Computing Research Association

Academic Member Highlight Book

Fall 2019

UNITING INDUSTRY, ACADEMIA, AND GOVERNMENT TO ADVANCE COMPUTING RESEARCH AND CHANGE THE WORLD.
Table of Contents

Yale
  Computer Science............................................................................................................. 7
Worcester Polytechnic Institute
  Computer Science........................................................................................................... 8
Williams College
  Computer Science......................................................................................................... 9
Whitman College
  Computer Science....................................................................................................... 10
Wayne State University
  Computer Science....................................................................................................... 11
Washington University in St. Louis
  Computer Science and Engineering............................................................................. 12
Wake Forest University
  Computer Science....................................................................................................... 13
Virginia Tech
  Computer Science....................................................................................................... 14
Virginia Commonwealth University
  Computer Science....................................................................................................... 15
Vanderbilt University
  Electrical Engineering and Computer Science............................................................. 16
University of Wisconsin, Madison
  Computer Science....................................................................................................... 17
University of Washington
  Paul G. Allen School of Computer Science and Engineering...................................... 18
  Information School....................................................................................................... 19
  Human Centered Design and Engineering..................................................................... 20
University of Virginia
  Computer Science....................................................................................................... 21
University of Vermont
  Computer Science....................................................................................................... 22
University of Utah
  School of Computing.................................................................................................... 23
University of Texas at Arlington
  Computer Science and Engineering........................................................................... 24
University of Texas at Dallas
  Computer Science and Engineering............................................................................ 25
University of Southern California
  Department of Computer Science.................................................................................. 26
University of South Florida
  Computer Science and Engineering............................................................................. 27
University of South Carolina
  Computer Science and Engineering............................................................................. 28
University of Rochester
  Department of Computer Science.................................................................................. 29
<table>
<thead>
<tr>
<th>University Name</th>
<th>Department Name</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of Pittsburgh</td>
<td>School of Computing and Information</td>
<td>30</td>
</tr>
<tr>
<td>University of Pennsylvania</td>
<td>Computer and Information Science</td>
<td>31</td>
</tr>
<tr>
<td>University of Oklahoma</td>
<td>School of Computer Science</td>
<td>32</td>
</tr>
<tr>
<td>University of Notre Dame</td>
<td>Computer Science and Engineering</td>
<td>33</td>
</tr>
<tr>
<td>University of North Texas</td>
<td>Computer Science and Engineering</td>
<td>34</td>
</tr>
<tr>
<td>University of North Carolina, Charlotte</td>
<td>College of Computing and Informatics</td>
<td>35</td>
</tr>
<tr>
<td>University of North Carolina, Chapel Hill</td>
<td>School of Information and Library Science</td>
<td>36</td>
</tr>
<tr>
<td>University of New Mexico</td>
<td>Computer Science</td>
<td>37</td>
</tr>
<tr>
<td>University of New Hampshire</td>
<td>Computer Science</td>
<td>38</td>
</tr>
<tr>
<td>University of Nebraska, Lincoln</td>
<td>Computer Science and Engineering</td>
<td>39</td>
</tr>
<tr>
<td>University of Michigan, Dearborn</td>
<td>Computer and Information Science</td>
<td>40</td>
</tr>
<tr>
<td>University of Michigan</td>
<td>School of Information</td>
<td>41</td>
</tr>
<tr>
<td></td>
<td>Computer Science and Engineering</td>
<td>42</td>
</tr>
<tr>
<td>University of Memphis</td>
<td>Department of Computer Science</td>
<td>43</td>
</tr>
<tr>
<td>University of Massachusetts, Lowell</td>
<td>Computer Science</td>
<td>44</td>
</tr>
<tr>
<td>University of Massachusetts, Amherst</td>
<td>College of Information and Computer Sciences</td>
<td>45</td>
</tr>
<tr>
<td>University of Maryland, Baltimore County</td>
<td>Computer Science and Electrical Engineering</td>
<td>46</td>
</tr>
<tr>
<td>University of Maryland</td>
<td>Computer Science</td>
<td>47</td>
</tr>
<tr>
<td>University of Illinois, Urbana-Champaign</td>
<td>Electrical and Computer Engineering</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td>Computer Science</td>
<td>49</td>
</tr>
<tr>
<td>University of Georgia</td>
<td>Computer Science</td>
<td>50</td>
</tr>
<tr>
<td>University of Florida</td>
<td>Computer and Information Science and Engineering</td>
<td>51</td>
</tr>
<tr>
<td>University of Colorado, Boulder</td>
<td>Computer Science</td>
<td>52</td>
</tr>
<tr>
<td>University of Cincinnati</td>
<td>School of Information Technology</td>
<td>53</td>
</tr>
<tr>
<td>University of Chicago</td>
<td>Computer Science</td>
<td>54</td>
</tr>
</tbody>
</table>
University of Central Florida
Computer Science........................................................................................................55

University of California, San Diego
Computer Science and Engineering..............................................................................56

University of California, Merced
Computer Science and Engineering..............................................................................57

University of California, Riverside
Computer Science and Engineering..............................................................................58

University of Arkansas
Computer Science and Computer Engineering..........................................................59

University of Arizona
Computer Science........................................................................................................60

University of Alberta
Computing Science.......................................................................................................61

University at Buffalo
Computer Science and Engineering..............................................................................62

Tufts University
Computer Science.........................................................................................................63

Toyota Technological Institute at Chicago
Computer Science.......................................................................................................64

The Ohio State University
Computer Science and Engineering..............................................................................65

Texas Tech University
Computer Science.........................................................................................................66

Texas State University
Computer Science.........................................................................................................67

Texas A&M University, Corpus Christi
Computing Science.......................................................................................................68

Texas A&M University
Computer Science and Engineering..............................................................................69

Syracuse University
Electrical Engineering and Computer Science............................................................70

Stony Brook University
Computer Science.........................................................................................................71

Stevens Institute of Technology
Computer Science.........................................................................................................72

Simon Fraser University
School of Computing Science........................................................................................73

Simmons University
College of Organizational, Computational, and Information Sciences.......................74

Saint Louis University
Computer Science.........................................................................................................75

Purdue University
Computer Science.........................................................................................................76

Pennsylvania State University
Computer Science and Engineering..............................................................................77
College of Information Sciences and Technology.........................................................78
<table>
<thead>
<tr>
<th>Institution</th>
<th>Department</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oregon State University</td>
<td>Electrical Engineering and Computer Science</td>
<td>79</td>
</tr>
<tr>
<td>Oklahoma State University</td>
<td>Computer Science</td>
<td>80</td>
</tr>
<tr>
<td>New York University Tandon School of Engineering</td>
<td>Computer Science and Engineering</td>
<td>81</td>
</tr>
<tr>
<td>New York University Courant</td>
<td>Computer Science</td>
<td>82</td>
</tr>
<tr>
<td>Northwestern University</td>
<td>Computer Science</td>
<td>83</td>
</tr>
<tr>
<td>Northern Kentucky University</td>
<td>Computer Science</td>
<td>84</td>
</tr>
<tr>
<td>Northeastern University</td>
<td>Khoury College of Computer Sciences</td>
<td>85</td>
</tr>
<tr>
<td>North Carolina State University</td>
<td>Computer Science</td>
<td>86</td>
</tr>
<tr>
<td>Naval Postgraduate School</td>
<td>Computer Science</td>
<td>87</td>
</tr>
<tr>
<td>National University of Singapore</td>
<td>Department of Computer Science</td>
<td>88</td>
</tr>
<tr>
<td>Mount Holyoke College</td>
<td>Computer Science</td>
<td>89</td>
</tr>
<tr>
<td>Montana State University</td>
<td>Gianforte School of Computing</td>
<td>90</td>
</tr>
<tr>
<td>Massachusetts Institute of Technology</td>
<td>Department of Electrical Engineering and Computer Science</td>
<td>91</td>
</tr>
<tr>
<td>Loyola University Chicago</td>
<td>Computer Science</td>
<td>92</td>
</tr>
<tr>
<td>Kean University</td>
<td>School of Computer Science and Technology</td>
<td>93</td>
</tr>
<tr>
<td>Kansas State University</td>
<td>Computer Science</td>
<td>94</td>
</tr>
<tr>
<td>Iowa State University</td>
<td>Computer Science</td>
<td>95</td>
</tr>
<tr>
<td>Illinois Institute of Technology</td>
<td>Computer Science</td>
<td>96</td>
</tr>
<tr>
<td>Harvard University</td>
<td>Computer Science</td>
<td>97</td>
</tr>
<tr>
<td>Georgia Institute of Technology</td>
<td>School of Interactive Computing</td>
<td>98</td>
</tr>
<tr>
<td>Georgia Institute of Technology</td>
<td>School of Computational Science and Engineering</td>
<td>99</td>
</tr>
<tr>
<td>Georgia Institute of Technology</td>
<td>School of Computer Science</td>
<td>100</td>
</tr>
<tr>
<td>Georgetown University</td>
<td>Computer Science</td>
<td>101</td>
</tr>
<tr>
<td>George Mason University</td>
<td>Computer Science</td>
<td>102</td>
</tr>
<tr>
<td>Emory University</td>
<td>Computer Science</td>
<td>103</td>
</tr>
</tbody>
</table>
Embry-Riddle Aeronautical University – Daytona Beach Campus
   Electrical, Computer, Software, and Systems Engineering.................................104

DePaul University
   School of Computing.................................................................................................105

Cornell University
   Computer Science........................................................................................................106

Columbia University
   Computer Science........................................................................................................107

Colorado School of Mines
   Computer Science........................................................................................................108

Colgate University
   Computer Science........................................................................................................109

Clemson University
   School of Computing..................................................................................................110

Case Western Reserve University
   Department of Computer and Data Sciences..............................................................111

Carnegie Mellon University
   Electrical and Computer Engineering........................................................................112

Carleton College
   Computer Science........................................................................................................113

Bradley University
   Computer Science and Information Systems..............................................................114

Bowling Green State University
   Computer Science........................................................................................................115

Boston University
   Electrical and Computer Engineering.........................................................................116
   Computer Science........................................................................................................117

Binghamton University
   Computer Science........................................................................................................118

Barnard College
   Computer Science........................................................................................................119
New Faculty Hires:

Tenured

Nisheeth Vishnoi
Professor of Computer Science

Lin Zhong
Professor of Computer Science Jan. 2020

Abhishek Bhattacharjee
Associate Professor of Computer Science

Theodore Kim
Associate Professor of Computer Science

Tenure Track

Marynel Vázquez
Assistant Professor of Computer Science

Yang Cai
Assistant Professor of Computer Science and Economics

Anurag Khandelwal
Assistant Professor of Computer Science Jan. 2020

Robert Soulé
Assistant Professor of Computer Science

Research Highlights:

• A paper by Profs. Nisheeth Vishnoi and Elisa Celis on “Controlling Polarization in Personalization: An Algorithmic Framework” was selected for the Best Technical Paper Award at FAT* 2019 (ACM Conf. on Fairness, Accountability, & Transparency).

• Prof. Abhishek Bhattacharjee directs the Systems Architecture Group. His research builds architectures and systems for data centers and systems that are inspired by, interface with, and improve our understanding of the brain. His group’s work on coalesced TLBs had been integrated in AMD’s chips (starting with the Zen architecture) and his work on superpages has been integrated in the Linux operating system.

• Prof. Theodore Kim of the Graphics Groups published two papers in 2019 in ACM Transactions on Graphics that were used in Toy Story 4 to help animate the characters of Woody, Gabby Gabby, and Benson. The elasticity model from his 2018 paper in the same journal was also used to animate the muscles of Mr. Incredible in Incredibles 2.

• Prof. Marynel Vázquez is the PI on a new NSF NRI project on advancing spatial behavior modeling and understanding for human-robot interaction. She and her colleagues at Stanford University published a method to enable mobile robots to predict close collisions. The method was published in IROS’18 and was nominated for the Best Paper Award on Safety Security and Rescue Robotics in memory of Motohiro Kiso.

• Prof. Yang Cai was awarded 2019 Sloan Research Fellowship. His research lies at the interface between Computer Science and Economics. He focuses on developing algorithmic and mathematical tools to understand how strategic agents interact in complex environments such as auctions and online markets.

• Prof. Robert Soulé received Best Paper Award at NSDI’18 for “NetChain: Scale-Free Sub-RTT Coordination” which demonstrated how to build a coordination service with incredibly low latency and high throughput.

• Prof. Joan Feigenbaum and PhD student Lihi Idan showed how to predict the voting behavior of Facebook users based on a Bayesian-network model that combines demographic, behavioral, and social features. Their method, which yields accurate predictions in the case of the 2016 US Presidential election, was published at the 2019 IEEE/ACM Conf. on Advances in Social Networks Analysis and Mining (ASONAM).

• The LILY lab, led by Prof. Dragomir Radev, published ten papers in ACL, NAACL, EMNLP, and AAAI in 2018. They are on semantic parsing, natural language access to databases, cross-lingual information retrieval, and text summarization. More than ten Yale undergraduate students were co-authors on these papers.

• Two recent papers by Yale faculty members are featured as Research Highlights in Communications of the ACM (ACM’s flagship magazine): “Building Certified Concurrent OS Kernels” by Prof. Zhong Shao and his students (October 2019) and “How to Implement Any Concurrent Data Structure” by Prof. Mahesh Balakrishnan and his colleagues at VMware and Microsoft Research (December 2018).

Other Highlights:

• In April 2019, Yale held its first workshop on AI, Ethics, and Society with 130 attendees from 35 departments/programs and 5 schools. The goal of this workshop was to identify and discuss challenges that arise as AI systems are increasingly deployed to control various aspects of modern society and to initiate a Yale-wide effort towards an interdisciplinary approach to problems arising at the interface of AI, ethics, and society.

• Michihiro Yasunaga (YC’19), advised by Prof. Dragomir Radev and Prof. John Lafferty, received the CRA 2019 Outstanding Undergraduate Researcher Award.

• Valerie Chen (YC’20) selected as 2019 Snap Research Scholar.

• Anton Xue (YC’19) wins the 2019 NSF Graduate Research Fellowship.

• U.S. high schoolers, coached by Prof. Dragomir Radev, won the 2018 International Linguistics Olympiad in Prague, Czech Republic.

• The Association for Computational Linguistics (ACL) Nominating Committee selected five new ACL fellows for 2018, including Prof. Dragomir Radev.

• Ruzica Piskac received the 2019 Ackerman Award for teaching and Mentoring; named the Dubinsky Associate Professor of Computer Science.

• Prof. Avi Silberschatz’s VLDB 2009 paper won the 2019 VLDB Test of Time Award.

• Daniel Spielman was named Sterling Professor of Computer Science, the highest honor bestowed on Yale faculty.

Student Numbers and Growth:

[Graph showing degrees in Computer Science: 140 Undergraduate, 140 Graduate, 120, 100, 80, 60, 40, 20, 0 for AY16-17, AY17-18, AY18-19]
New Tenure-Track Faculty Hires (and Previous Position)

Daniel Reichman  
Post-Doc Princeton

Ali Yousefi  
Researcher Harvard

Department Highlights

- The department celebrated its 50th anniversary in March 2019 with over 200 attendees. The highlight of the event was a panel of five alumni panelists from across the five decades of the department sharing the past and looking at the future of the department.

- New faculty funding awards were close to double the previous record high for the department. 100% of department tenured/tenure-track faculty had, sought or obtained funding during the fiscal year.

- Department faculty contributed to the creation of a new MS degree in Neuroscience and a new BS degree in Data Science.

- Hired additional full-time teaching faculty: Michael Engling (Asst Teaching Prof) and Jonathan Weinstock (Asst Teaching Prof).

- WPI was ranked as the second-best Computer Science program by College Factual in 2018.

Department Facts and Figures

- As the Hub of WPI Interdisciplinary Programs, department faculty work with faculty in eight other departments to offer eight computing-related degree programs in Bioinformatics & Computational Biology (BCB), Cybersecurity, Data Science, Interactive Media & Game Development (IMGD), Learning Sciences & Technologies, Neuroscience, Robotics Engineering (RBE) and Systems Engineering.

- The department has 31 tenured/tenure-track faculty (74% currently have external funding) with an additional 7 full-time teaching faculty.

- The department has over 800 undergraduate majors. Between Computer Science, IMGD, RBE and BCB there are over 1200 (over 25% of WPI) undergraduates pursuing computing-related degrees. The department has roughly 120 Computer Science graduate students and there are over 500 graduate students pursuing computing-related degrees.

- Female students represented more than 30% of first-year Computer Science majors.

Institutional News

- WPI has announced plans for the construction of a new, state-of-the-art facility, focused on the smart world, which will advance our ability to achieve interdisciplinary, translational research breakthroughs by enabling collaborative research and teaching among the computational sciences.

- For the third consecutive year, WPI has over 40% of female students in the first-year class.
Recent Hires (Tenure-Track)

Daniel Barowy (Fall 2017)
Ph.D. UMass Amherst
End-user programming, crowdsourcing, program synthesis, debugging techniques

Iris Howley (Fall 2017)
Ph.D. Carnegie Mellon
Human-Computer Interaction, technology enhanced learning environments, computer-supported collaborative learning

William Jannen (Fall 2016)
Ph.D. Stony Brook University
Design and analysis of file systems, media-specific optimizations for storage, data structures, write optimization

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

- Twelve undergraduate students and three faculty will attend the Grace Hopper Celebration of Women in Computing and the ACM Tapia Celebration of Diversity in Computing in 2019.
- 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 2020.
- The department sponsored a turbo hackathon in February, which was ambitiously organized and led by a group of majors.
- During the summer of 2019, 15 undergraduate research assistants were supervised by seven members of the CS faculty.
Whitman College
Department of Computer Science

Founded in 1882, Whitman College is a highly selective private, residential undergraduate college located in Walla Walla, Washington. The college brings together approximately 1,500 talented and creative students from diverse backgrounds, providing them a rigorous liberal arts experience within a highly supportive and collaborative community.

Computer science courses have been offered at Whitman since the 1970s. In 2014, thanks to a major gift from Microsoft and other sources, the college was able to offer additional courses in the field. In the summer of 2015, Whitman hired Janet Davis as the first Microsoft Chair of Computer Science. A computer science minor was added shortly thereafter and the new major was officially approved in fall 2016. In the 2017-18 academic year, computer science became the college's 46th major.

We are now a department!
• Computer Science separated from the department of Mathematics & Statistics as of Fall 2018.
• Find our web site at https://www.whitman.edu/academics/departments-and-programs/computer-science

We are growing!
• We had 15 computer science majors in our second graduating class (2019), 19 majors in our current capstone class (2020), and 27 declared majors intending to graduate in 2021.
• Courses at all levels are filled to near or above capacity.
• We are conducting a search this year for our first new tenure track faculty member since the major was approved.

We have impact!
• During the 2018-2019 year, our capstone teams completed technological solutions to local nonprofits and community organizations, including one awarded a Non-Profit FOSS Institute grant. This year’s capstone teams are striving for similar impact.
• Our graduates are taking positions applying their liberal arts background in startups and leading tech companies, and applying their technical skills in nonprofit sectors.
Zheng Dong develops real-time scheduling algorithms and timing validation techniques to enhance the computing capability of cyber-physical systems in data analytics, IoT, wireless sensor networks and mobile edge computing. He received his Ph.D. in 2019 from the University of Texas at Dallas.

Assistant Professor Abusayeed Saifullah received an NSF CAREER award for a technology called SNOW, a scalable LPWAN (low-power, wide-area network) over TV white spaces to support rural IoT connectivity.

Assistant Professor Zichun Zhong received an NSF CAREER award for innovation in 3D/4D anisotropy with parallel computation for applications in additive manufacturing and other processes.

Ph.D. student Tayebeh Bahreini won the 2019 National Center for Women & Information Technology (NCWIT) Collegiate Award for her edge computing research. The prize includes a $10,000 cash award and travel expenses for the annual NCWIT Summit on Women and IT.

The Department of Computer Science recently received full ABET accreditation through the Computing Accreditation Commission for its Bachelor of Science in Computer Science program.

Wayne State and the Michigan Mobility Institute are establishing the Center for Advanced Mobility in order to create a holistic curriculum focused on autonomous driving and other mobility concepts.

Assistant Professor Zichun Zhong received an NSF CAREER award for innovation in 3D/4D anisotropy with parallel computation for applications in additive manufacturing and other processes.

Ph.D. student Tayebeh Bahreini won the 2019 National Center for Women & Information Technology (NCWIT) Collegiate Award for her edge computing research. The prize includes a $10,000 cash award and travel expenses for the annual NCWIT Summit on Women and IT.

The Department of Computer Science recently received full ABET accreditation through the Computing Accreditation Commission for its Bachelor of Science in Computer Science program.

Wayne State and the Michigan Mobility Institute are establishing the Center for Advanced Mobility in order to create a holistic curriculum focused on autonomous driving and other mobility concepts.
New Faculty in 2019

**Hila Ben Abraham**
Lecturer
PhD, WashU, CSE, 2019
BS Bar Ilan University
Expertise in networking and cybersecurity

**Brian Garnett**
Lecturer
PhD, Rutgers, Math, 2016
BS WashU Math
Expertise in cryptography, probability, graph theory

**Netanel Raviv**
Assistant Professor
PhD, Technion, CS, 2017
Postdoc, Caltech, EE
Expertise in application of coding to computation, privacy and storage

Research Highlights

- Roman Garnett member of team awarded $1.8M by NSF for “Accelerating the Discovery of Electronic Materials through Human-Computer Active Search” as part of NSF program on Harnessing the Data Revolution (HDR): Institutes for Data-Intensive Research in Science and Engineering - Ideas Labs.
- Ayan Chakrabarti and Tao Ju members of awarded collaborative NSF proposal with the Danforth Plant Science Center as part of NSF's Big Ideas / Emerging Frontiers program on “Understanding Rules of Life.”
- Sanmay Das and Patrick Fowler (Brown School) receive two NSF grants, one of them from the “AI and Society” competition, to continue their work studying algorithmic allocation techniques in the context of social services provision.
- Angelina Lee receives NSF grant to study “Provably Efficient Dynamic Analysis Tools for Task Parallel Computations.”
- Roch Guerin receives Google Faculty Research Award to work on “Minimum Capacity Inter-Data Center Networks with Service Guarantees.”

Other Highlights

- Haoran Li (PhD student) and Chenyang Lu among co-authors of the paper "Holistic Resource Allocation for Multicore Real-Time Systems" selected as Best Paper at RTAS'19.
- PhD student Anthony Cabrera receives “Best Presentation” award at the OpenCL meeting for the paper "Exploring Portability and Performance of OpenCL FPGA Kernels on Intel HARPv2."
- Sanmay Das elected chair of ACM SIGAI for a three-year term starting on July 1st, 2019.
- McKelvey Hall, the new home of the CSE department, scheduled to open early 2021.

CSE by the numbers

- 39 faculty (14 professors, 5 associate professors, 11 assistant professors, 9 teaching professors)
- 19 new T/TT faculty and 8 new teaching faculty since 2013
- 103 PhD students, 190 MS students, 722 BS students (majors), 255 minors
- Close to 50% of all course units taught in the engineering school
- Close to 100% growth in enrollments over the past 5 years
- Our cohorts grow by a factor of about 5 between their first and fourth years
- Over 26% of CSE students are female and close to 14% are URM
Meet our three NEW FACULTY MEMBERS

SARRA ALQAHTANI  MINGHAN CHEN  NATALIA KHURI

Academic Highlights

- MS, BS, BA and Joint BS/MS (5 year program) degree programs
- Over 100 majors and 45 minors (juniors and seniors)
- Small class sizes
- Honors programs, study abroad, and independent study opportunities
- Opportunities for summer internships and employment

Research and Scholarship Highlights

Students at all levels regularly engage in research with faculty. Research topics include:

- Development of parallel and HPC algorithms that translate to more efficient software
  [http://users.wfu.edu/ballard/](http://users.wfu.edu/ballard/)
- Data mining with applications in bioinformatics, biomedicine, and drug discovery; Data valuation for machine learning
- Design and development of algorithms using Bayesian inference and evolutionary search techniques
  [https://sites.google.com/a/wfu.edu/david-john/](https://sites.google.com/a/wfu.edu/david-john/)
- Computer network management and computer and network security
  [http://csweb.cs.wfu.edu/~fulp/](http://csweb.cs.wfu.edu/~fulp/)
- K-mer based algorithms for protein family classification
  [http://csweb.cs.wfu.edu/~turketwh/](http://csweb.cs.wfu.edu/~turketwh/)
- Methods and algorithms for recognition and classification of human activities in fragile environments

Student Highlights

Support for conference attendance

- Grace Hopper
- WeCode
- ACM ICPC Programming and Super Computing Cluster Competitions

Student groups

- WFU Chapter of ACM - [https://sites.google.com/wfu.edu/wfu-acm/home](https://sites.google.com/wfu.edu/wfu-acm/home)
- Women in Computer Science (WICS) - [https://wics.cs.wfu.edu/](https://wics.cs.wfu.edu/)
- Student Cluster Competition Team - [http://csweb.cs.wfu.edu/scc/index.html](http://csweb.cs.wfu.edu/scc/index.html)
- Programming Competition Team - [https://cs.wfu.edu/student-life/](https://cs.wfu.edu/student-life/)
- WakeHacks - [https://sites.google.com/wfu.edu/wfu-acm/home](https://sites.google.com/wfu.edu/wfu-acm/home)
- UPE - [https://cs.wfu.edu/student-experience/upe/](https://cs.wfu.edu/student-experience/upe/)
New Initiatives

- **Amazon HQ2 decision** spurred $1.1B statewide investment in higher education focused on computer science and related disciplines. Virginia Tech’s share includes funding for major new infrastructure and significant faculty growth both in Blacksburg (doubling the size of the faculty, graduate and undergraduate programs in ten years) and the Washington, D.C., metro area (new $1B innovation campus in Alexandria, VA, graduating 500+ CS MS students and 25 CS PhD students per year in ten years).
- New $25M/annual statewide initiative, led by Virginia Tech, will support **cybersecurity** research and education.
- Partnership with block.one has catalyzed an initiative in **blockchain** research, education, and outreach.
- Searching to fill at least ten **new faculty positions** this year

Faculty, Staff, and Students

- 52 faculty: 46 tenure-track, 3 professors of practice, 2 senior instructors, 1 collegiate faculty member
- 6 research faculty, 11 affiliate faculty from other VT departments
- 16 administrative and support staff, 8 administrative and professional faculty
- New tenure-track faculty members joining in Fall 2019:
  - Dimitrios Nikolopoulos, John W. Hancock Professor of Engineering and Professor, PhD U. Patris (2000), systems
  - Hoda Eldardiry, Associate Professor, PhD Purdue (2012), ML
- Undergraduate program: 1005 majors (sophomore, junior, senior), 19% women, 303 BS degrees awarded in 18/19
- Graduate programs: 115 MS and 187 PhD students, 30% women, 55 MS and 29 PhD degrees awarded in 18/19

Research and Professional Service Highlights

- $12M in research expenditures in FY19
- NSF CAREER award: Na Meng
- DARPA Young Faculty Award: Matthew Hicks
- Best paper recognitions at CCS, FSE, INFOCOMP, IUI, SIGCSE
- Major conference leadership roles at ACSAC, HPDC, DIS, HCOMP
Programs

“Computing Fundamentals” – sequence of four online courses open to all non-CS students, without any prerequisites; students earn “Digital Tech Credential: GENERALIST” badge after completion of three courses.

Undergraduate

- BS in Computer Science – the first ABET-accredited CS program in Virginia (1986)
- Accelerated BS/MS program in Computer Science
- Post-Baccalaureate Certificate in Computer Science

Undergraduate students can specialize in Cybersecurity and in Data Science (based on 3 technical elective courses each).

Graduate

- MS in Computer Science
- Ph.D. in Engineering – Computer Science track
- Dual Ph.D. program with University of Cordoba, Spain

Graduate students can specialize in Cybersecurity or in Data Science (based on 5 graduate courses each).

- Post-Baccalaureate Graduate Certificate in Cybersecurity (based on 4 courses)
- Post-Baccalaureate Graduate Certificate in Data Science (based on 4 courses)

Key information

- 450 undergraduate students
- 64 graduate students: 33 Ph.D., 27 MS and four in Graduate Certificate programs; one doctoral NSF Graduate Research Fellow
- 19 regular and 5 teaching faculty, including one endowed chair Professor; teaching load for regular faculty is 3 courses per year
- Establishing and leading the VCU Cybersecurity Center

Research

Focus is on data science and cybersecurity, including artificial intelligence, bioinformatics, biomedical informatics, blockchain, cloud computing, computer vision, computer and network security, cryptography, cyber-physical systems, digital forensics, high-performance computing, human-machine interfaces, machine learning and quantum machine learning, mobile computing, natural language processing, robotics, network systems, data privacy and software engineering. Faculty members are funded by grants from NSF (majority; including CAREER award), NIH, DARPA, DOE, US Army and industry: Google, Microsoft, Battelle, and Hamilton Beach.

Annual events

The Department organizes three large annual events: RamHacks and Computer Science Day (each fall) and a High School Programming Contest (each spring).

Recognition

- Two Fellows of the American Institute of Medical and Biological Engineering
- One member of the European and Polish academies of sciences and arts

Start-ups

- Two faculty members co-founded a blockchain company: FRACTAL

More information about the Department can be found at [https://egr.vcu.edu/departments/computer/](https://egr.vcu.edu/departments/computer/)
7 NEW FACULTY MEMBERS

Catie Chang
Functional neuroimaging

Ipek Oguz
Medical image analysis, machine learning

Jack Noble
Medical image processing

Justus Ndukaife
Nanophotonics, novel bio-inspired soft actuators

Sandeep Neema
Embedded systems, design-space exploration

Yuankai Huo
Medical image processing, machine deep learning

Matthew Berger
Data visualization, machine learning, computer vision

RESEARCH HIGHLIGHTS

VANDERBILT TEAM WINS $750K WITH AI TO MANAGE RF SPECTRUM

Vanderbilt team MarmotE cleared Phase 2 of the U.S. Defense Advanced Research Projects Agency’s Spectrum Collaboration Challenge held in December. MarmotE was one of six teams each awarded a $750,000 prize. The Vanderbilt team, which led 10 teams in Phase 1 competition in December 2017, came in second.

