professor
Machine Learning, Graph Neural Networks

Jay Lim
Lecturer
Compilers, Programming Languages

Yale CS faculty take lead roles in two NSF-funded AI Institutes; Nisheeth Vishnoi is Co-PI for the Institute for Learning-Enabled Optimization at Scale (TILOS) and Lin Zhong is Co-PI for the AI Institute for Edge Computing Leveraging Next-generation Networks (Athena). Yale CS faculty Abhishek Bhattacharjee, Anurag Khandelwal, and Daniel Spielman will also serve as institute members.

Daniel Spielman received the 2021 Michael and Sheila Held Prize from the National Academy of Sciences. Additionally, his co-authored paper on Smoothed Analysis of Algorithms won the 20-year STOC Test of Time Award.

Anurag Khandelwal received an NSF CAREER Award for his proposed project which envisions a new design for memory disaggregation.

Smita Krishnaswamy has been awarded a 2021 Sloan Research Fellowship.

Research on brain-computer interfaces from the labs of Abhishek Bhattacharjee and Rajit Manohar, originally published in ISCA 2020, was selected as one of IEEE Micro’s Top Picks in Computer Architecture Journal.

Ph.D. Student Matt Amodio is having a remarkable run on Jeopardy! and is now the third person in Jeopardy! history to earn more than $1 million in non-tournament play.

The team of Yale undergraduate students Andrew Yuan, Deyuan Li, and Dion Ong (and their coach Ruizica Piskac) advanced to the 45th annual ICPC World Finals.

Yale has recently established the Wu Tsai Institute to support interdisciplinary neurocognition research. CS faculty will play a central role in its new academic center on neurocomputation and machine intelligence.
With research and programs that cover the entire range of electronic and computing technologies, we address Canada's technological future. Our strengths include medical assistive technologies, artificial intelligence, cyber security, computer vision, networks, big data, and human-computer interaction and many others.

The Department of Electrical Engineering and Computer Science at Lassonde the Lassonde School of Engineering at York University has a clear mission, to offer students exceptional programs and learning experiences to make a positive impact on the world and promote scholarship and discovery in a research-oriented environment.

Recent News:

**Professor Marcus Brubaker receives CFI JELF award**
Professor Marcus Brubaker will develop novel artificial intelligence (AI) methods focused on applications where labelled training data is limited or unavailable. The goal of this research is to enable learning from minimal amounts of data to dramatically reduce the amount of labelled data required for modern AI methods and thereby democratizing access to the technology. [Learn more.](#)

**Professor Ali Sadeghi-Naini, receives Early Researcher Award funding**
Professor Sadeghi-Naini was awarded funding through the ERA program for a project entitled “Smart quantitative imaging biomarkers for personalized breast cancer care”. The goal of this research is to develop multi-modal quantitative imaging technologies that can predict and evaluate the response of individual breast cancer patients to chemotherapy before or after treatment initiation. [Learn more.](#)

**The Question of Privacy in Virtual Classrooms**
The world has been moving online and education is no exception. The COVID-19 pandemic greatly accelerated the need for, and adaptation of, online learning technologies, with virtual classrooms becoming the new norm. Professor Yan Shvartzshnaider has been investigating the privacy and security risks that have accompanied the adoption of virtual classrooms. [Learn more.](#)

**Lassonde Computer Science PhD graduate receives the CIPPRS John Barron Doctoral Dissertation Award**
Dr. Amir Rasouli, a recent PhD graduate from Professor John K. Tsotsos’ research group at the Lassonde School of Engineering, was awarded the 2020 Canadian Image Processing and Pattern Recognition Society (CIPPRS) John Barron Doctoral Dissertation Award. His winning thesis was entitled “The Role of Context in Understanding and Predicting Pedestrian Behavior in Urban Traffic Scenes”. [Learn more.](#)

**Professor Zhen Ming (Jack) Jiang awarded the CS-Can|Info-Can Outstanding Early Career Computer Science Researcher Prize**
Professor Zhen Ming (Jack) Jiang, has been awarded the CS-Can|Info-Can Outstanding Early Career Computer Science Researcher Prize. Dr. Jiang’s prolific research in software engineering encompasses work done at York University’s Lassonde School of Engineering as well as accomplishments while at BlackBerry (RIM). [Learn more.](#)

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**John Tsotsos:**
CS-Can|Info-Can Lifetime Achievement Award

**Marin Litoiu:**
Fellow of the Canadian Academy of Engineering

**Pirathayini Srikanta:**
Canada Research Chair