IPHONE PLUS NANOSCALE POROUS SILICON EQUALS CHEAP, SIMPLE HOME DIAGNOSTICS

The simplest home medical tests might look like a deck of various silicon chips coated in special film that could detect drugs in the blood, proteins in the urine indicating infection, and bacteria in water. Add the bodily fluid you want to test, take a picture with your smart phone, and a special app lets you know if there’s a problem or not.

VANDERBILT ENGINEERS TO TRAIN NEURAL NETWORKS AND ENHANCE CHATTANOOGA TRANSIT SYSTEM

Chattanooga is the test city for a new Department of Energy-funded project that leverages the expertise of Vanderbilt engineers and widespread availability of 1-gigabyte internet connection to revolutionize energy efficiency of transit providers. Advancements in data sensors, data collection and machine learning will fuel the project, which aims to optimize schedules of bus routes, decrease stop-and-go bus driving and reduce energy consumption at a system-wide level.

FACULTY HIGHLIGHTS

MALIN ELECTED TO NATIONAL ACADEMY OF MEDICINE

Bradley Malin, professor of biomedical informatics, biostatistics and computer science, is among 85 newly elected members of the National Academy of Medicine (NAM). Drawing on methodologies from computer science, biomedical science and public policy, Malin’s research is focused on building technologies to enable data analytics and patient data privacy.

CHANG RECEIVES EARLY CAREER AWARD FOR ADVANCING FMRI DATA ANALYSIS

Catie Chang, assistant professor of computer science, electrical engineering and computer engineering, has received the 2019 Early Career Achievement Award from a society of the Institute of Electrical and Electronics Engineers. The award cites her “innovative contributions to human functional neuroimaging research that have advanced the interpretation and analysis of fMRI data.”

VISE CELEBRATES NEW HOME AND SHOWCASES TECH TO IMPROVE PATIENT CARE

The Vanderbilt Institute for Surgery and Engineering celebrated its opening of dedicated space in Medical Center North with a technology showcase of more than two dozen cross-disciplinary collaborations advancing health care techniques from the lab to patients.

ONLINE PLATFORM ASSURES CYBER-PHYSICAL SYSTEMS RESEARCH IS LEGIT, RESULTS DON’T DISAPPEAR

Vanderbilt University’s Institute for Software Integrated Systems is unveiling the latest version of this virtual repository—called the Cyber-Physical Systems Virtual Organization Portal. The National Science Foundation funded the effort with a $5.6 million, five-year grant to create a virtual home for the large cyber-physical systems research community and for research artifacts such as software, data and tools they create in their projects.

STUDENT NUMBERS AND GROWTH

<table>
<thead>
<tr>
<th>Year</th>
<th>Ph.D.</th>
<th>Master’s</th>
<th>Bachelor’s</th>
<th>Total Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>141</td>
<td>44</td>
<td>466</td>
<td>651</td>
</tr>
<tr>
<td>2018</td>
<td>153</td>
<td>57</td>
<td>535</td>
<td>745</td>
</tr>
<tr>
<td>2019</td>
<td>161</td>
<td>61</td>
<td>590</td>
<td>812</td>
</tr>
</tbody>
</table>

AVERAGE ANNUAL ENROLLMENT GROWTH OVER 3 YEARS

<table>
<thead>
<tr>
<th>Level</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ph.D.</td>
<td>10%</td>
</tr>
<tr>
<td>Master’s</td>
<td>15%</td>
</tr>
<tr>
<td>Bachelor’s</td>
<td>16%</td>
</tr>
</tbody>
</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. © 2019 Vanderbilt University. All rights reserved.
The new School for Computer, Information & Data Sciences (CDIS) launched in September 2019. Computer Sciences, Statistics, and the Information School came together to form CDIS with several goals in mind: to create more interdisciplinary research opportunities, to expand course offerings, and to lead the computing revolution across the state of Wisconsin and beyond. Learn more at http://ls.wisc.edu/areas-of-study/cdis.

Highlights of Research Initiatives

๏ Somesh Jha is on a team of computer scientists from UW-Madison and seven other universities to make up the Center for Trustworthy Machine Learning (CTML), which will work to understand the risks inherent to machine learning and develop tools, metrics, and methods to manage and mitigate these risks.

๏ UW-Madison’s Center for High Throughput Computing, part of the Dept. of Computer Sciences, was awarded a grant to develop software to process data from the High-Luminosity Large Hadron Collider.

๏ Bilge Mutlu, Michael Gleicher, and other partners from UW-Madison, in collaboration with The Boeing Company, were awarded a grant from NASA Aeronautics to design robots that can collaborate with humans to improve manufacturing processes that piece together a Boeing airliner.

Faculty Award Highlights

๏ Mark Hill honored with Eckert-Mauchly Award
๏ Mary Vernon awarded ACM SIGMETRICS Achievement Award
๏ Paul Barford & Stephen Wright received IEEE INFOCOM Test of Time Paper Award
๏ Suman Banerjee recognized by ACM for Outstanding Scientific Contribution to Computing and named Distinguished Member of ACM
๏ Andrea Arpaci-Dusseau & Remzi Arpaci-Dusseau earned ACM SIGOPS Mark Weiser Award

Teaching

๏ CS is the largest major on the UW-Madison campus (counting both undergraduate and graduate students).

๏ The Computer Sciences Learning Center is served by trained students who have completed CS 502, “Theory and Practice in Computer Science Education.”

Rankings (from CSrankings.com)

#1 in Logic and Verification, #4 in Computer Architecture, #4 in Databases, #4 in Operating Systems, #5 in Programming Languages, #5 in Measurement & Performance Analysis, #8 in Computer Networks, #9 in Mobile Computing, #12 in Machine Learning & Data Mining, #21 Human-Computer Interaction, #22 Computer Graphics
EXPANDING EXPERTISE

5 outstanding new faculty hires this year:

- Byron Boots
  Robotics & Machine Learning

- Kevin Lin
  Computer Science Education

- Jamie Morgenstern
  Machine Learning

- Alex Ratner
  Machine Learning & Data Science

- Amy Zhang
  Human-Computer Interaction

EXPANDING RECOGNITION

ACM Prize in Computing:
  Shwetak Patel

Harrold & Notkin Research & Graduate Mentoring Award:
  Richard Ladner

IJCAI John McCarthy Award:
  Pedro Domingos

NSF Graduate Research Fellowships:
  Christine Chen: Privacy & Security
  Benjamin Lee: Artificial Intelligence
  Nelson Liu: Natural Language Processing
  Sheril Nyaz: Robotics
  Nicholas Nuechterlein: Machine Learning
  Ewin Tang: Theoretical Computer Science
  Matthew Whitehill: Ubiquitous Computing
  Erin Wilson: Computational Biology

EXPANDING REACH

Graduating Ph.D.s who accepted faculty positions:
  James Bornholt: University of Texas at Austin
  Tianqi Chen: Carnegie Mellon University
  Eunsol Choi: University of Texas at Austin
  Jialin Li: National University of Singapore
  Dominik Moritz: Carnegie Mellon University
  Rajalakshmi Nandakumar: Cornell University
  Pavel Panchekha: University of Utah
  Aditya Vashistha: Cornell University
  Doug Woos: Brown University
  Mark Yatskar: University of Pennsylvania
  Danyang Zhuo: Duke University

EXPANDING IMPACT

Fighting fake news in the age of AI

A team of researchers at the Allen School and the Allen Institute for Artificial Intelligence developed Grover, a model for detecting machine-generated fake news with 92% accuracy, as featured in The New York Times.

An app that detects opioid overdose

Partnering with UW Medicine, Allen School researchers developed SecondChance, a contactless mobile app that detects signs of overdose to enable early intervention and save lives, as seen in Science Translational Medicine.

An autonomous robotic feeding system

Researchers in the Allen School’s Personal Robotics Lab developed the Assistive Dextrous Arm (ADA) robot-assisted feeding system for people with mobility impairments, which earned the Best Demo Award at NeurIPS 2018.

Magdalena Balazinska appointed Director of the Allen School

Balazinska, co-leader of the school’s Databases and Data Science groups, will succeed Hank Levy in January 2020.

Bill & Melinda Gates Center for Computer Science & Engineering doubles our space

Did you know...?

The Paul G. Allen School recently awarded our 5,000th bachelor’s degree.

We granted over 1/4 of those degrees in the last 5 years.

www.cs.washington.edu
ACCOLADES

Anind K. Dey was honored with a 20-year Impact Award at ISWC 2019 for his work on wearable technologies.

Professors Batya Friedman and Jacob O. Wobbrock were inducted into the CHI Academy, the top honor in human-computer interaction research. They join Dr. Dey as UW iSchool faculty who have received this prestigious award.

Jacob O. Wobbrock earned the SIGACCESS ASSETS Lasting Impact Award as co-author of Slide Rule: Making mobile touch screens accessible to blind people using multi-touch interaction techniques.

Assistant Professor Alexis Hiniker earned a Best Paper Award at CHI 2019 for her work describing a method to improve data-gathering from audio recordings. Overall, iSchool faculty and students were lead authors on 17 papers accepted to the leading conference on human-computer interaction.

Professor Wanda Pratt and alumnus Pedja Klasnja were honored in the 50th anniversary issue of the Journal of Biomedical and Health Informatics, which listed papers that have had a particularly important role in advancing the field of biomedical informatics.

9 iSchool students were named among the 2019 Husky 100, which honors those who are making the most of their UW experience, making an impact inside and outside the classroom.

NEWS & IMPACT

iSchool data-science research, led by Lecturer Ott Toomet and Associate Professor Bill Howe, was widely credited for a change in Washington state eviction law, giving tenants more time to respond to notices. The law will help prevent homelessness.

Associate Professor Hala Annabi released the Autism @ Work Playbook, a product of research into how to make workplaces in the tech sector more inclusive.


Associate Professor Amy J. Ko worked with policymakers to shape a bill in the state Legislature mandating access to computer education in high schools. The bill was signed into law in April 2019.

Assistant Professor Alexis Hiniker’s research on smartphone use was covered by numerous major news outlets. Hiniker looked into the triggers for compulsive phone use and how to eliminate their causes.

Associate Professor Jevin West’s website WhichFacetsReal.com went viral and earned widespread media attention. The website educates users about the effectiveness of “deepfakes” and methods to spot them.

BY THE NUMBERS

Ph.D.: 59

PROGRAM ENROLLMENT: 1,128

INFORMATICS MAJOR: 512

MLIS: 346

MSIM: 211

FACULTY COUNT

2007 2010 2013 2016 2019

34 39 41 52 63

LEADING-EDGE RESEARCH

$4,356,893 in research funding for fiscal 2019.

$5,600,000 in initial funding has been pledged from the Knight Foundation and Hewlett Foundation to launch the Center for an Informed Public, an interdisciplinary research unit that seeks to understand and defend against misinformation.

DIVERSITY IN TECH

39% of Informatics students identify as female, helping to close the gender gap in STEM fields.
Putting people first, we research, design, and engineer interactions between humans and technology.

**WHO WE ARE**

Students and faculty in Human Centered Design & Engineering (HCDE) at the University of Washington design solutions to global challenges by tailoring technology to human needs and interests. By employing research methods rooted in a broad range of disciplines, we investigate the interaction of people with technology and technical development.

**STUDENT ENROLLMENT**

Undergraduate: 171  Certificate: 32
Master’s: 289  PhD: 52

**CORE FACULTY**

Professors: 8  Assistant Professors: 1
Associate Professors: 7  Career Lecturers: 7

**WOMEN IN HCDE**

- BS: 66%  20%  62%
- MS: 24%  59%  23%
- PHD: 16%  63%

**RESEARCH AWARDS  FY 2019**

Awards Funded: 20  Total Awarded Amount: $2.6M+

**2019 FACULTY & STUDENT HIGHLIGHTS**

In September, HCDE Professor Julie Kientz assumed the role of Interim Department Chair, succeeding Dr. David McDonald, who completed his 5-year term as Chair and returned to the faculty as a Professor.

HCDE Associate Professor Kate Starbird is a founding Principal Investigator on the new Center for an Informed Public, a cross-campus initiative aimed at fighting the spread of misinformation and disinformation in online systems.

HCDE PhD student John Porter was named to the MIT Technology Review 35 Innovators Under 35, for his work on investigating accessibility in video game design.

HCDE Professor Cecilia Aragon co-authored “Writers in the Secret Garden,” a new book that explores how young people support and learn from each other through participation in online fanfiction communities.

Lecturers Brock Craft and Tyler Fox led a London Study Abroad program for undergraduate and graduate students focused on exploring urban resilience and sustainable design in the context of a large-scale urban environment.

HCDE PhD student Os Keyes was named to the inaugural Ada Lovelace Fellowship program from Microsoft Research, to support Keyes’ research aimed at combatting bias in facial recognition systems.

HCDE’s K-12 outreach program, directed by Lecturer Andrew Davidson, continues to expand, reaching hundreds of middle- and high school students throughout the state of Washington annually.

HCDE PhD student Wendy Roldan received the prestigious NSF Graduate Research Fellowship Program award to support her research on improving makerspaces for women.

HCDE Professor Mark Haselkorn is leading a group of six agencies to design and implement a regional strategy for enhancing mobility when a major incident drastically reduces capacity along the Seattle I-5 corridor.
UNIVERSITY OF VIRGINIA  COMPUTER SCIENCE
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.

NEW TENURED OR TENURE-TRACK FACULTY SINCE 2012-2013:

108% INCREASE IN UNDERGRADUATE DEGREES AWARDED, 2014-2019:

254

261% GRADUATE PROGRAM GROWTH, 2014-2019:

119% GROWTH IN RESEARCH EXPENDITURES FY 2014-FY2019

RESEARCH FOCUS AREAS:

- CYBER-PHYSICAL SYSTEMS
- ARTIFICIAL INTELLIGENCE
- CYBERSECURITY
- SOFTWARE ENGINEERING
- HUMAN-COMPUTER INTERACTION
- COMPUTER SYSTEMS
- THEORY

FY 2014-FY2019

RESEARCH FOCUS AREAS:

Department of Computer Science
Our strategic growth is firmly grounded in expanding transdisciplinary research, utilizing enhanced active learning classrooms, and advancing faculty excellence.

2019 Highlights

Recent significant grants through the Computer Security and Privacy Interdisciplinary Research Group:

- NSF grant "SHF: Medium: Collaborative Research: Synthesizing Verified Analyzers for Critical Software"
- IARPA HECTOR grant "The PANTHEON Platform for Secure Computation"

Implementation of a groundbreaking research opportunity through The Threat Stack Cybersecurity Fellowship, which will allow scholars to apply cutting-edge research expertise to real-world problems in partnership with a fast-growing cloud cybersecurity company.

Host of the NetSci 2019 conference, uniting leading researchers and practitioners and encouraging collaboration across computer and information sciences; physics, mathematics, statistics, the life sciences, neuroscience, environmental sciences, social sciences, finance, and business, arts and design.

Learn more about our incredibly diverse and richly talented faculty, undergraduate, and graduate student cohorts at uvm.edu/cems/cs.
New Faculty

Qingyao Ai  
Assistant Professor  
Information retrieval, machine learning

Swaroop Joshi  
Assistant Professor, Lecturer  
Programming languages and computing education

Marina Kogan  
Assistant Professor  
Crisis informatics, social computing, network science

Pavel Panchekha  
Assistant Professor  
Programming languages

P. (Saday) Sadayappan  
Professor  
Compiler optimization; High-performance computing

Blair Sullivan  
Associate Professor  
Data-driven graph algorithms; parameterized complexity

Alan Kuntz  
Assistant Professor  
Robotics

Mu Zhang  
Assistant Professor  
Computer security

Highlights

The School of Computing celebrated the 50th anniversary of the University of Utah’s involvement in the birth of the internet. In 1969 the University of Utah became the 4th node of the ARPANET. [www.cs.utah.edu/arpanet50](http://www.cs.utah.edu/arpanet50)

School of Computing establishes **Women in Computing (WIC)**, a student-led organization to create an environment that will increase community and pathways to success for female students.

**Weerahannadige Milinda Shayamal Fernando**, a PhD student received the 2019 ACM/IEEE-CS George Michael Memorial HPC Fellowship.

In Fall 2019 the School of Computing launched a **new undergraduate BS degree in Data Science**, one of the first and most comprehensive in the Mountain West. This program prepares individuals in core computer science and software engineering, and trains them in fundamentals of data analysis and processing to effectively, efficiently, and ethically make decisions based on the information from various data sources. Graduates will fill a growing demand for data scientists nationally, and particularly in the growing tech center in the greater Salt Lake valley.

[www.cs.utah.edu](http://www.cs.utah.edu)
Faculty

33 tenure-track, 19 teaching faculty members

Since 2006, current and former faculty members received: 7 NSF CAREER, 1 AFOSR YIP, and 2 NSF CRII awards. 3 faculty members are IEEE fellows.

**1 Assistant Professor hired in 2019**

Cesar Torres  
Ph.D. : University of California, Berkeley  
Human computer interaction, computer vision and multimedia, machine learning and data mining

Achievements & Research Highlights

Over $6M research expenditure in 2019 up from $5.4M in 2018 and $4.7M in 2017

Selected grants since Sept. 1, 2018

- **$1.2M**  
  DoED GAANN, increasing doctoral fellowships for designing assistive technologies, Ishfaq Ahmad

- **$1M**  
  NSF, creating a credible open knowledge network for fact-checking, Chengkai Li

- **$175K**  
  NSF CRII Award, fighting malware via computer hardware, Jiang Ming

- **$585K**  
  NIST, security testing of blockchains and IoT systems, Jeff Lei (in collaboration with SBA Research inc.)

- **$250K**  
  NSF, improving key aspects of network performance within commodity operating systems, Jia Rao

- **$498K**  
  NSF CAREER Award, redesigning abstractions in virtualized systems to improve efficiency, Jia Rao

- **$250K**  
  NSF, fuzzing cyber-physical system development tool chains with deep learning (DeepFuzz-CPS), Christoph Csallner

Students & Enrollment

Fall 2019  
2626 STUDENTS

- 1647 Bachelor’s
- 835 Master’s
- 144 Ph.D.

16.7% increase from Fall 2018

Ph.D. graduates who secured tenure-track positions in 2019

Abolfazl Asudeh  
Naeemul Hassan  
University of Illinois at Chicago  
University of Maryland, College Park

Senior Design industry sponsorship program

30+ sponsored projects and over $130,000 in pledged funding since Spring 2016. An additional $15,000 pledged for Spring 2020.

Grants support efforts to encourage women in computing

Drs. Chengkai Li, Ming Li, Shirin Nilizadeh, and Carter Tiernan will be hosting the Student Computing Research Festival (funded by NCWIT and Microsoft Research) and OurCS@DFW, a computing research weekend (funded by Google) for women students in February 2020.

cse.uta.edu  
@cseuta  
@cseutarlington  
linkedin.com/school/cseuta/
The Computer Science Department at UT Dallas is one of the largest in the US with approximately 4,600 students and a distinguished faculty that has won numerous awards.

Research Highlights
- Six broad areas of research: AI, Cyber Security, Networks, Systems, Theory, Software Engineering.
- Approximately over $45 Million total external funding over the last 5 years.
- Faculty includes 13 NSF CAREER Award Winners.
- CS Faculty direct 4 research institutes, 6 research centers, and one education/outreach center.
- Prof. Tien Nguyen won his 4th ACM SIGSOFT Distinguished Paper award in Software Engineering.
- Prof. Andi Marcus won his 4th Most Influential Paper award in the area of Software Engineering.
- Prof. Murat Kantarcioglu received the Technical Achievement Award in Intelligence & Security Informatics (ISI) from the Institute of Electrical and Electronics Engineers (IEEE).
- Prof. B. Prabhakaran’s NSF funded project on 3D Immersive Tele-Rehabilitation was chosen by the NSF as one of eight to showcase to US Congressmen & Senators at Capitol Hill.
- Prof. Zygmunt Haas’ paper among the top 10 most cited papers in networks on Google Scholar.
- Prof. Gopal Gupta won the 10-year Test of Time Award for his work on coinduction in logic.
- Prof. Hal Sudborough’s Paper from 1980 given WG Conference the Test of Time Award.
- Prof. Murat Kantarcioglu’s Paper from 2009 given the ACM SACMAT Test of Time Award.
- Prof Latifur Khan Awarded the IEEE Big Data Security Senior Research Award.
- Prof. Bhavani Thuraisingham named a fellow of the Association for Computing Machinery (ACM) and the National Academy of Inventors (NAI).
- CS Dept. ranked #8 in NLP, and #6 in Software Engineering at CSrankings.org (’09~’19 period).

Student Numbers/Growth/Education Highlights
- Approximately 4,600 total students (3,315 Undergraduates, 1,110 Master’s Students, 165 PhDs).
- Awarded approximately 390 Bachelors, 450 Masters, and 23 PhDs degrees in 2017-18.
- 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.
- Ranked #21 in 2014 LinkedIn’s ranking of “Best Universities for Software Developers.”
- Nearly 80 teams completed industry-sponsored senior-design, capstone projects.
- Platinum sponsor of Grace Hopper Conference; sent 30 Students to GHC 2018.
- 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.

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.
- Center for Women in Cyber Security recently founded by Dr. Bhavani Thuraisingham.
FACULTY
89 faculty members
38 tenure-track
32 research faculty
19 teaching faculty

STUDENTS
4,075 students
321 PhD
2,475 master’s
1,279 undergraduate

FACULTY DISTINCTIONS
Okawa Foundation Research Grant Award  —  Bistra Dilkina
USC Distinguished Professor  —  Maja Mataric
Google AI Faculty Research Award
  —  Cyrus Shahabi and Xiang Ren
  —  Shrikanth Narayanan
AIMBE Fellow
Herbert A. Simon Prize for Advances in Cognitive Systems  —  Paul Rosenbloom
Academy of Motion Pictures, Arts and Sciences  —  Paul Debevec
  —  Michael Zyda
IEEE Fellow
New Voices of National Academies of Science, Engineering and Medicine  —  Yan Liu

ACADEMY MEMBERS & SOCIETY FELLOWS
1 Turing Award Winner
5 NAE
2 NAS
8 ACM
15 IEEE
35 additional society members, including AAAI and AAAS

ADDITIONAL HIGHLIGHTS
USC’s online computer science graduate program was ranked No.1 according to US News and World Report 2019, for the seventh consecutive year
42 percent of entering fall 2019 computer science freshmen are women
The USC Games program is recognized as one of the top game design programs in North America by the Princeton Review
The USC Computer Science (CS) Department Industry Affiliate Program (IAP) launched in fall 2018, with current members including Google, Microsoft, Lyft, DiDi and Facebook

NEW FACULTY, RECRUITED 2018-2019

Assistant Professor
Mukund Raghothaman
PhD: University of Pennsylvania
Programming languages, software engineering, program synthesis, software verification, probabilistic methods in static analysis, automated reasoning

Research Assistant Prof.
Fred Morstatter
PhD: Arizona State University
Social network analysis, data mining, machine learning, artificial intelligence

Research Assistant Prof.
Mohammad Soleymani
PhD: University of Geneva
Affective computing, multimodal machine learning, computational mental health assessment, interactive virtual agents

Assoc Prof. of Practice
Wei-Min Shen
PhD: Carnegie Mellon University
Self-reconfigurable and metamorphic robots, surprise-based machine learning, artificial intelligence, autonomous systems, life sciences

Lecturer
Mohammad Reza Rajati
PhD: University of Southern California
Machine learning, natural language processing, data mining, artificial intelligence and multiagent systems

GRAFT HIGHLIGHTS
Jyotirmoy Deshmukh, FMIF: A Novel Framework for Learning Formal Abstractions and Causal Relations from Temporal Behaviors, US-National Science Foundation: $1,000,000
Ramesh Govindan, CNS Core: Large: Collaborative Research: Network Design Automation, US-National Science Foundation: $1,000,000
David Kempe, Multi-Scale Network Games of Collusion and Competition, Regents of the University of Michigan: $1,158,953
Bistra Dilkina, CRISP Type 1/Collaborative Research: Sustainable and Resilient Design of Interdependent Water and Energy Systems at the Infrastructure-Human-Resource Nexus, US-National Science Foundation: $210,417

STUDENT DISTINCTIONS
Undergraduate student Zane Durante received the Goldwater Scholarship (2019-2020), the nation’s preeminent scholarship for undergraduates in mathematics, natural sciences or engineering
For the second year in a row, a team of computer science students placed first in the regional contest of the “Olympics of Computer Programming,” the International Collegiate Programming Contest
PhD student Hung Hsu was named an Amazon Alexa Graduate Fellow, awarded to only 10 doctoral students from universities around the world
The University of South Florida (USF) CSE has 28 tenure-stream faculty and 12 full-time instructors. Faculty members are currently executing $9.6 million in active external research grants from NSF, DoD, NIH, NIST, industry and state sources. Twelve CSE faculty members are NSF CAREER awardees. Fellows include 6 IEEE, 4 AAAS, 1 NAI, 3 AIMBE and 3 IAPR.

USF CSE is in the top sixth (rank 29) of computer science departments at U.S. public universities, according to Academic Analytics (2017) data based on Scholarly Research Index.*  
*uses default weights for grants, articles, conferences, awards, and citations.

In 2018, the Florida Board of Governors designated USF Tampa as a Preeminent State Research University, placing USF in the most elite category among the state's 12 public universities.

In 2018-19, 8% of BS were awarded to black students and 17.4% awarded to Hispanic students, more than double the national average for computer science. In academic year 2018-19, 16.2% of BS degrees were awarded to women students. This is below the national average of 21.2%, but our percentage has increased significantly in the past five years.

USF CSE launches Broadening Participation in Computing initiative with help from NCWIT to determine the best ways for increasing the number of women in computer science and engineering.

USF CSE Computing Partners Program commences to strengthen the connection of industry with students.

USF Institute for Artificial Intelligence (AI+X) approved by the Florida Board of Governors.

In academic year 2018-19, 8% of BS were awarded to black students and 17.4% awarded to Hispanic students, more than double the national average for computer science.

In academic year 2018-19, 16.2% of BS degrees were awarded to women students. This is below the national average of 21.2%, but our percentage has increased significantly in the past five years.

USF CSE launches Broadening Participation in Computing initiative with help from NCWIT to determine the best ways for increasing the number of women in computer science and engineering.

USF CSE Computing Partners Program commences to strengthen the connection of industry with students.

USF CSE is in the top sixth (rank 29) of computer science departments at U.S. public universities, according to Academic Analytics (2017) data based on Scholarly Research Index.*  
*uses default weights for grants, articles, conferences, awards, and citations.

In 2018, the Florida Board of Governors designated USF Tampa as a Preeminent State Research University, placing USF in the most elite category among the state's 12 public universities.

USF CSE launches Broadening Participation in Computing initiative with help from NCWIT to determine the best ways for increasing the number of women in computer science and engineering.

USF CSE Computing Partners Program commences to strengthen the connection of industry with students.

USF Institute for Artificial Intelligence (AI+X) approved by the Florida Board of Governors.

In academic year 2018-19, 8% of BS were awarded to black students and 17.4% awarded to Hispanic students, more than double the national average for computer science.

In academic year 2018-19, 16.2% of BS degrees were awarded to women students. This is below the national average of 21.2%, but our percentage has increased significantly in the past five years.

USF CSE launches Broadening Participation in Computing initiative with help from NCWIT to determine the best ways for increasing the number of women in computer science and engineering.

USF CSE Computing Partners Program commences to strengthen the connection of industry with students.

USF Institute for Artificial Intelligence (AI+X) approved by the Florida Board of Governors.

In academic year 2018-19, 8% of BS were awarded to black students and 17.4% awarded to Hispanic students, more than double the national average for computer science.

In academic year 2018-19, 16.2% of BS degrees were awarded to women students. This is below the national average of 21.2%, but our percentage has increased significantly in the past five years.

USF CSE launches Broadening Participation in Computing initiative with help from NCWIT to determine the best ways for increasing the number of women in computer science and engineering.

USF CSE Computing Partners Program commences to strengthen the connection of industry with students.

USF Institute for Artificial Intelligence (AI+X) approved by the Florida Board of Governors.

In academic year 2018-19, 8% of BS were awarded to black students and 17.4% awarded to Hispanic students, more than double the national average for computer science.

In academic year 2018-19, 16.2% of BS degrees were awarded to women students. This is below the national average of 21.2%, but our percentage has increased significantly in the past five years.

USF CSE launches Broadening Participation in Computing initiative with help from NCWIT to determine the best ways for increasing the number of women in computer science and engineering.

USF CSE Computing Partners Program commences to strengthen the connection of industry with students.

USF Institute for Artificial Intelligence (AI+X) approved by the Florida Board of Governors.

In academic year 2018-19, 8% of BS were awarded to black students and 17.4% awarded to Hispanic students, more than double the national average for computer science.

In academic year 2018-19, 16.2% of BS degrees were awarded to women students. This is below the national average of 21.2%, but our percentage has increased significantly in the past five years.

USF CSE launches Broadening Participation in Computing initiative with help from NCWIT to determine the best ways for increasing the number of women in computer science and engineering.

USF CSE Computing Partners Program commences to strengthen the connection of industry with students.

USF Institute for Artificial Intelligence (AI+X) approved by the Florida Board of Governors.

In academic year 2018-19, 8% of BS were awarded to black students and 17.4% awarded to Hispanic students, more than double the national average for computer science.

In academic year 2018-19, 16.2% of BS degrees were awarded to women students. This is below the national average of 21.2%, but our percentage has increased significantly in the past five years.

USF CSE launches Broadening Participation in Computing initiative with help from NCWIT to determine the best ways for increasing the number of women in computer science and engineering.

USF CSE Computing Partners Program commences to strengthen the connection of industry with students.

USF Institute for Artificial Intelligence (AI+X) approved by the Florida Board of Governors.

In academic year 2018-19, 8% of BS were awarded to black students and 17.4% awarded to Hispanic students, more than double the national average for computer science.

In academic year 2018-19, 16.2% of BS degrees were awarded to women students. This is below the national average of 21.2%, but our percentage has increased significantly in the past five years.

USF CSE launches Broadening Participation in Computing initiative with help from NCWIT to determine the best ways for increasing the number of women in computer science and engineering.

USF CSE Computing Partners Program commences to strengthen the connection of industry with students.

USF Institute for Artificial Intelligence (AI+X) approved by the Florida Board of Governors.

In academic year 2018-19, 8% of BS were awarded to black students and 17.4% awarded to Hispanic students, more than double the national average for computer science.

In academic year 2018-19, 16.2% of BS degrees were awarded to women students. This is below the national average of 21.2%, but our percentage has increased significantly in the past five years.

USF CSE launches Broadening Participation in Computing initiative with help from NCWIT to determine the best ways for increasing the number of women in computer science and engineering.

USF CSE Computing Partners Program commences to strengthen the connection of industry with students.
DEPARTMENT SUMMARY

- 23 tenured and tenure-track faculty (10 are NSF CAREER Award winners); 8 instructors
- Focal Research Areas: artificial intelligence, bioinformatics, computer architecture, computer vision, cyber security, data science, machine learning, mobile computing, robotics, software engineering, and wireless networking
- Faculty and student research is funded currently by NSF, ONR, NIH, DoE, IARPA, SRNL and AFRL, as well as several corporations and South Carolina agencies.
- CSE is an NSF Research Experiences for Undergraduates (REU) site in Computational Robotics. reu.cse.sc.edu
- CSE is one of 15 BRAID (Building, Recruiting, and Inclusion for Diversity) Initiative Institutions anitab.org/braid-building-recruiting-and-inclusion-for-diversity

UNDERGRADUATE PROGRAMS

cse.sc.edu/undergraduate

- Majors (939 students): Computer Engineering (187), Computer Information Systems (161), Computer Science (591)
- Minors: Data Science; Computer Science; Applied Computing
- Cyber Security Specialization in Information Assurance

GRADUATE PROGRAMS

cse.sc.edu/graduate

- Total Enrollment = 168; M.S. and Ph.D. in Computer Science, M.S. and Ph.D. in Computer Engineering, Certificate in Cyber Security Studies

STUDENT HIGHLIGHTS

- Over 100 CSE students have attended the Grace Hopper Celebration of Women in Computing over the last 5 years.
- 166 CSE seniors formed 34 teams to complete senior design capstone projects: capstone.cse.sc.edu

OTHER HIGHLIGHTS

- CSE opened a new Computer Engineering Lab in spring 2019 to support new, interactive courses in embedded systems and the Internet-of-Things.

NEW FACULTY HIRES

Amit Sheth
Professor
AI, Knowledge-enabled Computing, Big Data and Computing for Human Experience

Ramtin Zand
Assistant Professor
Hardware Design for Machine Learning Systems, Neuromorphic Computing, Emerging Nanoscale Electronics

Casey Cole
Instructor

William Hoskins
Instructor

NEW AI INSTITUTE

The institute, created under the recent excellence initiative, is led by Amit Sheth. With a proven funding record (> $35 million), Sheth has created world-class research centers and launched three companies by licensing his university-developed technologies.

The institute will collaborate with 10 colleges and several major centers and active research groups across the university. Each partner group has identified cases involving a significant big data challenge that needs to be solved with AI techniques. Illustrative examples of collaborations initiated by the AI Institute and include:

- **College of Pharmacy** (incl. SC Colon Cancer Prevention Network): early onset of colorectal cancer
- **College of Arts and Sciences**: recovery and resilience from natural disasters (with Hazards and Vulnerability Research Institute), misinformation and radicalization (with Institute of Mind and Brain)
- **School of Journalism and Mass Communications**: social media insights and harassment of journalists (with Social Media Insights Lab)
- **College of Education**: using chatbots (virtual agents) for the health of school children through nutrition monitoring and guidance
- **School of Medicine and College of Nursing**: personalized digital health (asthma and obesity in children and adults)
- **Arnold School of Public Health**: brain imaging (with Aging Brain Cohort and Aphasia Laboratory), identification and management of mental health including depression and suicide ideation
Recent Hires

Zhen Bai
Human-Computer Interaction
PhD, University of Cambridge
Postdoctorate, CMU

Fatemeh Nargesian
Data Management
PhD, University of Toronto

Sreepathi Pai
Heterogeneous Systems
PhD, IISc
Postdoctorate, UT Austin

Yuhao Zhu
Energy-Efficient Systems
PhD, UT Austin

Faculty Highlights

2019
- Jiebo Luo named an AAAI Fellow.
- Zhen Bai and Ted Pawlicki receive Sykes awards for new courses in AR/VR Interaction Design and Quantum Computing, respectively.
- George Ferguson named Engineering Professor of the Year at UR Students' Association Awards.

2018
- Ehsan Hoque receives NSF CAREER Award and the Early Career Award for Scientists and Engineers (ECASE--ARMY).
- Henry Kautz named NSF Division Director for Information and Intelligent Systems. He also receives the 2018 ACM--AAAI Allen Newell Award.
- Jiebo Luo receives the IEEE Region 1 Technological Innovation (Academic) Award for contributions in computer vision and data mining.
- Yuhao Zhu receives Honorable Mention in the SIGARCH/TCCA Outstanding Dissertation Award Competition.
- Sandhya Dwarkadas, Wendi Heinzelman, and Jiebo Luo named ACM Fellows.
- Michael Scott receives Hajim School Lifetime Achievement Award.

Undergraduate and Graduate Highlights

2019
- Louis Jenkins awarded Department of Energy Computational Science Graduate Fellowship.
- Sam Lerman receives Honorable Mention in NSF GRFP Competition.
- Samuel Triest '20 wins Gold Medal in ACM SRC.
- Jackson Abascal '19 and Quyue Sun '20 win CRA Outstanding Graduate Researcher Awards.

2018
- Zhengyuang Yang wins the 2018 ICPR Best Industry Related Paper Award.
- BRAID funding extended through 2019.
- Vivian Li wins honorable mention in the CRA Outstanding Undergraduate Researcher competition.
- Gene Kim was selected to attend the Heidelberg Laureate Forum.
## By the Numbers

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduate Students</td>
<td>1,152</td>
</tr>
<tr>
<td>Master's Students</td>
<td>432</td>
</tr>
<tr>
<td>PhD Students</td>
<td>149</td>
</tr>
<tr>
<td>Tenure and Non-tenure faculty</td>
<td>65</td>
</tr>
</tbody>
</table>

## New Faculty Hires
- Wonsun Ahn, *Visiting Lecturer*
- Katharine Anderson, *Visiting Assistant Professor*
- Amy Babay, *Assistant Professor*
- Jacob Biehl, *Associate Professor*
- Kayla Booth, *Research Assistant Professor*
- Seong Jae Hwang, *Assistant Professor*
- Stephen Lee, *Assistant Professor*
- Eleanor Mattern, *Teaching Assistant Professor*
- Luis de Oliveira, *Visiting Lecturer*
- Vinicius Petrucci, *Lecturer*
- Song Shi, *Visiting Assistant Professor*
- Xulong Tang, *Assistant Professor*
- Lingfei Wu, *Assistant Professor*
- Joseph Yurko, *Teaching Assistant Professor*

## MLIS Redesign
With the ever-changing roles of information professionals, our faculty undertook a redesign of the ALA-accredited Master of Library and Information Science (MLIS) program to better prepare the next generation of creative and entrepreneurial information professionals to make a difference in the communities they serve and pursue fulfilling and intellectually challenging careers. The first cohort of students entered the program in Fall 2019.

## New Undergraduate Majors

### Computational Biology
Offered jointly with the Department of Biological Science, the Computational Biology major will prepare students to understand the core principles, models, and theories in both biology and computer science and allow them to strategically solve key problems within the field.

### Digital Narrative and Interactive Design
Offered jointly with the Department of English, the Digital Narrative and Interactive Design major will teach students how to build interactive narrative systems such as games, interactive literature, virtual reality environments, and other interactive types of media.

## 4-Year Undergraduate Program
SCI welcomed its inaugural class of first-year students in Fall 2019. As part of our undergraduate curriculum, students will be exposed to big ideas in computing and information that will allow them make connections and move seamlessly between disciplines.

## Highlights
- Kayla Booth, research assistant professor and director of the iSchool Inclusion Institute (I3), received funding from the Andrew W. Mellon Foundation to continue funding the program through 2022.
- Panos Chrysanthis, professor, received the Outstanding Achievement in Education award from the University of Massachusetts at Amherst as part of their Outstanding Achievement and Advocacy award program.
- Diane Litman, professor, and Yu-Ru Lin, associate professor, were featured in SAGE Ocean’s list of 39 *Woman Doing Amazing Research in Computational Social Science*.
- Late professor Janyce Wiebe was honored with the Test of Time award from the Association for Computational Linguistics.
- Nicholas Farnan, lecturer, Bill Garrison, lecturer, and Dmitriy Babichenko, clinical assistant professor, received Innovation in Education Award grants from the Provost’s Advisory Council on Educational Excellence.
- Peter Brusilovsky, professor, won AMiner’s Most Influential Scholar award.
Penn is the birthplace of the modern computer, the ENIAC. Our Computer and Information Science Department, in the center of a vibrant Ivy League campus.

The CIS Department has strong collaborations with Penn’s nearby Wharton School of Business, Perelman School of Medicine, Annenberg School of Communication, School of Law, Graduate School of Education, School of Social Policy and Practice, and School of Arts and Sciences.

**Faculty:**
- 34 tenure-track + 3 hires starting in 2020
- 11 teaching-track
- 4 research-track

**Students:**
- 161 PhD
- 646 Master’s (5 degree programs)
- 1004 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 Faculty Members, 2019-20**
- **Dinesh Jayaraman**, Assistant Professor (Jan 20). PhD, 2017, UT-Austin. Computer vision, robotics, machine learning, computational photography.
- **Tal Rabin**, Professor (July 20). PhD, 1994, Hebrew University. Cryptography, secure multiparty communication, threshold cryptography, proactive security.
- **Mark Yatskar**, Assistant Professor (July 20). PhD, 2017, U Washington. Natural language processing, computer vision, fairness.

**Online Education Initiatives**
The Penn Computer and Information Technology degree, targeted at individuals in the workforce who have quantitative skills but do not have formal training in computer science. Approximately one year in, the program has enrolled 490 students.

**Faculty and Student Highlights**
- Sanjeev Khanna and Andre DeHon were named ACM Fellows.
- Linh Thi Xuan Phan was promoted to Associate Professor with tenure.
- Vincent Liu received an NSF CAREER Award.
- Andreas Haeberlen and Chris Murphy won university awards for teaching excellence.
- Michael Kearns and Aaron Roth’s book *The Ethical Algorithm* was published.
About Norman
Reasonable cost of living. Part of this is the very reasonable housing expenses. Rents for a one bedroom apartment begin around $500, and a variety of units are within walking distance to campus.

Championship sports teams. OU football, seven national championships and seven Heisman Trophy winners, and the Oklahoma City Thunder major league basketball team.


Amy McGovern
Professor, School of Computer Science
Adjunct Professor, School of Meteorology

Amy McGovern’s research focuses on machine learning methods and applications with a focus on severe weather. She also works with dones and K-12 outreach to interest more students in computer science.

McGovern’s research in meteorology has demonstrated that machine learning can be used to improve predictions of severe weather, thus saving lives and property.

Christian Grant
Assistant Professor, School of Computer Science
Assistant Professor, Data Science and Analytics Program

Grant and colleagues develop systems for analyzing data, interactive machine learning, and privacy.

Grant’s collaborations with colleagues in political science and epidemiology have been funded by Robert Wood Johnson Foundation, United States Department of Agriculture, National Science Foundation and others. Grant recently developed one of the most extensive multilingual, political event data sets between 1970 and 2015 (terrierdata.org).

Dimitrios Diochnos
Assistant Professor, School of Computer Science

Works in artificial intelligence and focuses on machine learning with provable guarantees. He is also interested in multi-agent systems and in reasoning with knowledge bases.

Recent work by Diochnos focuses on the robustness of machine learning classifiers. This line of work helps us create and deploy a new era of machine learning systems that make reliable predictions, even within adversarial contexts where part of the data that is fed into such systems has been maliciously altered.

Song Fang
Assistant Professor, School of Computer Science

Song Fang’s research interests include wireless and mobile system security, cyber physical systems and IoT security, mobile computing, and application of machine learning in wireless and mobile systems.

Fang’s research has appeared in premier conferences and journals, including ACM Conf. on Mobile Computing and Networking, ACM Conf. on Computer and Communications Security, IEEE International Conf. on Computer Communications, and IEEE Trans. on Dependable and Secure Computing.

Computer Science is a rapidly evolving profession.
Our goal is to prepare you to grow with it during your education and beyond.

17 Full-Time Faculty

More than 600 Undergraduate Students

OFFERING
- Bachelor’s
- Master’s
- Doctoral DEGREES

With a balanced curriculum and variety of minors, the Computer Science undergraduate program is broad AND flexible.

About Norman
Reasonable cost of living. Part of this is the very reasonable housing expenses. Rents for a one bedroom apartment begin around $500, and a variety of units are within walking distance to campus.

Championship sports teams. OU football, seven national championships and seven Heisman Trophy winners, and the Oklahoma City Thunder major league basketball team.
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

- 133 graduate students enrolled
  - Ph.D. program: 49 domestic, 79 international
  - M.S. program: 5 international
- 16 Ph.D. graduates in 2019
- 87 new research awards ($12.8 million), $14.2 million expended (14% increase over 2018)

UNDERGRADUATE STUDY HIGHLIGHTS

- 153 B.S. graduates in 2019
- 440 majors (sophomore through senior year)
- Silicon Valley Semester program: 25 CSE students participating in courses and internships at Bay Area firms during the spring semester (25% increase from 2018)

RECENT NEWS

- Prathim Juneja, a senior pursuing a dual major in computer science and political science, was named a 2019 Truman Scholar.
- A class project in Professor Jane Cleland-Huang’s drone course laid the foundation for a student startup company that dispatches defibrillators by drone in response to 911 calls so bystanders can save lives before rescue workers arrive.
- Professors Patrick Flynn and Timothy Weninger, along with Katherine Corcoran, associate director of media relations at Notre Dame, Anne Thompson from NBC Universal, and Cong Yu from Google Research, participated in a panel discussion titled “Fact, Fiction, and the Newsfeed.”
- The first edition of “Introduction to Compilers and Language Design,” a free online textbook by Professor Douglas Thain was released.
Department Highlights

• With 3 new hires, described below, the department has grown to a size of 35 faculty.

Dr. Mark Albert joined UNT as an Assistant Professor with a primary appointment in Computer Science and Engineering with a secondary appointment in Biomedical Engineering. He received his Ph.D. in Computational Biology from Cornell University in 2009 after which he joined Loyola University of Chicago where he was recently recommended for tenure and promotion to Associate Professor. His research focuses on machine learning, wearable devices in health care, and applying efficient coding principles to computational neuroscience.

Dr. Nagendra Gulur joined UNT as an Assistant Professor after working for more than 20 years at Texas Instruments. While working at TI, he received his Ph.D. in Computer Architecture from the Indian Institute of Science in 2015. His research areas are memory systems, embedded computing, and formal methods.

Dr. Yanyan He comes to UNT as an Assistant Professor from New Mexico Institute of Mining and Technology. Her primary appointment is in Mathematics with a secondary appointment in Computer Science and Engineering. She received her Ph.D. in Applied and Computational Mathematics from Florida State University in 2013. Her research focuses on uncertainty quantification, uncertainty modeling, and computational statistics.

Research Highlights

• CSE has three Research Centers: Center for Computational Epidemiology and Response Analysis (CeCERA), Center for Information and Cybersecurity (CICS), and the Net-Centric Software & Systems Center.
• CSE has 15 Research Labs in these areas: Algorithms and Computational Science, Artificial Intelligence and Data Science, Computer Systems and Networks, Cybersecurity, and Software Engineering.
• Three NSF CAREER award recipients on faculty – Dr. Eduardo Blanco, Dr. Hyunsook Do and Dr. Wei Jin.

Other Highlights

• UNT was renewed as a a Tier 1 Research Institution (Carnegie Classification as a Doctoral University: Highest Research Activity).
• UNT is a BRAID (Building, Recruiting And Inclusion for Diversity) institution.
• Dr. Stephanie Ludi was appointed Editor-in-Chief of the ACM Transactions on Accessible Computing.
• The Teach North Texas program facilitates undergraduates in receiving teacher certification to become K-12 computer science teachers.

Student Numbers and Growth

• CSE awarded 178 Bachelors, 50 Masters and 14 Ph.D.s in 2018-2019.
• CSE sent 8 students to Richard Tapia in Sept 2019 and 19 students to Grace Hopper in October 2019.
• In fall 2019, CSE has over 100 Ph.D. students, 100 M.S. students, and 1,200 undergraduate students enrolled.
The College of Computing and Informatics (CCI) at UNC Charlotte is the FASTEST-GROWING College in the UNC System.

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 Robotics
- Big Data Analysis
- Computing Education
- Bioinformatics
- Cybersecurity

Research opportunities are open to Master's and Doctoral candidates as well as undergraduates.

FY2018 RESEARCH FUNDING $9.8M
#35 Nationally in CS Grant Dollars
14,165 CITATIONS
GRANTS 68

Deans Message

The College of Computing and Informatics (CCI) is celebrating 20 years of innovation in thinking, teaching, and engaging with the world.

Twenty years ago, Chancellor James Woodward foresaw how computing was fundamentally transforming all key human enterprises: education, scientific inquiry and discovery, health care, communication, and transportation. This warranted a dedicated college housing two departments dedicated to the science of computing and to the design and use of computing systems.

A few years later, he added the Department of Bioinformatics and Genomics, thus combining our electronic, information, and biological worlds.

Interestingly, the continuous osmosis between these three spaces and the blurring of boundaries between them may very well be the most important signature of our times.

The genesis of our college, its people, and its enduring footprint, continue to be a source of inspiration and a cause for pride and humility.

Three major enduring themes emerge in examining our history: Curiosity, Action and Care. These themes will also shape how we navigate our future.

CCI.UNCC.EDU

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, and Data Science
New research center will study impact of digital information sharing on democracy

The UNC School of Information and Library Science (SILS) is the lead partner in a new interdisciplinary initiative to study the impact of the internet, social media, and other forms of digital information sharing on democracy in the U.S. and socio-political systems around the globe. A $5 million gift from the John S. and James L. Knight Foundation enabled the launch of the Center for Information, Technology, and Public Life (CITAP). An additional $750,000 from Luminate and $600,000 from the William and Flora Hewlett Foundation will help expand the center’s impact.

Advancing email curation with $1.1M from Mellon Foundation

SILS Professor Cal Lee is leading the Review, Appraisal, and Triage of Mail (RATOM) project to develop new software and workflows that will enable institutions to efficiently process emails included in digital collections. The RATOM acronym was developed not only to label the project, but also to honor Ray Tomlinson, the computer programmer credited with inventing email. SILS and the State Archives of North Carolina are partnering on the project, which received a $1.1 million grant from the Andrew W. Mellon Foundation. Learn more at ratom.web.unc.edu.

Helping teens become DataAware

Hosted by the Carolina Health Informatics Program and supported by the NIH, Data Analytics for Teen Advancement: Applications in the Workforce and Academics with Research Experience (DataAware) brought high school students to UNC-Chapel Hill’s campus this summer to learn about health data analytics, digital health technology, and academic research. Learn more at dataaware.unc.edu.

Gotz named RTIUx Scholar

David Gotz, Associate Professor at SILS and Assistant Director of the Carolina Health Informatics Program (CHIP), was selected for the 2019-20 RTIUx scholars program, which provides support for distinguished academic researchers to spend scholarly leave time at RTI International. Gotz is partnering with an interdisciplinary team at RTI’s Center for Data Science, working on extensions of his ongoing visual analytics research.

Science behind the Jeopardy ‘Giant Killer’

SILS alumna Emma Boettcher (MSIS’ 16) made headlines in June after her defeat of “Jeopardy!” phenomenon James Holzhauer. Before Boettcher’s debut, Holzhauer had enjoyed a 32-game winning streak. Boettcher, a UX Librarian at the University of Chicago and long-time “Jeopardy!” fan, had focused her SILS master’s paper on determining the difficulty of “Jeopardy!” questions using textual features.
From Formal Methods to Interactive Design

Computer Science at UNM has research strengths in biological systems and processes, distributed and parallel computing, machine learning, and theoretical foundations. The department has 15 tenure-track faculty and 2 lecturers, with research expenditures averaging over $3M per year since 2015. UNM is a designated Minority-serving institution, and one of only four Carnegie Research/Doctoral-Extensive Universities designated as Hispanic-serving.

Leah Buechley Joins Faculty

Leah Buechley, newly hired Associate Professor, builds connections between computer science and art. Her research focuses on “how computation can be used to open up new potentials in design.”

Dr. Buechley was formerly a professor at the MIT Media Laboratory and founded Rural/Digital, an independent design and engineering firm that focuses on technology, design and learning. She received the National Science Foundation CAREER Award in 2011 and the Edith Ackerman Award for Interaction Design and Children in 2017.

Buechley grew up in northern New Mexico, the daughter of two furniture makers, and says “one of the things that attracted me back to New Mexico is that we have a rich cultural history here with traditions that include ceramics, weaving and other art.”

Jose Castellanos Interns at MSR

José Castellanos, PhD student at UNM CS, interned last summer at Microsoft Research in Redmond. During that time, he worked with Dr. Mark Marron on adding formal methods to the compiler for a new programming language called Bosque.

José says that “Software verification is becoming increasingly relevant because many unintentional bugs are introduced while integrating large systems. I was introduced to my mentor at MSR thanks to my adviser Prof. Deepak Kapur. Microsoft Research is a great place to intern! Not only was I able to learn and apply many new things in my research area, but also I got a broad sense of other projects developed at Microsoft and now appreciate how important interdisciplinary research is to finding solutions and developing novel technologies.”

Trilce Estrada is Emerging Woman Leader

Trilce Estrada has been selected as the 2019 SIGHPC Emerging Woman Leader in Technical Computing Award winner. Associate Professor Estrada’s overarching research goal is to “solve computationally and data intensive problems in science, health, and education, especially in scenarios where resources and trained professionals are scarce.”

The award is presented every two years, to a woman in high-performance computing (HPC), in recognition of impact on technical computing as indicated by early career achievements, and her commitment to growing our community through service and mentorship.

Estrada is also the recipient of a National Science Foundation CAREER Award in 2015 for “Enabling Distributed and In-Situ Analysis for Multidimensional Structured Data.”

Diverse Impacts

Our department conducts fundamental and applied research, with collaborations both on campus and around the world. Recent successes include:

- Faculty Awards: Abdullah Mueen won the UNM School of Engineering Junior Faculty Research Excellence Award (May 2019).
- Postings: Recent PhD graduates have taken research and academic positions at Visa Research, Sandia Labs, Los Alamos Labs, the University of Michigan, and Oxford University.
- Pedagogy: Our “NM-CS4All” program has trained 60 high school teachers to teach introductory computer science, to date reaching 1,500 students across New Mexico—and for the first time, adding a computer science class to the UNM core curriculum.
- New Grants: Assistant Professor Matt Lakin is Co-PI on a new NSF “Rules of Life” grant to create synthetic cells that can learn without evolution. His project aims to develop synthetic cells that learn to respond to a light pulse by associating it with the addition of molecules detected by olfactory receptors.
Wheeler Ruml has been named a fellow of the National Academy of Inventors.

Marek Petrik was awarded 2 NSF grants: Robust Reinforcement Learning for Invasive Species Management and Robust Reinforcement Learning Using Bayesian Models.

Momotaz Begum was awarded an NSF grant: Robust Learning of Sequential Motion from Human Demonstrations to Enable Robot-Guided Exercise Training.

Laura Dietz has been awarded an NSF CAREER grant: Utilizing Fine-grained Knowledge Annotations in Text Understanding and Retrieval.

In collaboration with the UNH InterOperability Laboratory, Radim Bartos is exploring methods making network time transfer systems more robust and secure.

Research team of Dongpeng Xu is working on research projects in software deobfuscation, malware detection, and automated vulnerability testing.
RESEARCH

CORE AREAS

- Informatics, Analytics, Foundations
- Software Engineering
- Systems

- $3.75 million in expenditures
- Average of 8 publications per year per faculty

STUDENTS

POPULATIONS
- 888 undergraduates
- 44 master’s students
- 61 doctoral students

DEGREES AWARDED
- 98 Bachelor’s degrees
- 15 Master’s degrees
- 2 Doctoral degrees

5-YEAR GROWTH TRENDS
- 86% in enrollment
- 177% in female students
- 108% in underrepresented students

FACULTY

STATISTICS
- 24 Tenure Track (3 new hires)
- 10 Instructional (4 new hires)
- 8 NSF Career Awardees
- 3 Endowed Chairs
- 2 IEEE Fellows
- 1 ACM Fellow

New Department Chair:
Marilyn C. Wolf

OUTREACH

- BRAID Initiative Founding Member
- Nebraska College Preparatory Academy
- Intercollegiate Programming Contest
- NCWIT Aspirations in Computing
- STEM-CONNECT with community colleges
Overview:

- 19 tenured/tenure-track faculty members, including 2 NSF CAREER award recipients.
- 9 full-time/part-time lecturers.
- Over 800 students: 630+ undergraduates and 170+ graduates.
- 4 B.S. programs, 4 M.S. programs, and 1 Ph.D. program.
- Searches for 2 new faculty members are under the way.

New Faculty Hires (Fall 2019):

- Jin Lu, Assistant Professor, data science and machine learning, PhD’19 UConn.
- Niccolo Meneghetti, Assistant Professor, data management, PhD’16 SUNY Buffalo.
- Probir Roy, Assistant Professor, computer systems and HPC, PhD’19 W&M.

Research Highlights:

- Research sponsors: NSF, NIH, NHTSA, DOS, NASA, TARDEC, IBM, HP, Toyota, Ford, Chrysler, TRW, Microsoft, Amazon, Sema, eBay, etc.
- Selected recent grants:
- Selected recent publication venues: TACO, TBD, TDSC, TEAC, TEVC, TKDE, TMC, TORS, TOIT, TON, TPDS, TSE, TVT, AAMAS, ASE, CAL, CGO, CoPR, ICCC, ICCD, ICPR, ICSOC, IEEE S&P, MASS, SEC, SIGMOD, USENIX MIPR, PACT, Ubicomp, etc.

Other Highlights:

- Marouane Kessentini received the 2019 Distinguished Tunisian Diaspora Research Award and the 2019 Beit al-Hikma Distinguished Early Career Research Award.
- Marouane Kessentini served as PC chair for MODELS 2019.
- Anys Bacha served as Travel Award Chair for MICRO 2019 and received an NSF award of $20,000 to support student travels for the conference.
- Brahim Medjahed was appointed as Associate Dean of University of Michigan Rackham Graduate School.
- Brahim Medjahed received the 2019 Michigan Distinguished Professor of the Year Award from the Michigan Association of State Universities (MASU).
- Di Ma, Brahim Medjahed and their students received the 2018 Trevor O. Jones Outstanding Paper Award from SAE.
- Jie Shen was elected to Fellow of ASME (2019) and Fellow of IET (2019).
- New MS in Cybersecurity and Information Assurance program was launched in Fall 2019.
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

NEW ONLINE DEGREE

In fall 2019, the School of Information inaugurated its first all-online graduate degree, a Master of Applied Data Science, on the learning platform Coursera. The program’s entering cohort numbered 150+ students.

umsi.info/mads

23 tenure-track faculty positions added since 2015

#1 in Information Systems—U.S. News & World Report, 2018

98–100% employment rate for recent grads in all programs

NEW FACULTY IN 2019

- Nazanin Andalibi
  Assistant Professor
  PhD, Drexel University
- Michaelanne Dye
  President’s Postdoctoral Fellow
  PhD, Georgia Tech
- Robin Brewer
  Assistant Professor
  PhD, Northwestern University
- Abigail Jacobs
  Assistant Professor
  PhD, University of Colorado, Boulder
- Christopher Brooks
  Assistant Professor
  PhD, University of Saskatchewan
- Parmveer Dhillon
  Assistant Professor
  PhD, University of Pennsylvania
- Grant Schoenebeck
  Assistant Professor
  PhD, University of California, Berkeley
- Misha Teplitskiy
  Assistant Professor
  PhD, University of Chicago

2019 HONORS & ACCOMPLISHMENTS

- CHI Conference—Three Best Papers, five Honorable Mentions
- The Web Conference—Best Paper, Best Poster
- Learning Analytics & Knowledge Conference—Best Full Research Paper
- ICWSM Conference—Best Paper
- IMS Global Learning Impact Gold Medal—Stephanie Teasley, Matthew Kay
- International Communications Association Fellow—Nicole Ellison
- ACM Distinguished Members—Eytan Adar, Cliff Lampe
- ACM SIGCSE Outstanding Contribution to Computer Science Education—Mark Guzdial

CURRENT GRANT HIGHLIGHTS

- Assessing the Impact of Exogenous Shocks on User Behavior and Information Diffusion in Social Media—DARPA, $449,547
- Preparing the Public Sector Research Workforce to Impact Communities through Data Science—NSF, $498,778
- Systematic Comparative and Historical Analysis Framework for Social Movements—NSF, $495,742
- Drawing from Theories of Justice to Respond to Online Harassment—NSF, $909,213

DEGREES OFFERED AND STUDENT ENROLLMENTS (FALL 2019)

- Bachelor of Science in Information 337
- Master of Science in Information 497
- Master of Health Informatics 91
- Master of Applied Data Science (online) 149
- PhD in Information 105
Algorithm can help robots navigate a home. Prof. Chad Jenkins’ algorithm allows robots to perceive environments orders of magnitude faster than previous approaches, enabling them to go from structured surroundings like factories to complex places like our homes.

Strategy game has players tackle real-life bat catastrophe. As a fungal infection ravages bat populations, the new game developed by Austin Yarger and funded by the US Fish and Wildlife Service hopes to promote public awareness of ongoing research to combat the issue.

RFID turns all objects into smart objects. Prof. Alanson Sample’s IDAct bridges the gap between the 14.2 billion ‘smart’ electronic devices part of the Internet of Things and hundreds of billions of everyday non-smart objects left out of the picture, a key step toward a truly immersive IoT experience.

New chip stops hacks before they start. Prof. Todd Austin’s MORPHEUS chip can encrypt and resuffle code thousands of times faster than human and electronic hackers – 20 times per second.

Virtual assistant startup draws windfall funding, looks ahead to IPO. Clin AI closed a funding round with $52M, and co-founders Profs. Jason Mars and Lingjia Tang hope for an IPO by 2022 to continue developing their AI to vastly improve human-computer interaction.

Prominent publication features election security specialist. Prof. J. Alex Halderman published an essay in Scientific American describing a worst-case cyberwarfare scenario for the 2020 American presidential election.

Driverless shuttle startup sees year of rapid expansion. May Mobility, co-founded by Prof. Ed Olson, introduced automated routes in 2 additional US cities, for a total of 4, opened a new headquarters in Ann Arbor, Michigan, raised $22M in series A funding, and unveiled a prototype wheelchair-accessible driverless shuttle.

New course introduces CS. A 1-credit class for students with no programming experience.

Engaging women in CS research. Semester-long workshop gave 70 undergrad women hands-on CS research experience.

4th annual CS Kickstart experience. Orientation held to welcome first-year women.

Connecting with diverse groups in CS. Sending 30+ students to Grace Hopper, Richard Tapia, SHPE, and NSBE conferences.

Bringing diverse voices to campus. A new lecture series features lectures from minority and underrepresented voices across industry and academia.
The University of Memphis Department of Computer Science 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 20 faculty members are highly productive researchers. With more than $20 million in active research grants, the department has been ranked 55th nationwide among CS departments in federally funded research expenditures and 80th nationwide among 173 doctoral computer science programs in citations of tenure-track faculty. Our faculty include two IEEE Fellows, an ACM Distinguished Speaker and the first state-endowed chair of excellence in computer science in Tennessee.

FALL 2019 NEW TENURE-TRACK FACULTY HIRE

Amy Cook
PhD, Human-Computer Interaction, Carnegie Mellon University, 2019

RESEARCH HIGHLIGHTS

- Dr. Lan Wang is on a team that was awarded $418,000 from the Public Safety Communications Research Division of NIST to work with the City of Memphis on Map901: Building Rich Interior Hazard Maps for First Responders.
- The Center of Excellence for Mobile Sensor Data-to-Knowledge (MD2K), now in its fifth year under the direction of Dr. Santosh Kumar, landed two grants totaling $2 million from NSF and NIH that will enable the center to enhance its software infrastructure, and also join the effort to curb opioid abuse.
- The Center for Information Assurance (CfIA) successfully hosted its 11th annual Mid-South Cybersecurity Summit on Oct. 5. Center director Dr. Dipankar Dasgupta gave an invited talk at Oxford University on his patented adaptive multi-factor authentication research (cs.ox.ac.uk/seminars/2225.html) on June 7.

STUDENT AND ALUMNI HIGHLIGHTS

- The inaugural Mid-South Student Hackathon, a joint effort between student organizations at the UofM and Christian Brothers University, was held March 8-9 at the FedEx Institute of Technology. International Paper, The Seam, Blockchain901 and the IEEE Memphis chapter helped sponsor the hackathon.
- Kareem Dasilva and Brandon Ellis, both members of the Memphis chapter of Black Data Processing Associates (BDPA), were on a team that placed first among five teams at the StartCo 48 Hours Launch Competition on Nov. 11.
- Undergraduates Marshal Hayes, Michael Bowman and Daniel Linn placed first at the UT Martin local site of the ACM International Collegiate Programming Contest on Nov. 3, 2018. The team bested eight other teams at the UT Martin site and placed 39th out of 125 teams in the Mid-Central USA region of five states.
- Nine students from the Memphis chapter of Black Data Processing Associates qualified to attend the annual BDPA National Conference in New Orleans in August 2018. Four students (Brandon Ellis, Bryce Ellis, Cody Seymour, Jada Thomas) were awarded $2,500 scholarships.

OTHER HIGHLIGHTS

- The department received a one-year $10,000 grant from the National Center for Women and Information Technology (NCWIT) to improve recruitment and retention of female undergraduate CS students.
Research Areas

Artificial Intelligence
Biomedical Informatics
Computational Social Science
Computer Science Education
Databases and Data Mining
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

CSrankings.org, 2014 - 2019 .................................................. #80
Research faculty members .................................................. 21
Teaching faculty members .................................................. 7
NSF CAREER awards ...................................................... 6
Last 5 years in research expenditures .................................... $15M
New research awards in FY2019 ........................................... $6.7M
New research awards in FY2020 Q1 ..................................... $2.4M
Undergraduate majors, Fall 2019 ......................................... 846
Degrees awarded in 2018 - 2019 .......................................... 120 BS
................................................................. 47 MS
................................................................. 8 PhD

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


Best Paper Award, 2019 IMIA Yearbook of Medical Informatics: Extraction of Information Related to Adverse Drug Events from Electronic Health Record Notes: Design of an End-to-End Model Based on Deep Learning, F. Li, W. Liu, and H. Yu

Innovation for the Common Good

Profs. Beverly Woolf and Shlomo Zilberstein are developing software that guides workers in the U.S. manufacturing workforce through the process of job selection and upskilling.

In collaboration with UMass Amherst’s Institute for Applied Life Sciences, faculty in CICS’s new Center for Smart & Connected Society (CS2) are making advances in wireless sensing, battery life, data capture, and other aspects of wearable tech.

A study led by recent doctoral graduate Emma Strubell found that the computer usage required to train a neural network can create a carbon footprint five times as large as the lifetime emissions of the average car.

Education for the Common Good

New interdisciplinary BS in Informatics program combines computer science curriculum with domain expertise in another major.

CICS is a founding sponsor of HackHer413, the first student-run hackathon for women and non-binary students in Western Massachusetts.

Now in its second year, the Data Science for the Common Good program partners graduate students with public interest organizations in Massachusetts.

For more information about our open faculty positions and graduate programs, visit cics.umass.edu.
CSEE Highlights, Awards and Honors

- Tim Finin was named an ACM fellow for “contributions to the theory and practice of knowledge sharing in distributed systems and the World Wide Web.”
- Adam Bargteil was elected to a 3-year term as Director-at-Large at ACM SIGGRAPH.
- Cynthia Matuszek has been named one of “AI’s 10 to Watch,” a list of rising stars in artificial intelligence published by IEEE Intelligent Systems.
- Fow-Sen Choa and Seung-Jun Kim (with Co-PI Tulay Adali) are leading teams receiving two awards from NSF (Brain Initiative).
- PI Yelena Yesha and Co-PIs Milton Halem and Karuna Joshi received a Phase I award from NSF to establish an Industry–University Cooperative Research Center, the Center for Accelerated Real Time Analytics (CARTA).
- Alan Sherman (PI) and Richard Forno (Co-PI) was awarded more than $4.9 million over five years through NSF’s CyberCorps: Scholarship for Service (SFS) program. The program is designed to increase the number of cybersecurity professionals that are trained to enter careers in government, focused on protecting the nation’s information, communications, and computer systems.
- Hamed Pirsiavash (PI) and Co-PIs Naghmeh Karimi, Cynthia Matuszek, Damian Doyle, and Francis Ferraro received an NSF MRI award for a Heterogeneous GPU Cluster to Facilitate Deep Learning Research.

CSEE GOES GLOBAL! UMBC has partnered to create a global university network dedicated to securing critical systems against cyber threats- The International Cybersecurity Center of Excellence, which includes UMBC, Keio University in Japan, Royal Holloway University of London, Northeastern University, Kyushu University in Japan, and Imperial College London.

CSEE Numbers at a Glance, 2019

- Enrollment- 1,953 Undergraduates, 645 Graduates
- Degrees Granted- 270 Bachelors, 140 Masters, 10 Ph.D. Graduates
- Faculty- 35 Tenure Track, 14 Teaching, 7 Research

Academic Programs- A Success Story

- 95%! That's how much growth CSEE's Data Science M.P.S. program has seen since its launch in 2017.
- Anupam Joshi (PI) and Co-PIs Freeman Hrabowski, David Chapman, Susan Mitchell and Katharine Cole received an NSF award, EAGER:X+CS: CS Pathways for Non CS majors, to develop new computing courses for non-majors.

Student Accomplishments Highlight Diversity

A team of UMBC students was named champions of the college division of the 2018 Maryland Cyber Challenge held at the annual Cyber-Maryland Conference. UMBC’s team showcased its dedication to inclusive excellence, and included Niara Richards ‘22, computer science; Nithya Prakash ‘22, information systems; Josh Mpere ‘19, computer science; Seamus Burke ‘20 computer science; and Swathi Krithivasan ‘22, computer science.
Be the Future.

Our new home, The Brendan Iribe Center for Computer Science and Engineering, opened in April 2019

16TH
IN THE NATION
BEST GRADUATE PROGRAMS
U.S. News & World Report, 2019

RECENT HIKES
Abhinav Bhatle - Ph.D. from UIUC
High-Performance Computing & Visualization
Ian Miers - Ph.D. from Johns Hopkins
Cybersecurity & Crypto Currency
Rachel Rudinger - Ph.D. from Johns Hopkins
NLP, Computational Linguistics & Machine Learning
Robert Patro - Ph.D. from UMD College Park,
Bioinformatics & Computational Biology
Pratap Tokekar - Ph.D. from UMN at Twin Cities
Algorithmic Robotics & Mobile Sensing

STUDENT/ALUMNI HIGHLIGHTS
Undergrad Yaelle Goldschlag,
Banneker/Key Scholar, was
awarded a Barry Goldwater
Scholarship 2019
Alumna Barna Saha (Ph.D,’11)
receives the Presidential Early
CAREER Award (PECASE) 2019
Ph.D. student Heba Aly
selected to participate in
“Rising Stars in EECS 2019”
Undergrad Louis-Henri Merino
named a Fulbright Scholar
Ph.D. Student Denis Peskov
awarded a DAAD Scholarship
to conduct research in
Germany

RECENT FACULTY AWARDS
Department Chair Professor Ming C. Lin - 2019 UMD Distinguished University Professor
Professors Dinesh Manocha & Hanan Samet - 2019 SIGGRAPH Academy Fellows
Professor Mohammad Taghi Hajiaghayi - ACM Fellow
Professor Aravind Srinivasan - AMS Fellow
Professor Jonathan Katz - Intl. Association for Cryptologic Research Fellow
Professor Larry Davis - 2019 USM Board of Regents’ Faculty Award for Excellence in Research/Scholarship/Creative Activities
Principal Lecturer Jan Plane - 2019 USM Board of Regents’ Faculty Award for Excellence in Public Service
Assistant Professors John Dickerson and David Van Horn - NSF CAREER awards
Assistant Professor Soheil Feizi - Simons Fellowship
Professor Aravind Srinivasan - 2019 Edsger W. Dijkstra Prize in Distributed Computing

Student Enrollment
Spring 2016: 2589
Spring 2017: 3005
Spring 2018: 3420
Spring 2019: 3756

MOST POPULAR UNDERGRADUATE MAJOR ON CAMPUS

cs.umd.edu
IEE Fellows, 12 AAAS Fellows, 5 ACM Fellows, 5 APS Fellows
NAE Members: 7 active, 15 emeritus

New tenue-track and specialized teaching faculty members added in 2019
11
113
Faculty members

Departmental News
Professor Bruce Hajek, Leonard C. and Mary Lou Hoeft Endowed Chair in Engineering, an internationally renowned expert in the field of communications networks, and a 40-year veteran of The Grainger College of Engineering faculty, has been named the new head of the Department of Electrical and Computer Engineering.

The Illinois College of Engineering has become The Grainger College of Engineering, recognizing a new $100 million gift from the Grainger Foundation and more than $300 million in total support. The Grainger Foundation’s total support represents the largest amount ever given to a public university to name a college of engineering.

New Direct PhD program, which allows students with a BS degree in an appropriate engineering field to enter directly into the PhD program.

New rooftop solar array consists of 950 panels, which includes 60 panels dedicated to research use. At their peak, panels can produce a combined 275 kilowatts. The system was designed to provide 20% of the building’s electrical consumption, but is currently generating about 25%.

Student Statistics
Welcoming The Grainger College of Engineering Class of 2023 with ECE ILLINOIS students in purple.
1,987
699
Undergraduate Students
Graduate Students

Top Honors
ACM Best Open Source Software Award: Tsung-Wei Huang, Martin Wong, Chun-Xun Lin, and Guannan Guo
Young Scientist Prize in Optics by the International Union of Pure and Applied Physics: Can Bayram
Clarivate Analytics Highly Cited Researchers: Thomas Huang, Shuming Nie
IEEE Fellows: Deming Chen and Romit Roy Choudhury
Sloan Research Fellowship: Haitham Al-Hassanieh
ACM SIGDA Outstanding PhD Dissertation Award in Electronic Design Automation: Tsung-Wei Huang
CS MANTECH Best Student Paper: Patrick Su and co-authors Thomas R O’Brien, Jr [PhD ’17], Fu Chen Hsiao [PhD ’20] and Professor John Michael Dallesasse
NASA Heliophysics Early Career Investigator Award: Raluca Ilie
International Symposium on Computer Architecture (ISCA) Hall of Fame: Nam Sung Kim
Finalist Collegiate Inventors Competition: Graduate student Richard Liu
New Faculty

Nancy Amato
Department Head
Robotics
(January 2019)

Payam Delgosha
Research Asst. Prof.
Theory
(August 2020)

Kris Hauser
Associate Prof.
Robotics
(August 2019)

Heng Ji
Professor
NLP
(August 2019)

Hongye Liu
Teaching Asst. Prof.
Biomedical Informatics
(August 2019)

Yongjoo Park
Assistant Prof.
Databases
(August 2020)

Lawrence Rauchwerger
Professor
Parallel Computing
(August 2019)

Hanghang Tong
Assoc. Prof.
Data Mining
(August 2019)

Deepack Vasisht
Assistant Prof.
Internet of Things
(August 2019)

Gang Wang
Assistant Prof.
Internet Security
(August 2019)

Top Faculty Honors

In the past 12 months, major recognitions have included: ACM Fellow: Gul Agha; ACM Distinguished Member: Brian Bailey, Indranil Gupta; ACM IEEE-CS Ken Kennedy Award: Sarita Adve; Funai Achievement Award: Jiawei Han; Robert-Piloty Award: Klara Nahrstedt; Best of Language, Vol. III; Tandy Warnow; Most Impactful HiPC Papers Over 25 Years: Laxmikant “Sanjay” Kale; Top 10 SIGCSE Technical Symposium Papers of All Time - #1: Geoffrey Herman; DARPA Assured Autonomy Award: Grigore Rosu; IEEE CS TCHPC Award for Excellence for Early Career Researchers in High Performance Computing: Edgar Solomonik; NSF CAREER Award: Sasa Misailovic.

Education Innovations

CS + X DEGREE PROGRAMS
Illinois leads the field in CS + X degree options, enabling students to bring computational skills to technical or professional training in the arts and sciences. These include: Advertising, Animal Sciences, Anthropology, Astronomy, Chemistry, Crop Sciences, Economics, Geography & GIS, Linguistics, Music, Philosophy, and legacy programs in Mathematics & CS and Statistics & CS.

ENGINEERING CITY SCHOLARS LIVE, INTERN, & STUDY IN CHICAGO

BROADENING PARTICIPATION IN COMPUTING
Illinois expanded its commitment to Broadening Participation in Computing by hiring a BPC Coordinator, expanding its Summer Research Experience for Undergraduates program, and hosting the 2019 Rising Stars in EECS Workshop.

MORE NSF FUNDING
Illinois was awarded more NSF Funding than any other University in 6 of the last 8 years

FACULTY BY RESEARCH AREA
(Counts recognize faculty doing research across multiple areas.)

<table>
<thead>
<tr>
<th>Research Area</th>
<th>Faculty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Architecture, Compilers, and Parallel Computing</td>
<td>13</td>
</tr>
<tr>
<td>Artificial Intelligence</td>
<td>18</td>
</tr>
<tr>
<td>Bioinformatics and Computational Biology</td>
<td>7</td>
</tr>
<tr>
<td>Computers and Education</td>
<td>14</td>
</tr>
<tr>
<td>Database and Information Systems</td>
<td>8</td>
</tr>
<tr>
<td>Interactive Computing</td>
<td>10</td>
</tr>
<tr>
<td>Programming Languages, Formal Methods, and Software Engineering</td>
<td>14</td>
</tr>
<tr>
<td>Scientific Computing</td>
<td>9</td>
</tr>
<tr>
<td>Security and Privacy</td>
<td>14</td>
</tr>
<tr>
<td>Systems and Networking</td>
<td>16</td>
</tr>
<tr>
<td>Theory and Algorithms</td>
<td>15</td>
</tr>
</tbody>
</table>

90
World-Class Faculty

1286
Graduate Enrollment

793
MCS Enrollment

122
MS Enrollment

324
PhD Enrollment

1740
Undergraduate Enrollment

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

Illinois leads the field in CS + X degree options, enabling students to bring computational skills to technical or professional training in the arts and sciences. These include: Advertising, Animal Sciences, Anthropology, Astronomy, Chemistry, Crop Sciences, Economics, Geography & GIS, Linguistics, Music, Philosophy, and legacy programs in Mathematics & CS and Statistics & CS.
DEPARTMENT OVERVIEW

This is an exciting year for the Department of Computer Science at UGA. The department offers the BS, MS with thesis and non-thesis options, and PhD degrees in Computer Science. The number of our undergraduate enrollments increased from 588 in fall 2014 to 1,158 in fall 2019 (an increase of 97%). Also, the department has close to 250 minors. At the graduate level, enrollment exceeded 195 graduate students.

In fall 2019, the Computer Science Department and Statistics Department are jointly offering a BS in Applied Data Science. In the last two years, the department has hired five new tenure-track faculty members in the areas of: computational science and high performance computing, machine learning, robotics, and two in cybersecurity. In addition, the department has hired three new lecturers: Dr. Marzieh Ahmadzadeh, Sal LaMarca, and Dr. Hao Peng.

NEWLY HIRED FACULTY

Dr. Ramviyas Nattanmai Parasuraman, Assistant Professor. He received his PhD from Technical University of Madrid, Spain in 2014. His research interests are in field robotics, with specific focus on multi-robot control, coordination, communication, and interfaces. He is interested in bridging the fields of heterogeneous multi-robot systems and human-robot interaction.

Dr. In Kee Kim, Assistant Professor. He received his PhD in Computer Science from the University of Virginia in 2018. His research areas include cloud computing, distributed systems, IoT/edge, and machine learning systems. The current focus is resource management for emerging cloud infrastructure systems, e.g., serverless and container orchestration.

Dr. Sheng Li, Assistant Professor. He received his PhD in Computer Engineering from the Northeastern University in 2017, and he worked as a Data Scientist at Adobe Research from 2017 to 2018. His research interests include machine learning with applications to data mining, computer vision, natural language processing, and causal inference.

Dr. Le Guan, Assistant Professor. He received his PhD from the University of Chinese Academy of Sciences in 2015. His research interests cover a wide range of systems security, including mobile security and IoT systems security. He is especially interested in leveraging COTS hardware components/features to design and build systems that are more reliable and secure than solutions based on software alone.

Dr. Wenwen Wang, Assistant Professor. He earned his PhD from the University of Chinese Academy of Sciences in 2014. His research interests have spanned a wide spectrum of issues in computer systems that cut across computer architectures, operating systems, compilers, runtimes, and security.

RECENTLY AWARDED GRANTS

Dr. Shannon Quinn received a 5-year CAREER grant from NSF for the proposal titled: “CAREER: ABI-Innovation: CiliaWeb: Integrated platform for foundational and reproducible ciliary beat pattern analysis.”

Dr. Yi Hong received a 2-year NSF grant for the proposal titled: “CRII: SCH: Analysis of Population-Based Image Metamorphosis.”

Professor Prashant Doshi and Dr. Yi Hong received a 3-year NSF grant for the proposal titled: “Robust Inverse Learning for Human-Robot.”

Professor Prashant Doshi received a 3-year NSF grant for the proposal titled: “Tractable Decision-Theoretic Planning Driven by Data.” Professor Prashant Doshi, in collaboration with Professors Adam Eck of Oberlin College and LeenKiat Soh of University of Nebraska at Lincoln, received a 3-year NSF grant in AI.

Professor Prashant Doshi (PI) and Dr. Kyu Hyung Lee (Co-PI) received a 3-year U.S. Army research grant for the proposal titled: “A Framework for Asymmetric Information Interactions among (Cyber) Defenders and Attackers.”

Dr. Kyu Hyung Lee received a 3-year NSF grant for the proposal titled: “OAC Core: Small: Collaborative Research: Data Provenance Infrastructure towards Robust and Reliable Data Sharing and Analytics, 3-years, PI Kyu Hyung Lee.”

Dr. Kyu Hyung Lee received a 4-year NSF grant for the proposal titled: “SaTC: CORE: Medium: Collaborative: Doctor WHO: Investigation and Prevention of Online Content Management System Abuse.”

CS STUDENTS WIN FIRST PLACE AT ASA DATAFEST AT EMORY!

Anna Gann, Mina Jeong, Michael Hearn, Andrew Palmer, and Hend Rasheed, five undergraduate students from the Computer Science Department, won first place in “Data Visualization” at the (ASA) DataFest at Emory competition. The team was accompanied by CS faculty member, Dr. Delaram Yazdansepas. ASA DataFest is an annual competition in which student teams work to reveal insights from a large and rich data set provided by a real client.
Among computer science departments at public universities in the number of women faculty, 2018 ASEE data

#3

Among computer science departments in the number of black students enrolled in the Ph.D. program, 2018 ASEE data

17%

Of the 66 black women enrolled in computer science Ph.D. programs nationwide are at UF CISE, 2018 CRA data

48%

Domestic students comprise 48 percent of UF CISE’s Ph.D. enrollment, 2018 departmental data

TOP 15

UF CISE is ranked among the top 15 largest computer science departments nationwide, 2018 ASEE data

3X

UF CISE employs 3X the national average of black faculty members among computer science programs, 2018 ASEE data

Research Highlights

Using 3D Audio to Aid Search and Rescue
Kyla McMullen, Ph.D., assistant professor, earned an early CAREER Award from the National Science Foundation to enhance first-responder effectiveness using 3D audio rendering and perception.

UF Engineer Leads Collaboration for Safer Roads
Sanjay Ranka, Ph.D., a professor, was recently awarded a $2 million grant from the National Science Foundation to develop technology that will monitor high-risk intersections in Gainesville, FL, to make roadways safer.

Awards & Recognition


My T. Thai, Ph.D., was named Associate Director of the Warren B. Nelms Institute for the Connected World.

Notable News

Arnold and Lisa Goldberg Rising Star Professorship in Computer Science: UF CISE received a $1 million gift to fund two rising star professorships for an appointment of five years. Associate professors Kevin R. B. Butler, Ph.D., and Daisy Zhe Wang, Ph.D., were named as holders of the professorships.

UF Cybersecurity Engineers Prevent Smartphone Hacking: Kevin R.B. Butler, Ph.D., and his team at the Florida Institute for Cybersecurity Research help companies stymie hackers’ use of ghost commands.

Inspiring the Next Generation of Black Women in Computing: Kyla McMullen, Ph.D., and Jeremy A. Magruder Waisome, Ph.D., host the Modern Figures Podcast, which is sponsored by the National Center for Women & Information Technology.
Mirela Alistar (ATLAS)
Creates cyber-physical systems based on biochips; investigates related issues in digital microfluidics, personal medicine, and DIYBio.

Nolen Scaife (Technology, Cybersecurity, and Policy)
Engages in research that addresses fundamental weaknesses in systems in networks (e.g. electronic payment systems) with a focus on near-term deployability by design.

Katharina Kann (Spring 2020)
Investigates issues in Natural Language processing, morphology, deep learning for NLP, NLP for low-resource languages and grammar induction-latent tree learning.

Bo Waggoner
Performs research in machine learning, AI, game theory, and EconCS.

2000+ Undergraduates
200+ MS and
180 PhDs

13 NSF CAREER Award winners on faculty

69 tenure-track and instructional faculty

LEADING ENTREPRENEURIAL COMMUNITY

Boulder is a nationally leading entrepreneurial community. It is headquarters of global accelerator Techstars and home to a thriving tech community including Google, Amazon and Twitter and close by, Uber, Oracle and Salesforce.

#1 in U.S. in per capita tech startups
#2 best city in U.S. for startups and entrepreneurs
#4 in U.S. in per capita VC investment
UNIVERSITY OF CINCINNATI
SCHOOL OF INFORMATION TECHNOLOGY
Home of the NSA and DHS Center for Academic Excellence in Cyber Defense

000 SoIT IN NUMBERS 000

794
BSIT Students
211
MSIT Students
3
PhD Students
1,008
Students Enrolled
$1.7 Million
External Funding

7 year average annual growth rate has increased to
19%

000 NEW HIRES 000

ABDOU FALL
Assistant Professor Educator
NELLY ELSAYED
Assistant Professor
SHANE HALSE
Assistant Professor
KELLY BROSCHIEID
Assistant Director, Early IT Program
ALANA CALHOUN
Academic Specialist
SELENA RAMANAYAKE
Instructional Designer
TRACY COLLINS
Academic Specialist- Assessment
MORGAN HALL
Marketing and Promotions Coordinator

18
Full-time Faculty
12
Full-time Staff

000 2019 HIGHLIGHTS 000

Early IT Program Expands
An innovative partnership to improve college access and affordability while increasing the quantity, quality and diversity of the IT talent pool. High school students complete the first year of the UC BSIT program and receive automatic admission to complete their BSIT, co-ops, and a possible Master’s degree in just four years after high school.

12
Early IT Students
Enrolled as Sophomores at UC this Fall
35
High School Teachers Trained
1,500
Student Enrollment in Partner Schools
7
School Districts Added since 2018

UC to Host Ohio’s Cyber Range
The successful completion of the demonstration site for the OCR resulted in UC partnering with six state agencies to host Ohio’s Cyber Range starting in 2020. Ohio Department of Higher Education, in collaboration with the Ohio Adjutant General’s Department, awarded UC $3 million to explore nine outcomes including: Technology and Infrastructure, Industry Engagement, Hands-on Practice, Higher Education Engagement, Dissemination, Cyber Exercises, Discovering Best Practices, K12 Engagement, and Workforce Development.

Accelerated Program Adds New Degree
The School of Information Technology developed the Accelerated Program that offers undergraduate students the opportunity to earn a dynamic master’s degree while completing the Bachelor of Science in Information Technology degree. The school has collaborated with the following programs to offer the accelerated master’s degree:

- BSIT + Master of Information Technology
- BSIT + Master of Business Administration
- BSIT + Master of Health Informatics
- BSIT + Master of Instructional Design and Technology
- BSIT + Master of Criminal Justice (Coming Spring 2020)

Launches New PhD Program
(Launched in Fall 2019)

Adds New Undergraduate Specialization Track
(Data Technology- Coming Spring 2020)

Online Master’s Program
Ranked #11 (US News and World Report- 2019)

We empower individuals to become passionate, solution-minded information technology professionals by fostering continuous innovation, research, leadership development, interdisciplinary problem solving, and real-world experience.
2019-2020 UPDATE

At the University of Chicago, we’re building a top-tier computer science program, adding world-leading faculty and students in cutting-edge areas that are critical for the science and technology of tomorrow and building intellectual bridges across the campus, city, and beyond. This expansion establishes a vital culture of computational scholarship and discovery at UChicago, where we are uniquely poised to define the future of computer and data science. Come visit us in Chicago or at [cs.uchicago.edu](http://cs.uchicago.edu).

—Michael J. Franklin, Liew Family Chair of Computer Science

2018-19 NEWS HIGHLIGHTS

- Center for Data and Computing (CDAC) awarded 12 Data Science Discovery grants to fund interdisciplinary collaborations in medicine, physics, social science, and the humanities.

- The Enabling Practical-Scale Quantum Computing (EPiQC) collaboration, an NSF Expedition in Computing, joined the NSF STAQ project to co-design hardware and software for the first practical quantum computer.

- Associate Professor Professor Henry “Hank” Hoffmann received a Presidential Early Career Award for Scientists and Engineers (PECASE) for his work on self-aware computing.

- Prof. Ian Foster received the Charles Babbage Award from the IEEE Computer Society, in recognition of significant contributions in the field of parallel computation.

- Students received NSF Graduate Research Fellowships, Siebel and Schwarzman Scholarships and the Physical Science Consortium Fellowship.

- Awards from Google and Intel for work on machine learning and databases for video and energy-efficient systems.

- Moved into new state-of-the-art computer and data science research and teaching facility in the renovated John Crerar Library building.

- Accepted our largest class of PhD students ever: 38 students starting Fall 2019.

2019-2020 NEW FACULTY

- **Raul Castro Fernandez**
  Area: Data Science
  Title: Assistant Professor
  PhD: Imperial College London ’15
  Previously: MIT

- **Kyle Chard**
  Area: Data Science
  Title: Research Assistant Professor
  PhD: Victoria University of Wellington ’11
  Previously: Argonne/UChego

- **Yuxin Chen**
  Area: Machine Learning
  Title: Assistant Professor
  PhD: ETH Zurich ’17
  Previously: Caltech

- **Marshini Chetty**
  Area: Human Computer Interaction
  Title: Assistant Professor
  PhD: Georgia Institute of Technology ’11
  Previously: Princeton

- **William Conner**
  Area: Security
  Title: Assistant Clinical Professor
  PhD: University of Illinois ’09
  Previously: Braintree/Google

- **Nick Feamster**
  Area: Networking, Security
  Title: Neubauer Professor
  PhD: MIT ’05
  Previously: Princeton

- **Bill Fefferman**
  Area: Quantum Computing
  Title: Assistant Professor
  PhD: Caltech ’14
  Previously: University of Maryland/NIST

- **Eric Jonas**
  Area: Machine Learning
  Title: Assistant Professor
  PhD: MIT ’13
  Previously: UC Berkeley

- **Lorenzo Orecchia**
  Area: Machine Learning
  Title: Assistant Professor
  PhD: UC Berkeley ’11
  Previously: Boston University
EXPANDING CSE’S RESEARCH INNOVATION & IMPACT

Catching Gas Station Credit Card Skimmers
Scientists have developed algorithms and a new platform, called Bluetana, that more accurately detect card skimmers’ Bluetooth signatures, helping inspectors find fraud and protecting consumers.

Healthcare Meets Human-Centered Computing
Computer engineers develop technology to help providers detect neurodegenerative diseases, provide remote surgeries and generally improve care.

Smartfins Collect Ocean Data
Few people spend as much time in the ocean as surfers. CSE students are part of a collaborative team designing surfboard fins with sensors to collect oceanographic data.

CONTINUING CSE’S IMPACT

Celebration of Diversity
This inaugural event united CSE students, faculty and alumni as they discussed new ways to strengthen diversity in the field.

Engaging Alumni Events
More than 800 department alumni participated in recent events in California and across the U.S. that strengthen ties between our students, faculty and industry.

Research Open House
From robots that support healthy aging to technology to study archaeological sites virtually, CSE students showcased the many ways they are shaping the digital world of tomorrow.
**NEW HIRINGS**

- **Ahmed Sabbir Arif**
  - Human-Computer Interaction, Tangible User Interfaces, Accessibility, Usable Security, Scientific Data Visualization

- **Shijia Pan**
  - Ubiquitous Computing, Mobile Sensing Systems, Ambient Structural Vibration Sensing, Objects as Sensors

- **Wan Du**

**46% of our faculty have earned CAREER Awards**

**PECASE**

- Shawn Newsam - 2007 for his interdisciplinary research in knowledge discovery in complex data.
- Presidential Early Career Award for Scientists and Engineers (PECASE) is bestowed by the president's Office of Science and Technology Policy on young researchers who have accomplished innovative research and community service.

**IEEE Fellows**

- Ming-Hsuan Yang - 2018 has been elevated to the status of Fellow in the Institute of Electrical and Electronics Engineers in recognition of his contributions to object tracking and face recognition research.
- Mukesh Singhal - since 2001, for pioneering contributions to distributed computing systems

**NSF CAREER Awardees**

- 2019: Sungjin Im
- 2016: Dong Li
- 2013: Alberto Cerpa
- 2012: Shawn Newsam
- 2012: Ming-Hsuan Yang
- 2006: Miguel Carreira-Perpinan

**#4 among new U.S. universities**

2019 Young University Rankings

**#105 in Computer Science**

2019 U.S. News & World Report's Best Graduate Schools

**2018-2019 HIGHLIGHTS**

- **Sefano Carpin**
  - Best Paper Award at IEEE International Conference on Automation Science & Engineering

- **Ahmed Sabbir Arif**
  - Best Paper Award at Conference on Computer Graphics, Visualization and Human-Computer Interaction

- **Ming-Husan Yang**
  - Most Influential Scholar By AMiner

- **Yijun Li, Ph.D. Student**
  - Facebook Fellowship

More information at [eeecs.ucmerced.edu](http://eeecs.ucmerced.edu)
WE ARE GROWING...

37 Faculty
171 Ph.D. students
122 M.S. students
945 Undergraduate students

AND HIRING

GETTING RECOGNIZED...

from CSrankings.com

36th OVERALL
3rd ARCH, DA, EMB SYS, HPC
12th BIOINFORMATICS
15th SYSTEMS
19th SECURITY

4 AAAS FELLOWS • 6 IEEE FELLOWS • 12 NSF CAREER AWARDS • 4 ACM FELLOWS

GETTING THINGS DONE...

• EXPENDITURES: $8M/year > $240,000/year per faculty
• $2M grant from NSF to enrich AsterixDB
• $1.2M award for Efficient Collaborative Perception
• $2.7M NSF grant to Modernize Big Data Management
• 3 NSF SBIR grants

HAVING REAL WORLD IMPACT

ENTREPRENEURSHIP
6 FACULTY LED STARTUPS

SOCIAL IMPACT

#1 SOCIAL MOBILITY
[US NEWS]

#1 MOST TRANSFORMATIVE UNIVERSITY
[MONEY MAGAZINE]

EAMONN KEOGH
FARMSENSE

FRANK VAHID
ZYBOOKS
$60M EXIT

VAGELIS HRISTIDIS
SMARTBOT360

COMPUTER SCIENCE AND ENGINEERING
CS.UCR.EDU
NEW FACULTY Hires

Justin Zhan
ARA Scholar/Professor
Data science, biomedical informatics, artificial intelligence, and social computing

Thi Hoang Nang "Nancy" Le
Assistant Professor
Computer vision, machine learning, deep learning for biometrics and medical imaging

Lora Streeter
Clinical (Teaching) Assistant Professor
Gesture-based programming languages, teaching programming to non-traditional students

RESEARCH HIGHLIGHTS

$3.03M in Annual New Research Awards
$4.63M new NSF Award to train Cybersecurity Professionals
NSF Sponsors New Project on Fairness in Data Science
ARO Sponsors Infrastructure to Enable Data Science Research and Education
NSF Sponsors New Project on Performance of Next Gen Computers

OTHER HIGHLIGHTS

4 Endowed Chairs
4 NSF CAREER Awardees
Faculty Grows to 20
CSCE Searching for 2 New Faculty for 2020

STUDENT NEWS

571 Undergrads, 57 PhD students enrolled
CSCE Student Awarded Goldwater Scholarship
CSCE Students Receive 4 Distinguished Doctoral Fellowships, 2 Doctoral Academy Fellowships
All-Female Team wins CSCE-Hosted High School Programming Contest

ORGANIZATIONAL NEWS

U of A and Governor Support Plan to Add B.S. in Data Science
Campaign Arkansas Raised $163M in 2019 Towards Goal of $1.11B
U of A again Classified "Research 1: Doctoral University: Very High Research Activity" by Carnegie Foundation
Awards and Recognitions

Dr. Katherine Isaacs - NSF Career Award
Dr. Joshua Levine - DOE Early Career Award
Staci Smith, PhD Student - 2019 ACM/IEEE-CS HPC Fellow
Dr. Christian Collberg and Stephen Kobourov - Most Influential Paper (MIP) award 2019 provided by IEEE VISSOFT 2019
Dr. Michelle Strout - Then and Now DOE Early Career Award

New Faculty

Kwang-Sung Jun
Assistant Prof.
PhD Wisconsin

Jason Pacheco
Assistant Prof.
PhD Brown

Chicheng Zhang
Assistant Prof.
PhD UCSD
DEPARTMENT OF COMPUTING SCIENCE
BY THE NUMBERS

RECENT FULL-TIME FACULTY HIRES:

Alona Fyshe
[Assistant Prof., PhD Carnegie Mellon U., 2015]

Ashique (Rupam) Mahmood
[Assistant Prof., PhD U. of Alberta, 2017]

James Wright
[Assistant Prof., PhD UBC, 2016]

Lili Mou
[Assistant Prof., PhD Peking U., 2017] AltaML, Professor in Natural Language Processing

Matthew Guzdial
[Assistant Prof., PhD Georgia Tech, 2019]

Nathan Sturtevant
[Professor, PhD UCLA, 2003]

- 50 faculty members (11 assist., 5 assoc. and 34 full) and 14 adjunct professors.
- ~150 undergraduate degrees conferred in 2017.
- More than 1,000 undergraduate students in all programs in 2017, as well as over 200 (thesis-based) graduates.
- More than $10M in research funding.
- According to csrankings.org as of July/2019, the department ranks:
  #6 in Canada
  #96 in the world
  in the combined areas of artificial intelligence, machine learning and data mining.

- NLP breakthrough in decoding the 15th century (no longer!) mysterious Voynich manuscript.
- Changing Edmonton’s high tech landscape by attracting big research labs such as DeepMind, RBC’s Borealis AI, and Mitsubishi, among others.

- Home of the Alberta Machine Intelligence Institute, one of three federally funded institutes in Canada for advancing artificial intelligence and machine learning research.
- Co-founder of highly popular Certificate in Game Design program.
- Excellency in games research (e.g., Go, Hex, SKAT, and Poker):
  - Solved “heads-up limit Texas hold’em” poker [Science 2015], and created an AI capable of beating professional players in “heads-up no-limit Texas hold’em” poker [Science 2017].
  - Alma mater for the first author of the Nature (2016) paper on AlphaGo.
  - Professor Martin Müller recently named DeepMind Chair in Artificial Intelligence.
- Our department has a steady number of more than 200 graduate students nearly evenly split between the PhD and thesis-based MSc programs.
- Our students are routinely recruited by top companies such as Google, Facebook, Amazon, Twitter, Microsoft, and IBM.

Edmonton, Alberta, Canada
ualberta.ca/computing-science

UNIVERSITY OF ALBERTA
DEPARTMENT OF COMPUTING SCIENCE
A Record of Five CSE Faculty Awarded NSF Early CAREER Awards in 2019

The grants, which total over $2.5 million, will support research in artificial intelligence, cybersecurity, autonomous robots and more.

Karthik Dantu
$549,369
Enabling Seamless Vision Sensing in Cloud-Edge Systems

Marco Gaboardi
$496,573
FormalDP: Formally Verified, Private, Accurate and Efficient Data Analysis

Shi Li
$500,034
Approximate Scheduling Algorithms via Mathematical Relaxations

Nils Napp
$498,619
Abstraction Barriers for Embodied Algorithms

Jaroslaw Zola
$487,569
Scalable Software and Algorithmic Infrastructure for Probabilistic Graphical Modeling

SIGNIFICANT NEW RESEARCH AWARDS

• Associate professor Marina Blanton received a Google Faculty Research award. Entitled “Efficient Tools for Privacy-Preserving Data Analysis,” her project has the potential to impact a wide variety of organizations in health, education, private and government sectors.

• UB was one of 17 educational institutions nationwide to receive a grant from the Responsible Computer Science Challenge, a competition funded by Omidyar Network, Mozilla Foundation, Schmidt Futures and Craig Newmark Philanthropies. Led by professor Atri Rudra, the project will integrate ethics and responsibility into computer science programs.

• Training cybersecurity experts is a new $2.39 million National Science Foundation grant to educate the next generation of experts who will protect the United States from cyberattacks. The five year award is led by Professor Shambhu Upadhyaya.

RESEARCH HIGHLIGHTS

• Inspired by animals and buoyed by advancements in computing and sensing, assistant professor Nils Napp is investigating how teams of autonomous robots, above, could alleviate future housing needs.

• A study by associate professor Wenyao Xu found that 3D printers have ‘fingerprints,’ a discovery that could help trace 3D-printed guns and counterfeit goods.

• Artificial intelligence expert and SUNY Empire Innovation Professor David Doermann testified before the House Intelligence Committee in June concerning national security challenges posed by deepfake videos and other manipulated forms of digital media.

• A collaborative study by assistant professor Kenny Joseph found that ‘supersharers’ on Twitter spread the majority of fake news. They represent less than 1 percent of Twitter users, but shared 80 percent of the fake news.

// BY THE NUMBERS

25
CSRankings.org since 2018

$9.6M
new research awards in 2018-2019

52
faculty

2,000+
gradient/undergraduate students in 2019-2020
Faculty

- 29 faculty members with research foci in programming languages, human-robot interaction, machine learning and data science, computational biology, theory, HCI, cybersecurity and policy, and networks.
- Searches for additional tenure-track and teaching professors are underway.

New Faculty for Fall 2019

![Marty Allen](image1)
Marty Allen
Associate Teaching Professor; Director of Online Programs

![Abani Patra](image2)
Abani Patra
Stern Family Professor; Director, DISC

![Raja Sambasivan](image3)
Raja Sambasivan
Sahu Assistant Professor

![Elaine Short](image4)
Elaine Short
Clare Boothe Luce Assistant Professor

![Richard Townsend](image5)
Richard Townsend
Assistant Teaching Professor

Program offerings

- Ph.D., M.S., B.S., Minor, Post-Baccalaureate, and Certificate in Computer Science
- Ph.D. and M.S. in Human-Robot Interaction
- Ph.D. in Cognitive Science
- M.S., B.S., and Certificate in Data Science
- M.S. and Certificate in Computer Engineering
- M.S. in Bioengineering
- New in 2020:
  - M.S. in Software Systems Development
  - M.S. in Cybersecurity and Public Policy
  - Online M.S. and Post-Bac in CS
- Certificate in Human-Computer Interaction

Recent Faculty Highlights

- Professor Diane Souvaine is serving as Chair of the National Science Board.
- Tufts faculty have served as program committee chairs for the 2018 IEEE Conference on Visual Analytics Science and Technology (Remco Chang), Recomb 2019 (Lenore Cowen), 2019 ACM Conference on Programming Language Design and Implementation (Kathleen Fisher), and ISMB 2020 (Donna Slonim).
- Tufts received a 3-year, $1.5M grant from the NSF as part of NSF’s Harnessing the Data Revolution initiative to launch an interdisciplinary center focused on the theory underlying data science. Professor Lenore Cowen is the PI of this effort.
- Professor Matthias Scheutz received a five-year $5M grant from AFOSR to develop techniques for inferring individual and team mental states to make artificial teammates more adaptive, proactive, and trustworthy.
- Professor Soha Hassoun received a four-year $1.5M R01 grant from the NIH to explore computational techniques for advancing untargeted metabolomics analysis with the goal of advancing biomedical research and improving human health.

Students by the numbers:

- Declared CS majors as of May 1, 2018: 675; CS majors who graduated in May 2018: 150
- Fraction of CS majors that are women: 1/3
- Number of undergraduates partnering with faculty to help teach our courses: more than 170.
- Number of non-profits receiving custom software developed by JumboCode in the past two years: 9.
- One of nine schools that nominated a student for CRA’s undergraduate research competition for the past four years.

New Space!

The CS Department will move into two floors of the newly constructed Joyce Cummings Center in 2021, which will be adjacent to a new Green Line T Stop that will provide direct access to downtown Boston.
Research Highlights

- At COLT 2019, both Best Student Paper awards went to papers authored by TTIC students and faculty. Congratulations to Steve Hanneke, Omar Montasser, Nati Srebro, and Blake Woodworth!
- Jinbo Xu received the 2019 RECOMB Test of Time Award
- Arturs Backurs received the 2019 EATCS Distinguished Dissertation Award
- Karen Livescu was Program Co-Chair for ICLR 2019
- Avrim Blum was Program Chair for ITCS 2019
- Julia Chuzhoy was selected Program Chair for STOC 2020
- Two TTIC alumni have now won Sloan Research Fellowships
- Congratulations to 2018 PhD graduates Haris Angelidakis, Heejin Choi, and Shubhendu Trivedi, and 2019 PhD graduate Mohammadreza Mostajabi!

Research Assistant Professor Placements

- Allyson Ettinger joined the University of Chicago Dept of Linguistics as an Assistant Professor
- Suriya Gunasekar joined Microsoft Research as a Research Scientist
- Mark Hallen co-founded a biomedical startup Gavilán Biodesign
- Aly Khan joined the University of Chicago Dept of Pathology
- Mesrob Ohannessian joined the University of Illinois at Chicago as an Assistant Professor of Electrical and Computer Engineering
- Karl Stratos joined Rutgers as an Assistant Professor of Computer Science

Events & Workshops

- TTIC joined 6 other academic institutions in hosting the AI Driving Olympics at NeurIPS 2018
- May 2019, TTIC hosted the 2019 Midwest Speech and Language Days
- Summer 2019, 2nd Annual TTIC Summer Workshop Program, with four exciting workshops on topics in machine learning, theoretical computer science, and computational biology.
- Summer 2019, TTIC hosted 17 visiting students (interns), including PhD students, undergraduates, and high-school students.

New Faculty Hires

Matthew Turk
President
Computer Vision, HCI, AI, Augmented Reality, Mobile Computing, and Multimodal Interaction

Brian Bullins
Research Assistant Professor

Mrinmaya Sachan
Research Assistant Professor
Machine learning models for natural language processing, knowledge discovery and reasoning.

Dougal Sutherland
Research Assistant Professor
Machine learning: learning over sets and distributions, implicit generative models, deep networks, kernel embeddings, active learning

Saeed Seddighin
Research Assistant Professor
Theoretical computer science, approximation algorithms, algorithmic game theory.

TTIC By the Numbers

Tenure-track Faculty
Research Assistant Prof.
PhD Students
(3yr position)

12
10
43

WWW.TTIC.EDU
6045 S. KENWOOD AVE. | CHICAGO, IL 60637
Department of Computer Science and Engineering

$9.3 million
Ohio State CSE research expenditures in the 2018-2019 academic year

31
NSF Career Awards held by current and past CSE faculty

14
Current and past ACM and IEEE Fellows

44
Tenure-track faculty members

1
Research-track faculty members

4
Clinical-track faculty members

Department Highlights

• CSE Alumni Ahmed Elmagarmid received the SIGMOD Contribution Award

• The paper titled Reconciling modern machine-learning practice and the classical bias–variance trade-off authored by Mikhail Belkin, Daniel Hsu, Siyuan Ma, and Soumik Manda was published in August 2019 in PNAS.

• Dr. Arnab Nandi was selected as one of the 40 under 40 for the year. Nominated by College of Engineering’s Associate Dean for Research Dorota Grejner-Brzezinska.

• Three CSE members were awarded The Lumley Engineering Research Award, Hari Subramoni, a research scientist; Dr. Alan Ritter, Assistant Professor; and Dr. Yinqian Zhang, Assistant Professor.

• Prof. Han-Wei Shen’s research group has recently won two best paper awards in the IEEE VIS 2019 conference. One is the best paper award in the SciVis track, and the other is the best paper honorable mention award in the VAST track.

• 49 Ohio State students attended the Grace Hopper Celebration of Women in Computing in Houston, Texas, supported by Ohio State’s ACM-W chapter.

Graduate students

<table>
<thead>
<tr>
<th>Year</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>AU 2014</td>
<td>347</td>
</tr>
<tr>
<td>AU 2015</td>
<td>329</td>
</tr>
<tr>
<td>AU 2016</td>
<td>298</td>
</tr>
<tr>
<td>AU 2017</td>
<td>308</td>
</tr>
<tr>
<td>AU 2018</td>
<td>310</td>
</tr>
</tbody>
</table>

Undergraduate students

<table>
<thead>
<tr>
<th>Year</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>AU 2014</td>
<td>1,498</td>
</tr>
<tr>
<td>AU 2015</td>
<td>1,617</td>
</tr>
<tr>
<td>AU 2016</td>
<td>1,764</td>
</tr>
<tr>
<td>AU 2017</td>
<td>2,072</td>
</tr>
<tr>
<td>AU 2018</td>
<td>2,320</td>
</tr>
</tbody>
</table>
Recent Faculty Hire

Lin Chen, Ph.D. CS
Research Assistant Professor, University of Houston
Assistant Professor
Algorithms, complexity and distributed systems

Victor Sheng, Ph.D. CS
Western University
Associate Professor, University of Central Arkansas
Assistant Professor
Big data analytics, machine learning and data science

Zhenkai Zhang, Ph.D. CS
Vanderbilt University
Assistant Professor
Hardware security and cyber-physical systems

Research Highlights

- The Cloud and Autonomic Computing Center (an NSF sponsored Industry-University Cooperative Research Center) has been elevated to a Phase II Center by obtaining committed funds of $200K/year from seven industrial members.
- At the Super Computing Conference, Dr. Chen and Dr. Dang were interviewed¹ about their industry-funded research project on the visualization, monitoring and prediction of the health status of High-performance Computing Centers.

Other Highlights

- 542 engineering students went broad in 2018. 45 of them were undergraduate CS students who went to 12 countries to study/intern as part of the college mandatory of 6-8 weeks of International experience.
- First year Ph.D. student, Ngan V.T. Nguyen, won the third place at the Herobots AI stock prediction and Visualization Showcase at the Practice & Experience in Advanced Research Computing Conference Series (PEARC 2019).

Organizational News

- Quantum Computing is now a top priority at TTU. The dean of the college of engineering has committed to hiring two faculty in the next academic year; one in Quantum information (CS department) and the other in Quantum sensing and communication (ECE department).
- $1.25 M spent on graduate recruitment fellowships this year where $286,000 supports six CS fellows.

Student Numbers

693 Undergraduate Student Enrollment
141 Graduate Student Enrollment including 58 Ph.D. students
113 Undergraduate Degrees Awarded
31 Graduate Degrees Awarded

¹ URL: https://www.youtube.com/watch?v=8c9GlqVZDvek
New Faculty Hire
Dr. Tanzima Islam, Assistant Professor
■ High-performance computing, machine learning, fault tolerance, and scalable systems

Faculty Highlights
■ Dr. Oleg Komogortsev was selected as a keynote speaker for the 2019 ACM Symposium on Eye Tracking Research and Applications.
■ Dr. Oleg Komogortsev received two awards from the Texas State University President — the 2019-2020 Presidential Seminar Award and the 2019 Award for Excellence in Scholarly/Creative Activities.
■ Instructor Greg LaKomski was in the "Best Academic Team" in the 2019 MITRE Verification Challenge.
■ Professor Xiao Chen won the Best Paper Award at the 17th IEEE International Conference on Embedded and Ubiquitous Computing.
■ Dr. Kecheng Yang was invited to participate in the Dagstuhl Seminar: Analysis, Design, and Control of Predictable Interconnected Systems.
■ Dr. Oleg Komogortsev gave the Alpha Chi Honor Society 2019 Distinguished Lecture.

Research Highlights
■ Dr. Ziliang Zong and Dr. Yan Yan were awarded an NSF CNS core research grant, and Dr. Yan Yan was awarded an additional NSF CNS core research grant.
■ Dr. Oleg Komogortsev received a new Global Google Research Award.
■ Computer Science hosted two summer 2019 NSF REU groups (REUSSA and REUSCC). The REU students presented at the poster convention in August.

Student Highlights
■ CS major Laura Godinez was featured in the Hillviews Magazine article entitled “Meeting the demand in science and technology.”
■ Computer Science was represented in three different student groups at the 2019 SXSW Innovation Lab.
■ Brent Redmon presented a CS poster at the 2019 WiSE conference.
■ CS hosted an International Collegiate Programming Contest with students from all over Texas and Mexico.
■ PhD Students Christopher Bell II and Molly O’Neil won first prize at the 2019 MSEC/CS Bootcamp entrepreneur competition.
■ Three computer science student organizations (VRDG, EXE, and Coding Titans) hosted several hackathons to enhance the CS student community.
Recent faculty hires for Fall 2017:

Antonio Medrano  
Assistant Professor  
- Combinatorial Optimization & Path Algorithms  
- Spatial Optimization  
- High Performance Computing

Teaching Faculty  
- Agatha Owora

New research Awards
• $7M grant from NOAA for “Geospatial Modeling-NGS”,
• NSF MRI ($550K) for cloud computing
• NSF BIGDATA:IA grant $1.3M
• NSF EAGER ($80K)
• Part of NSF CAHSI INCLUDES Alliance (3.6M total funding).
• Involved in $2.1M NASA UAS UTM TCL 4 Test activities

Highlights for externally funded projects
• Integrated Gas Monitoring sensors into medium UAS with $540K MRI funding from NSF.
• CAHSI Circuits alliance ($3.8M) from NSF
• $360K NSF REU Site.
• TxARM AGEP Alliance with $2.8M NSF funding
• NSF S-STEM: $609K
• USDA-NIFA, “Experiential Training in Use of Unmanned Aerial Systems” ($1M)

Research Highlights:
• 3 Best Paper Awards, from IEEE ICC 2019, IEEE ICCC 2019, and IEEE TAOS.
• Winner of NIST Performance Evaluation of Smartphone Indoor Localization Application Challenge

Other Highlights:
• Graduated first Geospatial Computer Science Ph.D. student.
• Student team took second place at 2018 NSPS competition.
• Held three one-week summer coding camps for over 90 middle school girls.
• High-school and middle school camps for programming UAS.

Organizational News:
• Diverse undergraduate population with 50% URM (43% are Hispanic) and 20% are female.
• 35 % of full-time faculty are female.
**NEW FACULTY**

- **Martin Carlisle**
  Professor of Practice
- **Jeeeun Kim**
  Assistant Professor
- **Robert Lightfoot**
  Lecturer
- **Tim McGuire**
  Instructional Professor
- **Shawna Thomas**
  Instructional Assistant Professor
- **Chia-Che Tsai**
  Assistant Professor
- **Yupeng Zhang**
  Assistant Professor

**BY THE NUMBERS**

**FACULTY 2018-19**

- **47** Tenured/ Tenure Track
- **9** Academic Professional Track
- **2** Chairs
- **6** Professorships
- **15** Faculty Fellowships

**ENROLLMENT 2019**

- **1,225** Undergraduates
- **238** Graduates
- **170** Ph.D.

**STUDENT SUCCESS**

- **221** Engineering Honors CSE Track
- **120** Undergraduate Scholarships
- **100%** Classes are Under 100 Students
- **OVER 2,500** students took our introductory programming course

**RESEARCH HIGHLIGHTS**

- Texas A&M and Yale use machine learning to predict bleeding during coronary procedures: [tx.ag/MortazaviML](tx.ag/MortazaviML)
- Texas A&M researchers partner with MoodMe to enhance facial analysis: [tx.ag/WangFacialAnalysis](tx.ag/WangFacialAnalysis)
- Huang receives ACM's Early Career Researcher Award for impact on software engineering community: [tx.ag/HuangACMAward](tx.ag/HuangACMAward)
- Flying drones during disasters may be dangerously fatiguing: [tx.ag/MurphyDisasterDrone](tx.ag/MurphyDisasterDrone)
- Sueda receives NSF Faculty Early Career Development Award for work in biomechanical simulation: [tx.ag/SuedaNSF](tx.ag/SuedaNSF)
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.

Computer Science at SU
- Artificial Intelligence and Machine Learning
- Cognitive wireless systems
- Cybersecurity
- Electromagnetics and Photonics
- Green computing
- Programming languages
- Smart Grid systems

New Faculty

Fernando Fioretto
Assistant Professor
Artificial intelligence, multiagent systems, and data privacy
Joining January 2019

Endadul Hoque
Assistant Professor
Network and system security, IoT security, program analysis, software testing and verification, and vulnerability detection

Bryan Kim
Assistant Professor
Data storage, data-intensive applications and systems, and file systems and database management systems

Kris Micinski
Assistant Professor
Programming languages, static analysis, formal methods, and foundations of computer security and privacy

Farzana Rahman
Associate Teaching Professor
Mobile and pervasive health technology, IoT, education, and broadening participation
Joining January 2019

Asif Salekin
Assistant Professor
IoT, pervasive and ubiquitous computing, machine learning, connected and mobile health, and cyberphysical systems

406 Undergraduates
375 Masters Students
44 Ph.D. Students
NEW FACULTY HIRES
Five new faculty hired in 2019 on tenure track or tenured positions: Shuai Mu (Distributed Systems), Dongyoon Lee (Computer Systems, Reliability), Haibin Ling (Computer Vision, Medical Image Analysis), Michael Ryoo (Computer Vision, Robotics), Zhaozheng Yin (Biomedical Image Analysis, Computer Vision). Also, Pramod Ganapathi (Parallel Programming) and Christopher Kane (Programming Languages) are hired on teaching positions.

FACULTY HONORS
- Professor Steven Skiena named AAAS fellow
- Several faculty are technical program or organizing committee chair, co-chair or vice chair of top-tier conferences during 2019-20: Aruna Balasubramanian (ACM CoNEXT and ACM MobiCom), Michael Bender (ESA), Erez Zadok (Usenix ATC)
- Faculty honored with various industry awards: Aruna Balasubramanian (VMWare), Nick Bikiforakis (Amazon), Steven Skiena and Haibin Ling (Yahoo)
- Departmental annual research expenditure saw a 12% increase in just one year, now going over $9M
- Aruna Balasubraminan honored as N²Women: Rising Stars in Computer Networking and Communications, Anshul Gandhi named 2019 ACM SIGMETRICS Rising Star

STUDENT GROWTH AND SUCCESS
- Steady increase in enrollment with 1400+ undergrad, 500+ masters and 200+ doctoral students
- Multiple students took up faculty positions in academic institutions: Syed Billah (Pennsylvania State University), Vikas Ashok (Old Dominion University) and Mohammad Ruhul Amin (Fordham University)
- New interdisciplinary teaching initiative: Enrollment in the new freshman Digital Intelligence class co-taught by CS and Humanities faculty crossed 200

AI INSTITUTE LAUNCHED
The Institute for AI-Driven Discovery and Innovation with Professor Steven Skiena as the Director, celebrated its official launch on Thursday, May 9, with an event at Bloomberg’s Global Headquarters in Manhattan. The event was attended by several high-powered guests including then Stony Brook President, Samuel L. Stanley Jr., and SUNY Chancellor Kristina Johnson. The keynote address was given by author and Francis Crick Professor at the Salk Institute, Terrence Sejnowski.
### NEW FACULTY HIRES

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Start Date</th>
<th>Research Focus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tian Han</td>
<td>Assistant Professor</td>
<td>August 2019</td>
<td>Statistical machine learning focused on computer vision applications</td>
</tr>
<tr>
<td>Xueqing Liu</td>
<td>Assistant Professor</td>
<td>January 2020</td>
<td>Software engineering, security and privacy, data mining</td>
</tr>
<tr>
<td>Jia Xu</td>
<td>Assistant Professor</td>
<td>October 2019</td>
<td>Machine learning and statistical natural language processing</td>
</tr>
</tbody>
</table>

### HIGHLIGHTS

- Grant Awards from NSF and NIH totaling $2.3M received by Samantha Kleinberg to develop AI patients can use to manage their health
- Department Chair Giuseppe Ateniese ranked #7 cybersecurity expert in the world by AMiner
- Supported by NIH and Google, Philippos Mordohai is developing algorithms that will support and improve AR applications by continuously reconstructing a scene in 3D from multiple images.
- The Gateway Academic Center will be the new home of the computer science department and house many state-of-the-art computer science laboratories.

### RANKINGS

- 38th in computer vision
- 37th in security
- 25th in programming languages
- 42nd in cryptography
- 27th in logic and verification

### STUDENT NUMBERS AND GROWTH

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduate Students</td>
<td>621</td>
</tr>
<tr>
<td>New Freshman</td>
<td>216</td>
</tr>
<tr>
<td>Enrolled in CS Ph.D. Program</td>
<td>46</td>
</tr>
<tr>
<td>Enrolled in the CS Masters' Programs</td>
<td>477</td>
</tr>
<tr>
<td>Tenure-Track Faculty</td>
<td>21</td>
</tr>
<tr>
<td>Teaching Faculty</td>
<td>5</td>
</tr>
</tbody>
</table>
The School of Computing Science at Simon Fraser University has world-class researchers, talented instructors, and motivated staff, all dedicated to the success of its students and advancing the scientific knowledge in computing.

**Recent Faculty Hires**

- **Yagiz Aksoy**: Computational Photography, PhD from ETH Zurich
- **Saba Alimadadi**: Software Engineering, PhD from UBC, postdoc at Northeastern
- **Mo Chen**: Robotics and AI, PhD from UC Berkeley, postdoc at Stanford
- **Hang Ma**: Robotics and AI, PhD from USC
- **Manolis Savva**: Graphics and Vision, PhD from Stanford, postdoc at Princeton
- **Igor Shinkar**: Computational Complexity, PhD from Weizmann Institute of Science
- **Tianzhang Wang**: Database Systems, PhD from University of Toronto

**Faculty Honor (Sample)**

- **Royal Society of Canada Fellows**
  - Eugene Fiume
  - Martin Ester
  - Jian Pei
- **Canada CIFAR AI Chair**
- **SIAM Fellow**
  - Pavol Hell
- **ACM CHI Academy, IEEE VIS Fellow**
  - Sheelagh Carpendale
- **MIT SLOAN Research Fellow**
  - Leonid Chindelevitch

**Test of Time and Best Paper Awards (Sample)**

- A. Bulatov, A Dichotomy Theorem for Nonuniform CSPs, Best Paper Award, IEEE Symposium on Foundations of Computer Science (FOCS)
- B. Zhou and J. Pei, Preserving Privacy in Social Networks Against Neighborhood Attacks, Influential Paper Award (10-year Best Paper Award), IEEE International Conference on Data Engineering (ICDE).
- X. Zhang, J. Liu, B. Li, and T. Yum, CoolStreaming/DONet: A Data-driven Overlay Network for Peer-to-Peer Live Media Streaming, Test of Time Paper Award, IEEE INFOCOM.
- A. Efros, A. Berg, G. Mori, and J. Malik, Recognizing Action at A Distance, Helmholtz Prize (10-year Test of Time Award), International Conference on Computer Vision (ICCV)
The information, computing, and business disciplines at Simmons University combine theory with professional practice to enable students to succeed, thrive, and become leaders in the field.

The 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.

The Division of Mathematics and Computer Science (MCS) houses undergraduate degree programs in Computer Science, Information Technology, Data Science and Analytics, Web Design and Development, Mathematics, and Statistics. The School of Library and Information Science (SLIS) offers graduate programs in Library and Information Science, with specializations in Archives, Cultural Heritage, and Information Science and Technology, as well as a dual degree in Archives Management and History. Both MCS and SLIS are part of the College of Organizational, Computational, and Information Sciences, which also includes the School of Business.

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.

simmons.edu/cocis

FACULTY AWARDS & ACCOMPLISHMENTS

**Associate Professor Naresh Agarwal** was invited as keynote speaker at the ISIC 2020 Conference in South Africa.

**Assistant Professor Amber Stubbs** co-advised a student project, “Digitizing Court Records: A Database of Unfreedoms,” which was selected for a keynote presentation at the Undergraduate Symposium.

**Professor and Dean Emerita Michèle Cloonan** received the 2019 Historic Preservation Book Prize from the Center for Historic Preservation at the University of Mary Washington, for her book, *The Monumental Challenge of Preservation: The Past in a Volatile World* (MIT Press, 2018).

**Professor Laura Saunders** received the 2019 Provost’s Award for Graduate Teaching.

**Professor Jeannette Bastian** was elected a Fellow by the Society of American Archivists.

**Associate Professor Spela Trefalt** has been chosen as the faculty recipient of a Simmons endowed chair, the Diana K. Trust Professorship in Leadership Development.

**Associate Professor Rong Tang** was awarded a 2019 Laura Bush 21st Century Librarian Program award for the project “Retooling the Librarian Workforce.”

**Adjunct Faculty Caryn Anderson ’04MS** was accepted to the U.S. Fulbright Program as a Fulbright Specialist.

Traveled with students to Nyamata, Rwanda, to collaborate with the computer science instructors and organize the library at the Maranyundo Girls School.

**Professor & MCS Director Nanette Veilleux**

**Associate Professor Lisa Hussey**
New Faculty in 2019

Abby Stylianou
Assistant Professor
Image Processing, Deep Learning, Citizen Science

Jie Hou
Assistant Professor
Machine Learning and Data Mining
Methods for Bioinformatics

Faculty Highlights

Erin Chambers
NSF Award to Study Algorithms to Compute and Visualize Reeb Graphs

David Letscher
Collaborative NSF Award to Study Plant Root Topology with Danforth Plant Science Center

Flavio Esposito
2 new NSF Awards on Computer Networks & Machine Learning; 1 new Award on Gambling Disorders

Kevin Scannell
Computer Science Professor Named 2019-2020 Fulbright Scholar

Tae-Hyuk (Ted) Ahn
Obese vs Lean Dogs’ Microbiomes? Research Grant from Nestle-Purina

Research Clusters

- Computer Network, Systems, and Security
- Image Processing, Virtual Reality
- AI, Machine Learning, Data Science
- Bioinformatics and Computational Biology
- Software Engineering
- Algorithms and Computational Topology

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

We’re hiring graduate students!

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
2,270 Faculty members

Fast Facts about CS@SLU

13 Computer science faculty
150+ Undergraduate and graduate students
19 Average CS class size
$3.3M Research funding of current active awards

Degrees Offered

- BS in Computer Science
- BA in Computer Science
- MS in Computer Science
- MS in Software Engineering
- MS in Bioinformatics

We’re hiring graduate students!
US NEWS 
RANKS 
PURDUE

NEW FACULTY HIRED 2019

Elisa Bertino
PhD, Georgia Institute of Technology
Named the 2019-2020 Athena Lecturer by the ACM
Named to GSMA’s Mobile Security Research Hall of Fame
Received the IEEE 2018 Research Innovation Award
Received Best Paper from ACM Conference on Data and Application Security and Privacy

Ben Delaware
PhD, Toyota Technological Institute at Chicago
Received the 2018 VMware Systems Research Award, the 2018 Facebook Probability and Programming Research Award

Pedro Fonseca
PhD, University of California, Berkley
Received an NSF CAREER Award

Suresh Jagannathan
PhD, University of California, Santa Barbara
Received the Programming Language Design and Implementation (PLDI) Distinguished Paper Award

Aniket Kate
PhD, University of California, Berkeley
Received an NSF CAREER Award

Jianzhu Ma
PhD, Toyota Technological Institute at Chicago

Alex Psomas
PhD, University of California, Berkeley

Kent Quanrud
PhD, University of Illinois at Urbana—Champaign

Dave Tian
PhD, University of Florida

NEW RESEARCH CENTER LAUNCHED
The Purdue University Center for Programming Principles and Software Systems (PurPL)

HACCLE PROJECT RECEIVED $10.7M IARPA GRANT
High Assurance Compositional Cryptography, Languages and Environments (HACCLE)
Professors Jeremiah Blocki, Benjamin Delaware, Christina Garman, Aniket Kate, Majid Kazemian, Milind Kulkarni, Tiark Rompf, and Roopsha Samanta

NEW FACULTY HIRED 2019

Award Winning Faculty

Elisa Bertino
PhD, Georgia Institute of Technology
Named the 2019-2020 Athena Lecturer by the ACM
Named to GSMA’s Mobile Security Research Hall of Fame
Received the IEEE 2018 Research Innovation Award
Received Best Paper from ACM Conference on Data and Application Security and Privacy

Ben Delaware
PhD, Toyota Technological Institute at Chicago
Received the 2018 VMware Systems Research Award, the 2018 Facebook Probability and Programming Research Award

Pedro Fonseca
PhD, University of California, Berkley
Received an NSF CAREER Award

Suresh Jagannathan
PhD, University of California, Santa Barbara
Received the Programming Language Design and Implementation (PLDI) Distinguished Paper Award

Aniket Kate
PhD, University of California, Berkeley
Received an NSF CAREER Award

Jianzhu Ma
PhD, Toyota Technological Institute at Chicago

Alex Psomas
PhD, University of California, Berkeley

Kent Quanrud
PhD, University of Illinois at Urbana—Champaign

Dave Tian
PhD, University of Florida

$14.2 MILLION RESEARCH EXPENDITURES
FY2017

Graduate Students
Graduate Students 396
Representing 36 countries
88% Increase growth in grad population over 10 years
261 PhD Students
135 Master’s Degree Students
20% Women Grad Students
Penn State Computer Science and Engineering

HIGHLIGHTS

• NSF Frontier: Center for Trustworthy Machine Learning
• NSF: Visual Cortex on Silicon
• ARL: Collaborative Research Alliance on CyberSecurity
• ARL: Collaborative Technology Alliance on Network Science
• Center for Machine Learning and Applications
• Center for Computational Biology and Bioinformatics
• Institute of Networking and Security Research
• Computer Systems Lab
• High Performance Computing Lab
• Laboratory for Perception, Action, and Cognition
• Mobile Computing and Networking Lab
• Microsystems Design Lab
• Natural Language Processing Lab
• Scalable Computing Lab

Department by the Numbers:

#21 Computer Engineering


Research Expenditures (2018-19) $10.5M

1,005 JUNIORS AND SENIORS
34 TENURE TRACK FACULTY

149 PH.D. STUDENTS
136 M.S. + M.ENG. STUDENTS

Institutes / Labs / Special Projects:

• NSF Frontier: Center for Trustworthy Machine Learning
• NSF: Visual Cortex on Silicon
• ARL: Collaborative Research Alliance on CyberSecurity
• ARL: Collaborative Technology Alliance on Network Science
• Center for Machine Learning and Applications
• Center for Computational Biology and Bioinformatics
• Institute of Networking and Security Research
• Computer Systems Lab
• High Performance Computing Lab
• Laboratory for Perception, Action, and Cognition
• Mobile Computing and Networking Lab
• Microsystems Design Lab
• Natural Language Processing Lab
• Scalable Computing Lab

New Hires:

ARZOO KATIYAR
Data Science

DAVID KOSLICKI
Computational Science

Department hosted “Dancing with Robots” girls’ summer camp

Department co-hosted:

Penn State Symposium on Election Security

Awards:

Sean Hallgren, professor of computer science and engineering, received the Penn State Engineering Alumni Society’s Outstanding Research Award

Swaroop Ghosh, Monkowski Career Development Assistant Professor of Electrical Engineering and Computer Science and Engineering, named as a senior member of the National Academy of Inventors

Eric Pauley, computer science and engineering student, received 2019 NSF Graduate Research Fellowship

Kaisheng Ma, 2018 computer science and engineering graduate, received the EDAA Ph.D. Outstanding Dissertation Award

Daniel Kifer, associate professor of computer science and engineering, named a recipient of the Google AI Impact Grant
Faculty and Research

IST continues contributions to the Northeast Big Data Innovation Hub through additional $4 million multi-institution NSF grant.

Shomir Wilson part of a $1.2 million NSF grant to develop software aimed at helping users understand and make decisions about online privacy policies.

James Wang is first Penn State researcher to receive Amazon Research Award for his work in affective computing.

Vasant Honavar named a Fellow of the American Association for the Advancement of Science and distinguished member of Association for Computing Machinery.

IST team earns Outstanding Paper Award at ACM Conference on Computer and Communications Security for work on building trust in deep learning models.

Ongoing and published interdisciplinary research focuses on identifying discrimination in AI recruiting tools, training clickbait detectors, detecting severe weather, collecting emergency data through social media, teaching computers to understand body language, and analyzing attitudes toward climate change.

New Faculty Hires

Mahir Akgun
Assistant Teaching Professor

Syed Billah
Assistant Professor

Patrick Dudas
Assistant Teaching Professor

Xinning Gui
Assistant Professor

Yubo Kou
Assistant Professor

Fenglong Ma
Assistant Professor

William Parquette
Assistant Teaching Professor

Joanne Peca
Assistant Teaching Professor

Kevin Sylvester
Lecturer

Chun-Hua Tsai
Research Assistant Professor

Ting Wang
Assistant Professor

Student Success

Students excel in internships with Boeing, Microsoft, Lockheed Martin, Canon, National Basketball Association, PepsiCo, U.S. Army, Capital One, Vera Bradley, General Electric, Dell, Comcast, Deloitte, EY, Hallmark, and many others.

IST-led team claims top prize in first-ever University Kaggle Hackathon.

Students use augmented reality to bring $10 million Penn State Dance Marathon to children’s hospital.

Students take advantage of experiential opportunities at Grace Hopper Celebration of Women in Computing and ACM Richard Tapia Celebration of Diversity in Computing, and travel to New York City and Texas for professional networking.

By The Numbers

- 1,900+ Resident Undergraduate Students
- 1,100+ Online Undergraduate Students
- 650+ Online Graduate Students
- 150+ Resident Graduate Students

84% Of undergraduate students offered a full-time position by a company they’ve interned with.

$8.4M Annual research expenditures by IST faculty, researchers, and scholars.

#7 U.S. News & World Report for “Best Online Graduate Computer IT Programs.”
Faculty
- 82 Faculty
- 1 Member of the National Academy of Engineering
- 2 Fellows of the National Academy of Inventors
- 13 ACM/IEEE fellows
- 27 Young investigator/CAREER awards
- 4 Editors-in-chief of internationally recognized academic journals

Research
- $11.6M in research expenditures (2017–2018)
- 14 spinoff companies + licenses

Research Areas of Excellence
- Artificial intelligence and robotics
- Communications and signal processing
- Computer graphics and visualization
- Cybersecurity
- Data science and engineering
- Electronic materials and devices
- Energy systems
- Health engineering
- Integrated electronics
- Networking and computer systems
- Programming languages
- Software engineering and human computer interaction
- Theoretical computer science

2018-2019 National Awards
- David Allstot: Meritorious Service Award, IEEE Circuits and Systems Society
- John Conley: Fellow Award, American Vacuum Society
- Fuxin Li: Amazon Research Award
- Steve Ramsey: Zoetis Research Excellence Award
- Arash Termehchy: Best Papers of SIGMOD Conference Award, ACM SIGMOD Research Highlight Award

Programs and Students
- Electrical and computer engineering (B.S., M.S., M.Eng., Ph.D).
- Computer science (B.S., M.S., M.Eng., Ph.D.)
- Online post-bacc degree in computer science (BS)
- Enrollment (Fall 2018)
  - 3,602 undergraduate students
  - 252 master’s students
  - 216 doctoral students
- Degrees awarded (2017–2018)
  
<table>
<thead>
<tr>
<th>Bachelor's</th>
<th>Master's</th>
<th>Doctoral</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECE 124</td>
<td>51</td>
<td>15</td>
</tr>
<tr>
<td>CS 564*</td>
<td>62</td>
<td>7</td>
</tr>
</tbody>
</table>

*One of the top in the nation

- Enrollment doubled in the last 5 years

Affiliated Centers and Institutes
- Center for Design of Analog and Mixed-Signal Circuits (CDADIC)
- Cyber Resilient Energy Delivery Consortium (CREDC)
- Collaborative Robotics and Intelligent Systems Institute (CoRIS)
- Northwest Alliance for Computational Science and Engineering (NACSE)
- Northwest National Marine Renewable Energy Center (NNMREC)

ROBOTICS AT OREGON STATE UNIVERSITY
Oregon State is the home of the Collaborative Robotics and Intelligent Systems Institute. Our robotics program is recognized as one of the country’s best, where more than 25 faculty and 180 top-notch graduate students conduct cutting-edge robotics research or apply robotics applications. Reaching beyond technological development, they explore robotics and intelligent systems holistically, considering their impact on people and the potential for robots to shape the future.

School of Electrical Engineering and Computer Science
Oregon State University
1148 Kelley Engineering Center | Corvallis, OR 97331-2409
541.737.3617 | eecs.oregonstate.edu
September 2018
New faculty who joined us, Fall 2019

• Sathyanarayanan Aakur, University of South Florida
• Arunkumar Bagavathi, UNC Charlotte
• Rittika Shamsuddin, University of Texas at Dallas
• Thanh Thieu, University of Missouri-Columbia

Meet Our Assistant Professors

Esra Akbas received her Ph.D. degree in Computer Science from Florida State University. Her research interest is broadly on the development of algorithms for large-scale data mining and analysis, with particular emphasis on text and graph-structured data, with social network and health data as the application area. Along with reviewing and publishing numerous referenced papers in international conferences and journals, Dr. Akbas has also been supervising many high school, undergraduate and graduate students.

Sathyanarayanan Aakur is interested in the intersection of computer vision, natural language processing and psychology. His aim is to build intelligent agents that understand the visual world beyond recognition (labels) or captions (sentences) without the need for explicit human supervision. This entails developing approaches such as self-supervised predictive learning for video event segmentation, common sense reasoning for ground perception and prior knowledge, and generative modeling for building knowledge.

Arunkumar Bagavathi focuses on designing deep-learning frameworks to learn multiple activities in social media to enhance network-based machine learning tasks like prediction, forecasting, and clustering. His work also leverages the use of cloud tools to frame a collection of scalable data agnostic models to glean actionable recommendations from massive data sources. For example, his multiplex model can identify user communities in the social media from their various activities and his action-mining model can impart personalized recommendations for hospitals to handle patients to improve care and reduce readmission rates.

Thanh Thieu is experienced in computational intelligence and computational linguistics. His work involves Natural Language Processing (NLP), data science, predictive modeling, machine and deep learning, semi-supervision, data augmentation and domain adaptation. Before joining OSU, he worked on NLP of functional terminology and interpretable predictive modeling of allegation text at NIH Clinical Center. Currently, he is focusing on NLP and Deep Learning, with application in Health Care, Education, and Bioinformatics.

Rittika Shamsuddin aims to improve communication between researchers in fields of computer science, biology, and medicine via knowledge-sharing and by developing algorithms and experiments, which will increase the interpretability of various machine-learning and artificial intelligence models. Such libraries and developments are necessary for extending technological success of computational fields to solve problems in healthcare/biology with a higher degree of trustworthiness and reliability than exists at present. Her past work includes bioinformatics and clinical informatics.
New Building: In summer 2019, the NYU CSE department moved into a new building at 370 J Street in Brooklyn, former headquarters of the New York MTA. The new building, shared by CSE with other NYU departments and centers with a joint vision for highly cross-disciplinary research, is an ambitious effort to advance NYU’s technology efforts and to support Brooklyn’s and the City’s evolution into a leading center for creative engineering and technology innovation. With the opening of 370 Jay Street, CSE’s opportunities for synergy in areas such as Cybersecurity, Data Science, Health and Medicine, Sustainability, Emerging Media, and Urban are about to expand greatly.

**Department Major Research Areas:** Cyber Security, Data Science, Theory & Algorithms, Visualization, Geometric and Urban Computing, Systems, Image Analysis.

**Faculty:** 25 TT/T Faculty (20 FTE, incl. 7 joint faculty with NYU Shanghai, CDS, Steinhardt, Global Public Health), 12 clinical/contract faculty, 15 adjuncts teaching any semester, 10 affiliated/associated faculty.

**Distinctions:** 2 Sloan, 2 ACM, 4 IEEE, 1 SPIE, 1 AIMBE, 1 Fullbright, 12 CAREER.

**Enrollments:** 980 majors (722 CSE, 258 CompE jointly with ECE), 975 students in two M.S. programs (644 CS, 331 cybersec., with 275 online only), 90 PhD students.

**NYU Global:** Tandon CSE maintains joint PhD programs with NYU Abu Dhabi and NYU Shanghai.

**New TT Faculty**

- **Shan Muthukrishnan**, ACM fellow, PhD NYU Courant. Previous affiliation: Rutgers. 

- **Christopher Musco**, PhD MIT CS, previously research instructor at Princeton. 

- **Chinmay Hegde**, PhD Rice University, previous affiliation: Iowa State University. 

**Faculty promoted:** **Damon McCoy**, Associate Professor

**Department Highlights AY 2018/19:**

- Incoming CSE undergraduate class of F2019 includes 44% women, up from 32% in F2017 and 22% in F2015.
- Major Awards: IEEE Fellow (Gerig), NSF CAREER awards (Chunara, McCoy).
- NYU Center for Cyber Security runs largest Cyber Security competition event in the world — CSAW, with over 20,000 participants in 2019.

**Recent new education programs:**

- **NYU Cyber Fellows**: The Cyber Fellows program — launched by NYU Tandon under the leadership of Nasir Memon in partnership with firms, government institutions and the New York City Cyber Command (NYC3) — offers scholarships that result in one of the lowest-cost online master’s degrees in the country and develops highly skilled technical graduates ready to step into the growing cybersecurity gap.

- **A Bridge Program to NYU Tandon**: Created for individuals with non-engineering backgrounds, the program provides the tools needed to be admitted into select graduate-level programs at NYU Tandon School of Engineering. Bridge enrollment is over 500 students in Fall 2019, and over 100 former Bridge students enrolled in the regular M.S. program.

- Tandon cybersecurity received 3 million dollars from NYCEDC to build a stackable credentials cyber security program in partnership with NYC companies and universities. It also received 5 million dollars from NSF for renewal of the cyber security scholarships.

The two NYU Computer Science Departments, Tandon CSE and the Computer Science Department at Courant Institute of Mathematical Science, maintain close shared efforts in faculty hiring, research and PhD education.
Department in Numbers

- 42 tenure-track; 14 contract faculty
- 78 PhD students; 435 MS students
- 643 majors; 420 minors

NYU Courant’s CS Department maintains a close, collaborative effort with the Tandon School of Engineering’s Computer Science and Engineering Department, with shared efforts in hiring and PhD education.

Academy and Society Fellows:
- 1 AAAS Fellow, 2 Academia Europea, 5 ACM, 2 AMS, 3 IEEE, 13 PYI and CAREER awards, 3 NAE/NAS, 1 Royal Society, 4 SIAM, 5 Sloan Fellows

Major Awards 2018-2019:
- Academia Europea (C. Yap), ACM Computer Graphics Achievement Award (D. Zorin), AMS Norbert Wiener Prize (M. Berger), Gödel Prize (O. Regev)

Student Distinctions:
- Adobe Research Fellowship (Z. Jiang and F. Gil-Ureta);
- Google PhD Fellowship (M. Arjovsky); La Caixa Foundation Fellowship (C. Enrich); NDSEG Fellowship (D. Brandfonbrener and K. Ottness); NSERC Fellowship (S. Jean and A. Kattis);
- NSF Graduate Research Fellowship (C. Kapp);
- NYU GSAS Dean's Dissertation Fellowship (S. Krishna)

Notable Grants:
- Google PhD Partnership will support a number of PhD students. Rajesh Ranganath received $3,338,186 from NIH for “Deep probabilistic predictive models for stroke and coronary heart disease.”

New Faculty Recruited

He He (Assistant Professor), machine learning and natural language processing (postdoc at Stanford, PhD University of Maryland).

Julia Kempe (Director of the Center for Data Science), data science, and quantum computing (PhD UC Berkeley and École Nationale Supérieure des Télécommunications).

Benjamin Peherstorfer (Assistant Professor), scientific computing, model reduction, uncertainty quantification, and Bayesian inference (PhD Technical University of Munich).

Michael Picheny (Research Professor), speech technologies, speech recognition, and speech synthesis (PhD MIT).

Lerrel Pinto (Assistant Professor, joining 2020), robotics and computer vision (postdoc Berkeley, PhD Carnegie Mellon).

Andrew G. Wilson (Assistant Professor), Gaussian processes, scalable machine learning, probabilistic deep learning (postdoc CMU, PhD University of Cambridge).

Faculty Distinctions in 2018-19:

ACM Computer Graphics Achievement Award (D. Zorin); AI Breakthrough Award (L. Subramanian); Armstrong Medal (T. Rappaport); Edison Award (L. Subramanian); Gödel Prize (O. Regev); IACR Test of Time Award (Y. Dodis); IEEE Best Presentation Award (A. Bari); IISME Medal (Y. LeCun); INFORMS Computing Society Prize (M. Overton); NSF CAREER and Presidential Young Investigator Awards (J. Bruna); NYU CAS Teach/Tech Award (C. Kapp);
- Samuel L. Marateck Prize for Outstanding Teaching in Computer Science (A. Siegel); Savage Award (R. Ranganath); SIGSPATIAL 10-Year Impact Award (D. Panozzo); Sloan Foundation Fellowships (J. Bruna); Symposium of Geometry Processing Dataset Award (D. Panozzo and D. Zorin)

Selected Conferences and Workshops:

J. Bonneau, Program Chair, Financial Crypto 2020; J. Li, Program Co-Chair, HotOS 2019; S. Odeh, Chair, Women in Computing in the Arab World; D. Panozzo, Paper Chair, Eurographics 2020; B. Mishra, General Chair, BICT 2019; O. Regev, Organizer, Lattice-Based Cryptography at Simons Institute; Emerging Communication (K. Cho); Synthesis at CAV (T. Wies); Programmable Networks at NSF (A. Sivaraman); Machine Learning and Healthcare (R. Ranganath); Computational Statistics and Data-Driven Models at ICERM (B. Peherstorfer); Simons Foundation Math+X Symposium (J. Bruna); Geometric Computation and Applications at HMI (C. Yap)
Technical excellence. Whole-brain thinking. Highly interdisciplinary work.

Computer Science at Northwestern University embodies these three core values. In its third year of an ambitious growth initiative, Northwestern CS has hired a new department chair and is in the process of hiring 20 tenure-track faculty members and more than doubling the size of its teaching faculty. Northwestern CS is driven by the goal of constantly pushing at the boundaries of the field with exceptional work in programming languages, machine learning, robotics, network security, theoretical computer science, artificial intelligence, computational imaging, high performance computing, networking, and personalized education.

Rapidly Growing Department

Northwestern is excited to announce the hire of a new Peter and Adrienne Barris Chair of the department, Samir Khuller joined from the University of Maryland, where he previously served as department chair of computer science.

Three tenure-track faculty members joined in core CS areas: Christos Dimoulas (from Harvard / programming languages), Konstantin Makarychev (from Microsoft Research / theory), and Xiao Wang (from MIT / cryptography).

Four tenure-track faculty members joined in collaborative “CS+X” areas with other disciplines: Jessica Hullman (from University of Washington / CS+journalism), Han Liu (from Princeton University / CS+statistics), Eleanor O’Rourke (from U of Washington / CS+learning sciences), and Marcelo Worsley (from Stanford University / CS+learning sciences).

Teaching faculty doubled in response to overwhelming enrollment, with substantial additional investment in postdoctoral teaching resources.

Highlights include: Sara Sood (from Pomona College), Vincent St-Amour (from Northeastern University), Stephen Tarzia (from Northwestern), Jesse Tov (from Northeastern University), and Sarah Van Wart (from University of California, Berkeley).

New, Expanded Facilities

Computer Science moved into remodeled space in the Mudd Building on Northwestern’s Evanston campus. The CS community is now in a single space, enhancing collaboration and culture.

Continued Growth in Majors, Enrollments

For the 2019-20 academic year, Northwestern saw the largest number of CS master’s and PhD applications and enrollments in its history, plus growth in collaborative PhD programs such as the PhD in Technology and Social Behavior (with the School of Communication) and the new PhD in Computer Science and Learning Sciences (with the School of Education and Social Policy).

The overwhelming demand for specific education in artificial intelligence and machine learning inspired the launch of the new Master of Science in Artificial Intelligence (MSAI) program in 2018.

CS+X Connections

We have developed a truly interdisciplinary approach, with joint CS+X initiatives in collaboration with our other top Northwestern schools, including Feinberg School of Medicine, Kellogg School of Management, Medill School of Journalism, Pritzker School of Law, Weinberg College of Arts and Sciences, and the School of Education and Social Policy.

Collaborations include joint research, workshops, joint faculty appointments, the launch of the new Center for Computer Science and Learning Sciences in 2019, and plans for a new center in human-machine interaction.

Research and Award Highlights

- Han Liu earned the Presidential Early Career Award for Scientists and Engineers
- Jessica Hullman received a 2019 Microsoft Research Faculty Fellowship
- Jennie Rogers received the NSF CAREER award
- Haoqi Zhang and Darren Gergle received a Google Faculty Research Award
- Nikos Hardavellas received the EDBT 10-year Test-of-Time Award
- Yan Chen won the 2018 ASPLOS Most Influential Paper Award
- Robby Findler won the annual SIGPLAN Programming Languages Software Award
New Faculty

Seth Adjei
Assistant Professor
Data Visualization and Mining
Computer Science Education

Nicholas Caporusso
Assistant Professor
Human-Machine Interaction
Web and Mobile Development

Junxiu Zhou
Assistant Professor
Deep Learning
Artificial Intelligence

Kenneth Roth
Assistant Professor of Practice
Systems Administration
Networking

Aziz Bahha
Visiting Assistant Professor
Software Engineering
Networking

Bradford Thomas
Lab Manager / Lecturer
Information Technology
Systems Administration

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 371 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) in 2019.

CS Department by the Numbers

Faculty:
• 24 full-time faculty, including 9 Full Professors, 3 Associate Professors, 7 Assistant Professors, 1 Professor of Practice, and 4 Lecturers

Students:
• Over 900 current majors, with over 300 majors in Computer Information Technology and Computer Science undergraduate programs.
• 4.1 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.
NAMING GIFT
In December 2018, the college was renamed the Khoury College of Computer Sciences, following an endowed gift from Amin & Julie Khoury.

NEW FACULTY
- 21 tenured and tenure-track faculty over the past four years
- 20+ more new hires anticipated over the next three years

RESEARCH HIGHLIGHTS

BEST PAPER AWARDS
2015-2019 Khoury College faculty and students won best paper/test of time awards at the following conferences, forums and workshops:
AAMAS, ACL, AISEC, ANRW, CCS, CHI, CNS, COSN, CSCW, DSN, EAPLS, FDG, FPF, ICDM, ISWC, NDSS, PETS, SecDev, SIGCOMM, SIGKDD, SIGSOFT, SOSYM, S&P, TACAS, USENIX FAST, USENIX Security, VEE, WISEC

CAREER, YOUNG INVESTIGATOR & SLOAN FELLOWSHIP AWARDS
From 2016-2018, the following members were awarded the Sloan Research Fellowship, Young Investigator, NSF CAREER or DARPA Young Faculty Awards:
Chris Amato, Michelle Borkin, David Choffnes, Seth Cooper, Ehsan Elhamifar, Raymond Fu, Long Lu, Huy Le Nguyen, Robert Platt, Christoph Riedl, Jonathan Ullman, Olga Vitek, Byron Wallace, Lu Wang, Daniel Wichs, Christo Wilson

CONFERENCE GENERAL OR CO-CHAIRS
2015-2019 Khoury College faculty have been general chair or co-chair for the following conferences:

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).

Khoury College houses the Cybersecurity and Privacy Institute (cyber.khoury.northeastern.edu) and the Network Science Institute (networkscinstitute.org)

BY THE NUMBERS
- 62 TT/T faculty total - (25% interdisciplinary with another college)
- 4 PhD programs - Computer Science, Cybersecurity, Personal Health Informatics, Network Science
- 199 PhD Students - 24% female

COORDERATIVE EDUCATION
Cooperative Education (co-op) is a cornerstone of our MS and undergraduate programs. Khoury College places 1,000 students in co-ops at over 500 companies annually.
CSC FOR ALL!

2018-19 Highlights:

- Ranked #2 in the world in publishing at conferences and journals dedicated to games and interactive entertainment computing research.
- NC State Paper Ranks #2 on SIGCSE’s Top Ten Symposium Papers of All Time (co-authored by Nachiappan Nagappan, Laurie Williams, Miriam Ferzli, Eric Wiebe, Kai Yang, Carol Miller and Suzanne Balik)
- NSA Renews Science of Security Lablet at NC State
- NSA Re-Designates NC State a National Center of Academic Excellence in Cyber Defense Research
- Dr. Xipeng Shen Named Distinguished Member of the ACM
- Dr. Frank Mueller Named 2018 ACM Fellow (department’s 1st)
- Dr. Tim Menzies Elected as Fellow of IEEE (department’s 10th)
- Dr. Carla Savage Named 2019 SIAM Fellow
- Dr. James Lester Named Distinguished University Professor
- Dr. Donald Bitzer was one of two faculty members to receive the Alexander Quarles Holladay Medal for Excellence, the highest honor bestowed by NC State and the university’s Board of Trustees
- Collaborating on a $1M multi-institute NSF grant to support Broadening Participation in Computer Science and Computational Thinking
- Launched Undergraduate Security & Entrepreneurship Tracks
- May 2019 grads had NC State’s HIGHEST average starting salaries:
  - $76,000 BS CSC
  - $112,000 MS CSC

$10.4M Research Expenditures
$12.9M New Research Awards
#6 USN&WR Best Online Computer IT Programs
#23 The Princeton Review’s 2019 Top 50 UG Schools to Study Game Design

Enrollments
- 196 BS
- 528 MS
- 1,191 PhD
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 21 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 and Data Science.

Our Research
We examine hard national security problems, developing theories for general solutions and prototypes that demonstrate feasibility. Cyber security is a top priority; 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. 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. Artificial intelligence -- autonomous, robotic, and deep learning systems -- are still another priority; we search for safe and reliable self-learning systems.

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.
Recent faculty hires:

Arnab Bhattacharyya  
Theoretical computer science: algorithms for problems involving high-dimensional data, statistics, coding theory, complexity theory

Bryan Hooi  
Scalable machine learning deep learning, graph algorithms, anomaly detection, and biomedica applications of AI

Diptarka Chakraborty  
Theoretical Computer Science: algorithms on large data set, streaming algorithms, string matching algorithms, graph algorithms and data structures

Angela Yao  
Human and hand pose estimation, action recognition, random forests, semi-supervised and unsupervised learning algorithms

Research Highlights:

- Apache SINGA, a distributed machine learning platform developed by Beng Chin Ooi, Wei Wang and team, has graduated as a top level project (TLP).
- Test of Time Award: Jin Song Dong and his former PhD students, Dr Sun Jun and Dr Liu Yang, won the 20 Year ICFEM Most Influential System Award.
- Best Papers: Beng Chin Ooi won the 2019 VLDB Best Paper Award; Seth Gilbert received the 2018 OPODIS Best Paper Award; Ilya Sergev received a distinguished paper award at POPL 2019; Mun Choon Chan won the Symposium on SDN Research (SOSR) 2019 Best Paper Award; Zhenkai Liang won the Best Paper award at WASA 2019; Jianshu Li won the Best Student Paper award at ACM MM’18.

Other Highlights:

- Min-Yen Kan received the 2019 ACL distinguished service award.
- Abhik Roychoudhury has been appointed chair of the inaugural CACM Special Section on East Asia and Oceania.
- David Hsu has been appointed a IEEE Robotics & Automation Society Distinguished Lecturer.
- Angela Yao received the 2018 German Pattern Recognition Award.
- Jonathan Scarlett received the 2018 NUS Early Career Research Award; Reza Shokri has been appointed Presidential Young Professor; Angela Yao, Arnab Bhattacharyya, and Meel Kuldeep received the 2019 NRF Fellowships for AI.
- (PhD Alumni) Loi Luu was named MIT TR35 Asia (2019); Sergey Mchtaev received the ACM SIGSOFT Outstanding Dissertation Award, he was also the winner for the IMDA Excellence Prize; Yaoqi Jia was a recipient of the Forbes 30 Under 30 Asia - Enterprise Technology 2019; Abdelhak Bentaleb received the DASH-IF Best PhD Dissertation Award at ACM MMSys 2019, he also won the ACM 2019 SIGMM Award for Outstanding PhD Thesis.
- Binghong received the Editorial Excellence and Eminence (EEE) award from IEEE TCC and the IEEE TPDS Award for Editorial Excellence; Roland Yap, Yair Zick and Maria Andreina Francisco Rodriguez were recognized for their exceptional reviewing contributions to UCAI 2019.

Entrepreneurial News:

- Visual recognition technology company ViSenze, started by NUS Computing Professor Chua Tat Seng and alumnus Li Guangda, was named as one of 45 top Artificial Intelligence companies in the world. It has raised $20 million in a series C funding round.
- Human resources (HR) startup, StaffAny, co-founded by Computer Science alumnus Jeremy Hon, has raised a S$1 million in seed funding.

Organizational News:

- The School’s third building is expected to be ready by Dec 2020.
- SoC Professors helm numerous new research projects: Wynne Hsu and Beng Chin Ooi are leading research in two projects on artificial intelligence healthcare technologies funded by AI Singapore’s AI in Healthcare Grand Challenge.
- NUS Computing’s new blockchain research centre and think tank, Crystal Centre, was named one of five influential blockchain organisations in shaping the cryptocurrency ecosystem.
Student Highlights

- CS largest major in the college (9.6% of the graduating class)
- Graduating senior Jaemarie Solyst received Fulbright to go to Germany and work on human robot interaction, deferring her graduate study at U Toronto until fall 2020.
- Graduating senior Emilyann Nault received an ACM-W Scholarship to attend ACM SIGCHI. She has started graduate study at Herriot-Watt University.
- Several students continue on to graduate study, particularly in interdisciplinary areas such as computational biology, while the remainder are heading to industry positions.
- One student received an ACM-BCB undergraduate travel award, and one receive and ACM UPE scholarship.

Other News

- Approval of the new data science major which launched September, 2019. Curriculum combines CS, Statistics, and a domain area of the student's choosing.
Faculty Hires for 2019-2020

- Travis Peters, Assistant Professor: Cybersecurity, Internet of Things
- Laura Stanley, Associate Professor: Human Computer Interaction, Virtual and Augmented Reality, Human Robot Interaction, Affective Computing

Research Highlights

- Laura Stanley (PI) received a three year, $1.2M NSF grant to explore how collaborative robots can augment human cognition.
- Clem Izurieta (PI) received $200K from Wright-Patterson Airforce Base to conduct software assurance research with Montana State University’s TechLink Office.
- Brittany Terese Fasy (PI) is overseeing a three-year $1,166K NSF grant entitled Improving the Pipeline for Rural and American Indian Students Entering Computer Science Via Storytelling. For this work, Brittany received the MSU College of Engineering’s Excellence in Outreach Award.
- Indika Kahanda is working with the Montana branch of the National Alliance on Mental Illness to develop article curation tools for sorting through millions of publications about mental illness and making the information more accessible to clinicians.
- Mike Wittie is collaborating with Dr. Ahmed Elmokashfi during a Fall 2019 sabbatical at the Centre for Resilient Networks and Applications in Oslo, Norway.
- Brendan Mumey will serve as the Fulbright Distinguished Chair in Information and Communications Technologies at the University of Helsinki during Spring Semester 2020.

Student Numbers and Growth

- 568 students in Fall 2019 (including B.S., M.S. and Ph.D. students)
- 573 students in Fall 2018 (including B.S., M.S. and Ph.D. students)
- Awarded 1 Ph.D. degree, 10 M.S. degrees and 90 B.S. degrees in AY 2018-19

Organizational News

- A Computer Science B.A. degree became available in Fall 2018.
- A Data Science M.S. degree became available in Spring 2019.
- The platinum LEED-certified Norm Asbjornson Hall opened in Spring 2019. The new building houses some CS faculty and graduate students and provides state-of-the-art classrooms.
MIT Stephen A. Schwarzman College of Computing

This new College will accelerate pioneering research and innovation in computing, build awareness of ethical implications and societal impact, and educate leaders for an algorithmic future. Dan Huttenlocher SM ’84, PhD ’88, founding dean of Cornell Tech, is the College’s inaugural dean. MIT celebrated the College’s creation with a historic three-day kickoff event in February 2019. For more information, visit computing.mit.edu.

Recent Faculty Awards
- National Academy of Engineering Fellow: Robert T. Morris
- National Academy of Inventors Fellows: Muriel Medard, Rafael Reif
- American Academy of Arts & Science Fellows: Dimitri Antoniadis, Anantha Chandrakasan, David Karger
- Carnegie Corporation Great Immigrant: Dina Katabi
- Financial Times Person of the Year: Sir Tim Berners-Lee
- Microsoft Research Fellowship: Mohammad Alizadeh
- NSF CAREER Awards: Stefanie Mueller, Julian Shun, Suvrit Sra
- Deep Knowledge Analytics Top 100 AI Leaders: Regina Barzilay, Tommi Jaakkola, Manolis Kellis, Peter Szolovits
- Simons Investigator Award: Caroline Uhler
- ACM Grace Murray Hopper Award: Constantin Daskalakis
- ACM SIGMETRICS Test of Time Paper Award: Devavrat Shah
- AISTATS Notable Paper Award: Tamara Broderick
- IEEE EMBS Distinguished Lecturer: Thomas Heldt
- Materials Research Society Fellow: Jesús del Alamo
- Intel Outstanding Researcher Award: Ruonan Han

Interdisciplinary Majors

Recent Hires
- Assistant Professors and Research Areas
  - Pulkit Agrawal, PhD, UC Berkeley. Robotics; computer vision; reinforcement learning.
  - Jacob Andreas, PhD, UC Berkeley. Computation for efficient language learning; intelligent systems.
  - Yufeng Chen, PhD, Harvard. Robotic design; dynamics and control.
  - Henry Corrigan-Gibbs, PhD, Stanford. Security; systems; cryptography.
  - Manya Ghobadi, PhD, University of Toronto. Systems and networking; optical networks.
  - Farnaz Niroui, PhD, MIT. Nanofabrication; nanoscale devices.
  - Negar Reiskarimian, PhD, Columbia. Integrated circuits and systems, applied electromagnetics and nanophotonics.
  - Jonathan Ragan-Kelley, PhD, MIT. Computer graphics; programming systems.
  - Mengjia Yan, PhD, University of Illinois. Hardware support for security.
- Associate Professor and Research Area
  - William D. Oliver, PhD, Stanford. Quantum systems.

Recent and Ongoing Initiatives
- SuperUROP: Nearly 130 undergrads completed this EECS-hosted one-year advanced research program in 2018-2019.
- Rising Stars in EECS: This workshop brought together 76 of the world’s top graduate students and postdocs for two days of discussions about academic careers.
- Postdoc 6: This ongoing initiative provides leadership training, social hours, and other support for 200+ postdocs in EECS-affiliated labs.
- EECS Comm Lab: This program offers workshops on technical communication and trains graduate students and postdocs to help their peers with presentations, posters, resumes, and more.
NEW FACULTY

Eric Chan-Tin
STARTED 2018
Cybersecurity

Dmitriy Dilgach
STARTED 2016
ML, NLP

Neil Klingensmith
STARTED 2019
IoT / Security

Heather Wheeler
STARTED 2015
Bioinformatics

DOYLE HALL
Home of the Computer Science Department

BS Data Science

New Degree Program Fall 2019

This interdisciplinary degree provides students with a solid undergraduate background in programming and data manipulation, applied statistics and inference, and practical domain experience.

Cybersecurity

New Degree Program Fall 2018

In addition to Computer Science (BS, MS, MS+Thesis), Software Engineering (BS, MS), Information Technology (BS, BA, MS), and Digital Humanities (MS)

RECENT FACULTY GRANTS AND ACCOMPLISHMENTS

Catherine Putonti, CRA undergraduate research faculty mentoring award and an NSF award ($676,000) for Deciphering the genetic diversity of viruses through gene networks

Heather Wheeler, awarded 2018 Sujack award and an NIH R15 grant ($429,000) for Predicting gene regulation across populations to understand mechanisms underlying complex traits

Ron Greenberg and George K. Thiruvanthukal, NSF Collaborative research grant ($72,000) Chicago Alliance for Equality in Computer Science (CAFECs)

An Introduction to Computer Networks, by Dr. Peter L Dordal, is a free and open general-purpose computer-networking textbook released under Creative Commons license, Version 1.9, 2019.

DEPARTMENT PROJECT PRESENTATION AWARDS

Nieky Allen for Volt Compiler (Spring 2018)

Jesse Meza & Samuel Habte for MixJIT (Spring 2018)

John O’Sullivan & Catherine Litten for MiHome (Fall 2017)

Percy Soliz & Pinky Sindhu for QHIPA (Fall 2017)

STUDENT THESES

Using Natural Language Processing and Machine Learning for the identification of alcohol in trauma patients (Andrew Phillips, Aug 2018)

Toddler Activity Recognition using Machine Learning (Pinky Sindhu, Aug 2018)

A mobile app demonstrating sensory neural codes through an efficient coding of collected images and sounds (Anne Zhao, Aug 2017)

Real-time fall detection and response on mobile phones using machine learning (Ilona Shparii, Aug 2017)

STUDENT AWARDS

John O’Sullivan on winning team in IBM Unchain the Frame global hackathon ($15,000 prize)

Nathaniel Alemu (BS 2017), Illinois Technology Fifty for the Future awardee

FACULTY AFFILIATIONS

Security, IoT, Distributed Systems, Machine Learning, Big Data, Programming Languages, Bioinformatics, and Computer Science Education

HTTP://CS.LUC.EDU  @LOYOLACHICAGOCS  FACEBOOK.COM/LOYOLACHICAGOCS
NEW FACULTY

JAMES NOVOTNY
ROBOTICS

YULIA KUMAR
ARTIFICIAL INTELLIGENCE

WAI-TAK WONG
ENTERPRISE SYSTEMS

ISABEL MORAIS (CS’19) RECEIVES 2019 UNDERGRADUATE RESEARCHER OF THE YEAR AWARD

2 COMPUTER SCIENCE STUDENTS PRESENT AT THE NCUR POSTERS ON THE HILL EVENT THIS SPRING

9 COMPUTER SCIENCE & INFORMATION TECHNOLOGY STUDENTS PRESENT THEIR RESEARCH POSTERS AT THE ANNUAL NCUR CONFERENCE

NEWS & HIGHLIGHTS

DR. AUSTIN HUANG RECEIVES KEAN’S 2019 FACULTY MENTOR OF THE YEAR AWARD

DR. PATRICIA MORREALE HAS BEEN NAMED A 2019 AAAS FELLOW

MAYRA BACHRACH WAS AWARDED A GOOGLE COMPUTER SCIENCE EDUCATION RESEARCH GRANT
Computer Science
Kansas State University
2018-2019

Our Four Core Focus Areas:
- Cybersecurity
- Cyberphysical Systems
- High Assurance Software
- Data Science

Research
- Expenditures: $2.7M
- Newly Awarded Grants: $1.3M

Other Facts:
- 81.8% Freshmen to Sophomore retention rate
- 56% 5 year growth in students
- 230% 5 year growth in female students
- 269% 5 year growth in Hispanic students
- 26% 5 year growth in PhD students

Students
- Degrees Awarded: 104 Undergraduates, 18 Masters, 3 PhD
- Number of Students: 564 Undergraduates, 29 Masters, 44 PhD

Faculty
- New Faculty:
  - 360+ Publications
  - $10M+ Grants
  - 29+yrs Faculty Experience
- Professors:
  - Pascal Hitzler
  - Lior Shamir
  - Francesco Maiorana
- Faculty Experience:
  - 16 Tenure Track
  - 10 Endowed Positions
  - 7 Instructional
  - 7 NSF Career Awards
  - 1 ONR Young Investigator Award

Facilities
- New Building: 2016
- New Data Science Center: 2017
- New Robotics Laboratory: 2018
- Expanded Data Science Laboratory: 2019
- ABET Accredited Degrees:
  - Computer Science (BS, MS, PhD)
  - Computer Science – Cybersecurity (BS)
  - Computer Science – Entrepreneurship (BS)
  - Computer Science (BS) + MBA
Department Overview

31 Tenured and Tenure-track faculty
25% TT faculty are women

9 NSF CAREER award winners, 1 NSF PECASE award winners, 1 AFOSR Young Investigator Award. 1 Fullbright Scholar, 3 ACM Distinguished Members, 1 IEEE Fellow, AAAS Fellow and European Academy of Sciences Fellow

{csrankings.org} Sept. 2019
#12 in Software Engineering
#16 in Embedded and Real Time Systems
#42 in Robotics
#48 in Artificial Intelligence

New Faculty since Fall 2017

Forrest Bao
Borzoo Bonakdarpour
Myra Cohen
Ali Jannesari

CLUSTERS OF RESEARCH EXPERTISE:
- Artificial intelligence and machine learning
- Bioinformatics
- Data Science
- Robotics
- Software engineering, programming languages and formal methods
- Systems and Networking
- Theoretical computer science

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

More than $5 Million of NEW external funding since 2018

Department Overview

Tenured and Tenure-track faculty

31
25% TT faculty are women

9 NSF CAREER award winners, 1 NSF PECASE award winners, 1 AFOSR Young Investigator Award. 1 Fullbright Scholar, 3 ACM Distinguished Members, 1 IEEE Fellow, AAAS Fellow and European Academy of Sciences Fellow

{csrankings.org} Sept. 2019
#12 in Software Engineering
#16 in Embedded and Real Time Systems
#42 in Robotics
#48 in Artificial Intelligence

CLUSTERS OF RESEARCH EXPERTISE:
- Artificial intelligence and machine learning
- Bioinformatics
- Data Science
- Robotics
- Software engineering, programming languages and formal methods
- Systems and Networking
- Theoretical computer science

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

More than $5 Million of NEW external funding since 2018

Department Overview

Tenured and Tenure-track faculty

31
25% TT faculty are women

9 NSF CAREER award winners, 1 NSF PECASE award winners, 1 AFOSR Young Investigator Award. 1 Fullbright Scholar, 3 ACM Distinguished Members, 1 IEEE Fellow, AAAS Fellow and European Academy of Sciences Fellow

{csrankings.org} Sept. 2019
#12 in Software Engineering
#16 in Embedded and Real Time Systems
#42 in Robotics
#48 in Artificial Intelligence

CLUSTERS OF RESEARCH EXPERTISE:
- Artificial intelligence and machine learning
- Bioinformatics
- Data Science
- Robotics
- Software engineering, programming languages and formal methods
- Systems and Networking
- Theoretical computer science

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

More than $5 Million of NEW external funding since 2018
New Degree Programs (Fall 2019):
- Bachelor of Science in Artificial Intelligence
  *(First such degree in the Midwest!)*
- Master of Artificial Intelligence
- Master of Cybersecurity

Student Numbers and Growth:
- Awarded 59 Bachelor’s, 362 Master’s, and 8 Ph.D. degrees in 2019
- CS department has doubled the number of students in the last 5 years to approximately 1,200 (16% of the total university enrollment)
- Master in Data Science program has grown to 113 students in its 5th year (Fall 2019), with 62 total alumni

Student Stats (Fall 2019):
- Undergraduate majors: 511
- Master’s students: 545
- PhD students: 74

Faculty Stats:
- Tenured/Tenure-Track: 18
- Research/Industry: 5
- Teaching: 7

Research Highlights:
- $9.44M in active CS grants/projects, with 18 tenure-track faculty
- Funding sources include NSF, NIH, AFOSR, DoE, IARPA, ARL, and Industry
- 6 NSF CAREER/DoD YIP Awardees
- 3 best paper awards
- New interdisciplinary AI Initiative bringing together researchers from across campus for collaboration in education, research, and innovation
- Illinois Tech’s Nikolich co-directing a $20M NSF Midscale Research Infrastructure award to build the next generation Internet

Faculty Highlights:
- Prof. Sanjiv Kapoor elected to National Academy of Inventors
- Prof. Cindy Hood serving on National Academies of Science, Engineering and Medicine Panel on Review of NIST’s Communications Technology Laboratory
- Prof. Xian-He Sun leading $3M project Collaborative Research: Hermes: Extending the HDF Library to Support Intelligent I/O Buffering for Deep Memory and Storage Hierarchy Systems funded by NSF
- Research Fellow Anita Nikolich co-directed the AI Village at DEFCON, showcasing Deep Fake technology and countermeasures

Department Highlights:
- Multiple summer sessions of Computer Discovery Camp, teaching middle-school girls to program robots
- CS Tech Programming Team Advances to World Finals
- CS student team ranked 6th in the Student Cluster Competition (SCC)
- CS undergrad on first-place team at Clinton Global Initiative Codeathon
- CS student members of STARS Computing Corps taught grade-school students coding over spring break at Holy Angels Catholic School
- 80% of CS Full Professors are Fellows of Professional Societies (IEEE/ACM/AAAS/etc.)

Organizational News:
- University committed to growth of CS and plans to increase the number of CS faculty significantly
- Ocient Computation and Data Center opened
- Global Cybersecurity Initiative Conference (GCSI 2018) held at Illinois Tech including AI in Data Privacy Hackathon

Sanjiv Kapoor Cindy Hood Xian-He Sun Anita Nikolich
COMPUTER SCIENCE

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 2020, Harvard CS will occupy a new state-of-the-art, 500,000-square-foot Science and Engineering Complex.

NEW FACULTY
Recent hires - part of a plan to increase the size of the CS faculty by 50 percent, enabled by former Microsoft CEO Steve Ballmer AB ’77 - include:

- **Milind Tambe**
  research interests: artificial intelligence and society

- **Cynthia Dwork**
  research interests: privacy, cryptography, and distributed computing

- **James Mickens**
  research interests: systems design and security

- **Nada Amin**
  research interests: ways of programming that are easier, faster, and safer

- **Elena Glassman**
  research interests: human-computer interaction

- **Minlan Yu**
  research interests: networked systems that make data centers inherently easier to manage

CENTERS & INITIATIVES
Harvard undergraduate, Masters, and PhD 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

BY THE NUMBERS

- **464** Undergraduates
- **115** PhD
- **40** Master in Computational Science and Engineering
- **92** Master in Data Science

[https://www.seas.harvard.edu/computer-science](https://www.seas.harvard.edu/computer-science)
Organizational News:
- IC Professor Charles Isbell was named Dean of Georgia Tech’s College of Computing, beginning his term of service on July 1, 2019.
- School of IC Chair Ayanna Howard was selected for the 2019-20 Executive Leadership Institute of the University System of Georgia.
- IC Professor Seth Hutchinson was chosen as the new Director for Georgia Tech’s Institute for Robotics and Intelligent Machines. He joins IC Professors Beth Mynatt (Institute for People and Technology), Irfan Essa (Machine Learning Center), and Keith Edwards (GVU Center) as center or institute directors at Georgia Tech. Hutchinson was also selected to be the next president of the IEEE Robotics and Automation Society.

Other News:
- The School was awarded $13.2 million in new research funding in FY19, bringing the total in its 13-year history to over $80 million.
- IC Professor Dhruv Batra was named a PECASE Award winner, one of three at Georgia Tech.
- The School of IC launched its podcast, the Interaction Hour, focusing on broad societal impacts of computing, from mental health to ethics in AI to equity, and more. Find it on iTunes and Spotify.
- Charles Isbell and Amy Bruckman were named Fellows of the Association for Computing Machinery.

New Faculty Hires:
- Diyi Yang, Assistant Professor, Computational Social Science; joined IC after receiving her Ph.D. from Carnegie Mellon.
- Judy Hoffman, Assistant Professor, Computer Vision and ML; joined IC after receiving her Ph.D. from the University of California, Berkeley.
- Jessica Roberts, Assistant Professor, Data Interaction and User Interface; joined IC after receiving her Ph.D. from the University of Illinois, Chicago.
- Clio Andris, Assistant Professor, Geovisualization; joined IC as joint appointment with the School of City and Regional Planning.

Research Highlights:
- IC Professors John Stasko and Gregory Abowd earned 10-year impact awards at IEEE VIS 2018 and Ubicomp 2018, respectively. Stasko earned his for Effectiveness of Animation in Trend Visualization and Abowd for Detecting Human Movement by Differential Air Pressure Sensing in HVAC System Ductwork: An Exploration in Infrastructure Mediated Sensing.
- New technology from the Robot Autonomy and Interactive Learning lab led by Sonia Chernova received national media attention for its breakthroughs in autonomous tool construction using reasoning about shape, function, and attachment. The lead author of the paper, titled Autonomous Tool Construction Using Part Shape and Attachment Prediction, was Ph.D. student Lakshmi 1air.
- B. DiSalvo, National Institutes of Health, Hemonauts – Interactive Digital Media for Increased STEM Learning Among Chronically Ill Children and Their Support Networks, $1.5M
- M. DeChoudhury, National Institutes of Health, Leveraging Social Media Data and Machine Learning to Optimize Treatment Paradigms for Youth with Schizophrenia, $2.6M
- R. Arkin, DARPA, Syrotheus: Cooperative Autonomous Mapping, $1M
- D. Batra, Army, Towards Transparent Machine Perception Systems, $1M

Student Highlights:
- IC FY20 enrollment numbers: 172 Ph.D. students, 121 Master’s students; 206 total Ph.D. graduates to date
Faculty News
• Professor Haesun Park and Joint Professor Surya Kalidindi earned the designation of Regent’s Professor.
• Regent’s Professor Richard Fujimoto was chosen for the Class of 1934 Outstanding Interdisciplinary Activities Award which recognizes faculty that have made significant interdisciplinary contributions to teaching and research.
• The American Institute for Medical and Biological Engineering (AIMBE) announced the induction of Mark Borodovsky, Regents’ Professor and Joint CSE and Biomedical Engineering professor, to its College of Fellows.
• Professor Srinivas Aluru will serve as the Executive Director for the Interdisciplinary Research Institute for Data Engineering and Science (IDEaS).

Organizational News:
• Professor Srinivas Aluru now serves as interim chair as CSE searches for a new leader.
• The entire CSE school moved locations from Georgia Tech campus to Tech Square at the multi-use building, Coda.

By the numbers:
• 19 tenure-track faculty
• Student enrollment numbers for FY19: 190 Master’s Students, 71 Ph.D. Students
• 3 Regents’ professors, 1 ACM Fellow, 3 IEEE fellows, 1 AAAS fellow, 1 AIMBE Fellow, 1 SIAM fellow, 1 TMS fellow, 1 ASM fellow, 1 ASME fellow, 1 PECASE award, 6 NSF CAREER awards, and 3 Gordon Bell awardees.

New Faculty Hires:
• Associate Professor Elizabeth Cherry joined CSE in August 2016. Cherry specializes in computational biology with a focus on cardiac electrophysiology and arrhythmias.
• Assistant Professor Xiuwei Zhang joined CSE in August 2016. Zhang’s research focuses on data science and computational biology with a specialization in studying mechanisms of cell differentiation using single cell data, and evolution of biological networks.
• Assistant Professor Srijan Kumar is set to join CSE in January 2020. Kumar studies machine learning and data science, social media, graph mining, cybersecurity, and social computing.

Research Highlights:
• CSE recently acquired a $5.3M high performance computing (HPC) resource through an MRI NSF grant led by Professor Srinivas Aluru. The HPC system is now available in the Coda data center and will support data-driven research in astrophysics, biosciences, computational chemistry, and materials and manufacturing. It will also be used for numerous computational science projects and for the HPC research that underlies it all.
• Georgia Tech is now the recipient of a NVIDIA Artificial Intelligence Lab (NVAIL) grant as part of the NVAIL program focusing on graph analytics on graphics processing units (GPUs).
• Professor Jimeng Sun created an algorithm that can detect heart failure 6 months in advance and a deep learning method that enables automatic scoring of sleep tests for patients suffering from sleep disorders. Sun was also named in the top 100 AI leaders for health for 2019.
Innovations

- Ph.D. student Samira Samadi incorporated fairness into spectral clustering techniques for partitioning graph data.
- Associate Professor Ada Gavrilovska and Research Scientist Ketan Bhardwaj developed a tool called AppSlicer that lets users install only the portion of an app with the same performance capabilities.
- Cybersecurity researchers including Associate Professor Taesoo Kim made the first fuzzing framework specifically for file systems that finds memory corruptions better than any existing tool.
- Assistant Professor Richard Peng created the first vertex sparsification-based dynamic algorithm for general graphs undergoing edge insertions and deletions.
- Ph.D. student Thaleia Dimitra Doudali worked on Kleio, a hybrid memory management system that uses ML and more common historical methods to predict which data is most frequently accessed.

Faculty News

- Professor Mostafa Ammar is serving as interim chair as the school searches for its next leader.
- Taesoo Kim has been promoted to associate professor, and Alexandra Boldyreva is now a professor.
- Jeffrey Young and Simon Chung have been promoted to senior research scientist and research science II respectively.

We continue to grow our tenure-track faculty:

- Ashutosh Dhekne studies wireless networking and mobile computing with applications to RF sensing, 5G cellular networks, and cyber physical systems.
- Alexey Tumanov researches systems support and resource management for distributed machine learning frameworks and applications.
- Paul Pearce has officially joined us and brings his expertise in network security in politically and economically motivated attacks, such as cybercrime, censorship, and advanced persistent threats.

Upcoming Research

- Professor Dana Randall is leading a team using collective emergent behavior to achieve task-oriented objectives with a $6.25 million grant from the Department of Defense.
- Professor Ellen Zegura is part of a team bringing better network coverage to Native American reservations with a $2 million NSF grant.
- Associate Professor Ada Gavrilovska is a new principal investigator for the Applications Driving Architectures (ADA) Center, a research center creating scalable application-driven architecture design.
Georgetown University
Department of Computer Science

Georgetown University’s Department of Computer Science offer BS/BA, MS and PhD programs. Our faculty perform research in many areas including algorithms, AI, bioinformatics, computer and network security, cryptography and privacy, database systems, data mining, distributed algorithms, human-computer interaction, information assurance, information retrieval, machine learning, networking, parallel algorithms, systems, theory, and visual analytics. Being in the heart of Washington, DC gives our students a strong quality of life and opportunities to engage in public and private sector internships, local computing groups, and regional events.

New tenured faculty in the past two years:

Matt Blaze
McDevitt Chair
Cryptography,
cryptography,
cryptomathics,
computer network
security, technology

Nitin Vaidya
McDevitt Chair
Distributed computing,
Fault-tolerance,
Wireless networks

Recent recognitions:

- Kobbi Nissim and co-authors received the 2019 Caspar Bowden PET award.
- Justin Thaler received a 2019 CAREER award from the National Science Foundation for research on “The Polynomial Method in Complexity and Cryptography”.
- Cal Newport and co-authors received the Best Paper Award at the 22nd International Conference on Principles of Distributed Systems (OPODIS).

New instructional faculty in the past two years:

Philip Buffum
Assistant Teaching Professor
Intelligent virtual agents,
computer science education

Raymond Essick
Assistant Teaching Professor
Switched and hybrid systems
control, distributed semidefinite programming

Highlights:

- Our PhD students are guaranteed 5 years of funding
- Computer science undergraduate class of 2018 was almost gender neutral, having approximately equal numbers of women and men.
- Our women coders group (guWeCode) focuses on building digital literacy and a community of technologists across campus.

Recent New Grants

- Prof. Micah Sherr leads a new DARPA project on reliable anonymous communication, and a NSF SaTC project with focus on expanding research frontiers with a next-generation anonymous communication experimentation framework.
- Prof. Lisa Singh and collaborators received a new NSF grant to explore the future of quantitative research in the social sciences. She also received a grant from the National Collaborative on Gun Violence Research to investigate the use social media posts to measure gun-related outcomes.
- Prof. Justin Thaler received the 2019 NSF CAREER award, and also leads a new NSF project on automatically parallelizing approximate data analysis with mergeable summaries.
- Georgetown University received a grant from the Mozilla Responsible Computer Science Challenge program to infuse ethics into the computer science curriculum.
Fast Facts:
- Number of faculty: 54 (42 tenure-track)
- Undergraduate student enrollment: 1782 (25% growth per annum over last 5 years)
- Graduate student enrollment: 145 (Ph.D. program), 348 (in four M.S programs)
- Research Expenditures (FY 19): $7.5M

Recent Faculty Hires:
- Foteini Baldimtsi, Ph.D. (Brown University), Postdoc (Boston University) – Area: Cryptography, Electronic cash, Bitcoin and blockchain technology
- Jonathan Bell, Ph.D. (Columbia University) – Area: Software engineering, Software systems
- Yue Cheng, Ph.D. (Virginia Tech) – Area: Distributed Systems, Storage Systems, Cloud Computing
- Dov Gordon, Ph.D. (University of Maryland), Postdoc (Columbia) – Area: Cryptography, Secure Computation
- Jonathan Katz, Ph.D. (Columbia University) – Area: Cryptography, Computer and Network security, and Complexity Theory
- Thomas LaToza, Ph.D. (Carnegie Mellon), Postdoc (UC Irvine) – Area: Software Engineering, Human-Computer Interaction
- Eric Osterweil, Ph.D. (UCLA): Area: Network Security
- Parth Pathak, Ph.D. (North Carolina State), Postdoc (UC Davis) – Area: Next-generation wireless networks, Cyber-physical systems
- Craig Yu, Ph.D. (UCLA) – Area: Computer Graphics, Virtual Reality

Recent Highlights:
- Commonwealth of Virginia provides infrastructure and faculty support for computing initiatives and increasing graduate/undergraduate tech. talent pipeline for Amazon and local Northern Virginia industry.
- $4M DARPA award received by Angelos Stavrou for project “Democratizing DDoS Defenses Using Secure Indirection Networks”
- NSF provides funding for REU site at GMU focused on educational data mining (PI: Rangwala)
- NSF provides funding for multi-disciplinary graduate students via National Research Traineeship (NRT) Program on brain-body interactions. (PI: Sikdar, Co-PI: Rangwala)
Computer Science
Emory University
http://cs.emory.edu

Notable Honors:
Jinho Choi
Assistant Professor
Amazon Alexa Prize
Contributions to Conversational AI

Newly Promoted:
Davide Fossati
Senior Lecturer
Outstanding Teaching
Mentor for GWC

Selected Highlights:
• Emory Team one of 10 worldwide Selected for 2019 Amazon Alexa Prize Challenge: Prof Jinho Choi and students Han He, James Finch, Liyan Xu, Sarah Fillwock, Harshita Sajwani, Jiyang Lu, Jason Choi, Xiangjue Dong, Zihan Wang, Ruixiang Qi, Chenxi Xu, Ali Ahmadvand, and Sergey Volokhin.
• Prof Eugene Agichtein to be keynote speaker for SIGIR 2019 eCommerce Workshop
• Prof Li Xiong and team receives 3rd Place for 2018 IDASH Genome Privacy & Security Competition for “Blockchain-based immutable logging and querying for cross-site genomic dataset access audit trail.”
• Best paper runner-up award IEEE MDM 2018: Privacy Preserving Reverse k-Nearest Neighbor Queries, Layla Pourmajaf, Farnaz Tahmesebian, and Profs Li Xiong, Vaidy Sunderam, and Cyrus Shahabi (USC)
• Prof Avani Wildani gives invited lecture at ACM Tapia Celebration of Diversity in Computing conference
• Prof Dorian Arnold selected as Association for Computing Machinery (ACM) Distinguished Speaker

Research Awards and Honors:
• Prof Joyce Ho receives NIH grant on “Re-envisioned chart assessment for real-time investigation of nursing and guidance” with SON Professor Vicki Hertzberg
• Prof Eugene Agichtein receives NIH grant for “Search & Social Media Data Mining to Predict Exposure to Air Pollution”
• Profs Ymir Vigfusson and Rebecca Mitchell receive CDC new bioinformatics contract
• Prof Avani Wildani receives NSF CRII grant for Workload Characterization project
• Prof Jinho Choi receives multiple research awards and gifts from industry for NLP research

Students and Education Programs:
• Robust interest continuing CS undergrad and grad courses: 1500 students enrolled, 260+ majors
• Awarded 71 Bachelors, 8 Honors, 14 Masters, and 5 Ph.D. degrees
• Prof Davide Fossati innovates teaching CS1 in group format and flipped classroom
• CS graduates joined leading universities and companies including Google, FB, Amazon, Microsoft
• Department launches “Towards Computing for All” curricular and co-curricular initiatives

Organizational News:
• CS continues to build on innovative and impactful research and teaching in Data Science and Systems
• Computer Science department growing with multiple faculty positions, 75 PhD 40 MS students

A few Emory CS research and student groups:
Recent Grants and Contracts

- Wilson et al., Using Scrum to Develop an Agile Department, NSF, $2M, five years
- Butka et al., Multi-Domain Approach to Increased USV [Unmanned Surface Vehicle] Capability for Future Naval Missions, ONR, $900k, five years
- Jafer, ATC Scenario Training Technology, FAA Center of Excellence on Technical Training and Human Performance, $350k with $350k in-kind industry match (RTSync), 18 months
- Towhidnejad et al., Multi-level Model of Swarm Intelligence for Resilient Autonomous Systems, AFRL Information Directorate, $544k, two years
- Yuan and Seker, REU Site: Cybersecurity Research of Unmanned Aerial Vehicles, NSF, $288k, two years

Points of Note

- PhD in EE&CS started fall 2015, now 21 students
- Ongoing search, multiple positions: cybersecurity, data analytics/ AI/ML, systems engineering
- Strategic research thrusts: Cybersecurity and assured systems engineering; modeling and simulation for aviation and aerospace; detect and avoid for unmanned systems
- Eighteen faculty members plus three open positions
- Faculty affiliated with ASSURE (FAA COE for UAS), TTHP (FAA COE for Technical Training and Human Performance), NEAR (Next-Generation Embry-Riddle Applied Research) Lab
- Hands-on undergraduate and masters programs; increasingly accurate approximation to engineering/computing practice
- Two-semester cross-disciplinary capstone (all ECSSE undergrad programs) uses Scrum, industry tools, for project development, management
- Near 100% placement
- Largest civilian employers of graduates, long term: Boeing, Lockheed Martin
- Employers of recent graduates: Same plus Amazon, Collins Aerospace, General Dynamics, Google, Harris, Intel, Microsoft, Northrop Grumman

Student Organizations and Projects

- Artificial Intelligence Club
- EcoCAR
- IEEE & IEEE HKN
- Robotics Association
- Tech Eagles (HackRiddle hackathon)
- UPE
- White Hat Eagles Cybersecurity Club

Programs and Enrollment

<table>
<thead>
<tr>
<th>Program</th>
<th>Fall 2019(Δ)</th>
<th>Program</th>
<th>Fall 2019(Δ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS Computer Engineering</td>
<td>56 (+4)</td>
<td>MS Cybersecurity Engineering</td>
<td>21 (-1)</td>
</tr>
<tr>
<td>BS Computer Science</td>
<td>67 (+8)</td>
<td>MS Electrical and Computer</td>
<td>24 (+1)</td>
</tr>
<tr>
<td>BS Electrical Engineering</td>
<td>77 (+1)</td>
<td>MS Software Engineering</td>
<td>15 (-2)</td>
</tr>
<tr>
<td>BS Software Engineering</td>
<td>65 (-6)</td>
<td>MS Systems Engineering</td>
<td>8 (-7)</td>
</tr>
<tr>
<td><strong>Undergraduate</strong></td>
<td><strong>263 (+3)</strong></td>
<td>MS Unmanned and Autonomous</td>
<td>9 (-1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Systems Engineering</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>PhD in Electrical Engineering</td>
<td>21 (+6)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>and Computer Science</td>
<td></td>
</tr>
<tr>
<td><strong>Graduate</strong></td>
<td><strong>87 (-23)</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
NEW FACULTY

Sean Bush
Information Technology
Michaël Cadilhac
Computer Science
Steve Dragon
Network Technology
Zhen Huang
Computer Science
Wael Kessentini
Software Engineering
Roselyn Tchoua
Data Science
Thiru Ramaraj
Data Science
Ilyas Ustun
Data Science

FACULTY HIGHLIGHTS

• Dr. Tanu Malik received a 5-year, $498,888 NSF CAREER grant for “Advanced Containers for Reproducibility in Computational and Data Science.”
• This year marked the fifteenth year of Medical Informatics Experiences (MedIX), an NSF Research Experiences for Undergraduates (REU) program. Co-founded by Dr. Daniela Raicu and Dr. Jacob Furst, the program has received over $1.5 million in funding over the years.
• Dr. Enid Montague and Dr. Daniela Raicu received a $300,000 grant from NSF for their project “CHS: Small: Feedback about Affect and Interaction to Patients and Providers to Increase Positive Interactive Behaviors.”
• Dr. Rosalee Wolfe was selected for the Fulbright-Schuman European Union Affairs program for her project “Improving Deaf-Hearing Communication through a Multi-Lingual Avatar.”
• Through its Academic Growth Initiative Fund (AGIF), DePaul is supporting Dr. Filipo Sharevski and Jean-Philippe Labruyere’s “High School Outreach Program Using Cybersecurity Competitions.”
• A new space, the first Internet of Things lab at DePaul (NexGeN), will be directed by Dr. Sharief Oteafy and is also AGIF-supported.

STUDENT HIGHLIGHTS

• Our Computer Science Society student organization planned and orchestrated their second annual student hackathon, DemonHacks. There were nearly 200 participants from more than 30 universities.
• Eight CDM students were selected for the Illinois Technology Foundation’s “Fifty for the Future” list.
• Each year, CDM sponsors six undergraduate female students to attend the Grace Hopper Celebration.
• Undergraduate student Tim Gamble was named one of Chicago Inno’s “25 under 25” rising entrepreneurs and technologists.
• Graduate student Sierra Sellman and her teammate Michelle Rodrigue, a student at Georgia Institute of Technology, won first place in the US Department of Energy’s 2019 Geothermal Design Challenge.
• PhD students Badar Al Lawati and Redar Ismail received a $100,000 credit grant via the Google Cloud Platform for Startups program. The team is using this credit, in addition to the technical support and mentoring opportunities accompanied by the monetary prize, to build out BridgeLink, their refugee-hiring platform.
• Our Security Daemons team won the Illinois Collegiate Cyber Defense Competition for the fifth consecutive year. The team won regionals from 2015-17 and placed in the top 5 nationally in 2016 and 2017.
• Undergraduate students Nathan Lorenzo and Jessica Oliveros were selected to be CME Group Foundation Scholars.
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. Cornell also aims, through public service, to enhance the lives and livelihoods of students, the people of New York and others around the world.

Six New Faculty

Nika Hghtalab
Fall 2019, Ithaca
Game Theory & Machine Learning
Ph.D. Carnegie Mellon

Sasha Rush
Fall 2019, New York City
Natural Language Processing
Ph.D. MIT

Volodymyr Kuleshov
Spring 2020, New York City
Computational Biology & ML
Ph.D. Stanford

Wen Sun
Fall 2020, New York City
Robotics & Reinforcement Learning
Ph.D. Carnegie Mellon

Owolabi Legunsen
Fall 2020, Ithaca
Software Engineering
Ph.D. Urbana-Champaign

Abe Davis
Fall 2020, Ithaca
Graphics & HCI
Ph.D. MIT

Faculty Highlights

Jon M. Kleinberg Receives Vannevar Bush Award from the U.S. Department of Defense

Joseph Halpern Elected to National Academy of Engineering (NAE)

Deborah Estrin Receives MacArthur Award

Éva Tardos Receives Jon von Neumann Medal

Carla Gomes’ Computational Sustainability earns cover of Communications of the ACM

Adrian Sampson Wins National Science Foundation Career Award

David Gries Wins SIGCSE Top Ten CS Education Paper for Last Half-Century

David Bindal, Austin Benson, & Kun Dong Win “Best Research Paper” at SIGKDD conference

Graduate Students

Rediet Abebe Named MIT Technology Review 2019 Innovator Under 35

Yi Sun Wins Bloomberg Data Science Fellowship

Dylan Foster Receives Best Paper and Best Student Paper at COLT 19

PicNIC Paper Wins the ACM SIGCOMM 19 Best Student paper

By the Numbers

Faculty Members: 58
Campuses: 2
Undergraduate Students: 1,170
Resident Ph.D. Students: 200
Masters Students: 138

Majors: 36.2% female, 9.9% URM
Incoming Ph.D. class: 27% female, 8% URM

Over 50% of all Cornell undergraduates take a class in CIS during their four-year degree; and more than 10% of all Cornell undergraduates major in one of the CIS fields.

One Department: Two Campuses. Ithaca and New York City
New Faculty

Elias Bareinboim
Bareinboim research focuses on causal inference and its applications to data-driven fields in the health and social sciences.

David Knowles
Knowles’ interests lie in the interface between Bayesian inference and machine learning. He looks at how machine learning can be used in genomics.

Brian Smith
Smith’s research combines computer vision, ubiquitous computing, and augmented reality to create the next generation of interactive systems.

Shuran Song
Song is an expert in computer vision and robotics, whose research is focused on data-driven scene understanding in 3D.

Major Faculty Awards

Test of Time Awards

Encrypted Key Exchange: Password-based protocols secure against dictionary attacks (1992)
Award: Test of Time Award, IEEE Symposium on Security and Privacy
Authors: Steven Bellovin, Michael Merritt

Award: Test of Time Award, Very Large Databases (VLDB) conference
Author: Michael Cafarella, Aion Halevy, Zhe Daisy Wang, Eugene Wu, Yang Zhang

Best Paper Awards

SpatialNet: A Declarative Resource for Spatial Relations
Best Paper at NAACL-HLT SpLU-RoboNLP 2019
Authors: Morgan Ulinski, Bob Coyne, Julia Hirschberg

Virtual Wires: Rethinking WiFi networks
Best Paper at IEEE LANMAN 2019
Authors: Yudong Yang, Yuming Jiang, Vishal Misra, Dan Rubenstein

Department Numbers

CS@CU by the Numbers

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

1268 CS majors / 12,102 CS class enrollments
39.5% of CS majors are women (of 1,212 students reporting gender)
(all students stats from Spring 2019)

59 Faculty

8 Elected to National Academy of Engineering
2 Elected to National Academy of Sciences
1 Elected to American Philosophical Society
1 Elected to Internet Hall of Fame
3 IEEE John von Neumann Medal Winners
5 AAAS Fellows
16 Alfred P. Sloan Foundation Fellows
16 ACM Fellows / 16 IEEE Fellows
6 Elected to American Academy of Arts and Sciences
1 Elected to National Academy of Inventors
2 ACM/IEEE Knuth Prize Winners
3 AAAI Fellows
3 ACL Fellows
3 Guggenheim Fellows
3 Packard Foundation Fellowships
NSF Awards: 3 PECASE, 31 CAREER, 2 NYI, and 4 PYI
FACULTY/DEPARTMENT HIGHLIGHTS

► CS@Mines was recognized by the National Center for Women & Information Technology for our work to increase the participation of women in computing. As the NCWIT NEXT Grand Prize recipient, CS@Mines received $100,000 to continue our diversity efforts.

► Associate Professor Dejun Yang is the 2019 winner of the William R. Bennett Prize from the IEEE Communications Society, for a recent paper published in the IEEE/ACM Transactions on Networking. The Bennett Prize is awarded to an exceptional publication that year.

► Professor Qi Han won Best Paper Award at the 10th EIA MobiCASE Conference (China) and Best Student Paper at the 16th IEEE UIC Conference (UK).

► Assistant Professor Tom Williams has received a NASA Early Career Faculty grant.

► Associate Professor Bo Wu is a Keynote speaker at IEEE Cluster 2019.

NEW FACULTY (WOOHOO!)

Mehmet Belvirani
Joined Fall 2019
Assistant Professor

Jedidiah McClurg
Joined Fall 2019
Assistant Professor

STUDENT ACHIEVEMENTS, NUMBERS, & GROWTH

► Four CS@Mines, who won a hackathon at M-Hack, were invited to attend the Global Facebook Hackathon Finals at Facebook HQ and took 1st place in a competition that had 20 teams from 10+ countries!

► Three CS@Mines students won our regional ACM International Collegiate Programming Contest last November, then competed in the ICPC World Finals in Porto, Portugal.

► Several CS@Mines students worked together to earn 10th place in the 2018 NSA CodeBreaker Challenge (which ended in January 2019). Over 375 U.S. universities participated in the challenge this year.

► Five CS@Mines won the IEEE Region 5 Student Robotics Competition, by designing a robot that could navigate obstacles, pick up small objects, and then sort the objects into separate container using computer vision.

► 681 Undergraduate Students (29% increase from a year ago)

► 105 Graduate Students (28% increase from a year ago)

We have faculty openings!
(like everyone else 😊)

2019-20 DISTINGUISHED SPEAKERS

Doug Sicker (CMU)
Greg Morrisett (Cornell)
Bill Regli (UMD)
Jeff Mogul (Google)
Ayanna Howard (GA Tech)
Victoria Coleman (Wikimedia)

Thanks for visiting CS@Mines!
Colgate University is a highly selective, private, liberal arts, undergraduate institution with roughly 2,900 students.

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.

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

• Two very active student clubs: Women in Computer Science and <ColgateCoders>
• Students run after-school coding lessons at the local elementary school
• Faculty participate in a summer workshop at Camp Fiver in nearby Poolville, NY, part of a youth-development organization for children from underserved communities
• 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 sending 15 students to GHC and the Tapia Conference in 2019, and is committed to diversifying our student population

Student Numbers and Growth

• The department is committed to small class sizes; still, well over 200 students take our CS1 course each year
• 250% increase in majors from class of 2015 to class of 2020, with students continuing on to top-tier industry positions and graduate programs
• Women make up about 45% of our majors
• We are hiring three new tenure stream faculty to start in 2020
Jacob Sorber was awarded a Fulbright U.S. Scholar and is spending a sabbatical year in Botswana.

Hongxin Hu won an NSF CAREER Award for the project “Towards Elastic Security with Safe and Efficient Network Security Function Virtualization”.

Ilya Safro’s article on “A Hybrid Approach for Solving Optimization Problems on Small Quantum Computers” was featured on the cover of IEEE Computer.

Feng Luo’s article was published in an article in Nature Methods, leading to a new NSF DBI grant.

Bart Knijnenburg won the Best Paper award at the 10th International Conference on Social Media & Society.

Clemson University is designated as an NSA National Center of Academic Excellence in Cyber Defense Research (CAE-R), an effort led by Hongxin Hu.

The Clemson Palmetto high performance computer is ranked 4th among public academic institutions in the US, an expansion funded in part by an NSF MRI award led by Amy Apon.

Sophie Joerg was an invited speaker at the ACM SIGGRAPH/Eurographics Symposium on Computer Animation.

Animation productions from School of Computing’s Digital Production Arts Program appeared in 12 film and animated short festivals in 2018-19, with one “Best Animated Short” award and one honorable mention.

PhD student Robert Underwood won a DOE Office of Science Graduate Student Research Program award.

PhD student Daricia Wilkinson received a 2019 Facebook Fellowship award.

PhD student Divine Maloney was selected as a 2019 Microsoft Research Ada Lovelace Fellow.

PhD student Byron Lowens was among 200 young researchers from around the world selected to participate in the Heidelberg Laureate Forum in Heidelberg, Germany.

PhD student Brodrick Stigall received the Institute of International Education Graduate International Research Experiences (IIE-GIRE) Scholarship.

Hundreds of students participated in Clemson’s all student-led hackathon, CUhackit, with premier sponsor Amazon Web Services, an event that will continue this year.

CU Cyber hosted CU Capture the Flag event for students throughout the Southeastern United States.

**New Faculty Members**

**Amy Apon**
C. Tycho Howle Endowed Chair and Director of the School of Computing
Ph.D. Vanderbilt University
Cloud computing, parallel and distributed computing, scalable data analytics systems

**Nina Hubig**
Assistant Professor
Ph.D. Technical University of Munich
Machine learning, time-series, neuroscience-hope

**Lana Drachova**
Lecturer
Ph.D. Clemson University

**Kai Liu**
Assistant Professor
Ph.D. Colorado School of Mines
Machine learning, data science, artificial intelligence and optimization

**Mitch Shue**
Professor of Practice
M.S. George Mason University
Former CTO, Morningstar

**New Director**

**Nina Hubig**
Assistant Professor
Ph.D. Technical University of Munich
Machine learning, time-series, neuroscience-hope

**Lana Drachova**
Lecturer
Ph.D. Clemson University

**Kai Liu**
Assistant Professor
Ph.D. Colorado School of Mines
Machine learning, data science, artificial intelligence and optimization

**Mitch Shue**
Professor of Practice
M.S. George Mason University
Former CTO, Morningstar

**Student Highlights**

- PhD student Robert Underwood won a DOE Office of Science Graduate Student Research Program award.
- PhD student Daricia Wilkinson received a 2019 Facebook Fellowship award.
- PhD student Divine Maloney was selected as a 2019 Microsoft Research Ada Lovelace Fellow.
- PhD student Byron Lowens was among 200 young researchers from around the world selected to participate in the Heidelberg Laureate Forum in Heidelberg, Germany.
- PhD student Brodrick Stigall received the Institute of International Education Graduate International Research Experiences (IIE-GIRE) Scholarship.
- Hundreds of students participated in Clemson’s all student-led hackathon, CUhackit, with premier sponsor Amazon Web Services, an event that will continue this year.
- CU Cyber hosted CU Capture the Flag event for students throughout the Southeastern United States.

**Degrees Offered**

- **Undergraduate**
  - BS Computer Science
  - BA Computer Science
  - BS Computer Info Systems

- **Graduate**
  - PhD/MS Computer Science
  - PhD/MS Biomedical Data Science & Informatics
  - MFA/MS Digital Production Arts
  - PhD Human-Centered Computing

- **Faculty**
  - Total: 49
  - Tenure/ Tenure Track: 37

- **Undergrad Students**
  - 967
  - As of 9/3/19

- **Graduate Students**
  - 277
  - As of 9/3/19

- **Website**
  - www.clemson.edu/computing
Chair's Message
Welcome to the Department of Computer and Data Sciences!

While the origin of the Computer Science program goes back to many decades ago, with the establishment of the new CDS dept, a new chapter is about to begin. We thrive to provide outstanding educational experiences for both our graduate and undergraduate students, while performing cutting edge research in Algorithms, AI & ML, Bioinformatics, Data Science & Analytics, Databases & Data Mining, Networks, Security and Privacy, and Software Engineering.

We are delighted to invite you to explore our department further and to join our growing community as faculty, students, friends, and sponsors.

Jing Li, Professor and Interim Chair

Students by the numbers

Degree programs:
- BS and BA in Computer Sci
- BS in Data Science and Analytics
- BS/MS, MS (thesis, project, and course-based), and PH.D. in CS

Faculty and Research Interests
Erman Ayday - Cryptography, Network Security
Harold S. Connamacher - Algorithms, Complexity
Mehmet Koyuturk - Bioinformatics, Algorithms
Michael Lewicki - Artificial Intelligence, Computational Perception
Jing Li - Bioinformatics, Data Mining
Vincenzo Liberatore - Networking
Andy Podgurski - Software Engineering
Michael Rabinovich - Networking
Soumya Ray - Artificial Intelligence
An Wang - Systems & Network Security
Yinghui Wu - Data Science
Xusheng Xiao - Software Engineering, Computer Security
Shuai Xu - Algorithms & Theory
Yanfang (Fanny) Ye - Cybersecurity, Data Mining
NEW FACULTY

- **Larry Pileggi**, Tanoto Professor of Electrical and Computer Engineering, named department head.
- **Yuejie Chi** received the prestigious Presidential Early Career Award for Scientists and Engineers for her research on extracting information embedded in a large amount of data.
- **Qing Li** received the 2019 Young Faculty Award from DARPA for his research proposal titled "Visible and mid-infrared frequency comb generation in wide-band gap photonic materials."
- **Vijayakumar Bhagavatula** appointed to the Technical Program Committee of the Globecom 2019: The IEEE Global Communications Conference and CVPR 2019 Biometrics Workshop, as well as the associate editor for the 2019 IEEE Intelligent Transportation Systems Conference.
- The undergraduate curriculum launched a concentration in security and privacy.

RESEARCH

- **Vanessa Chen**: low-power circuits and systems, design of high-performance data converters, ubiquitous sensory interfaces, as well as hardware-based cybersecurity
- **Marc Dandin**: low-noise photodetectors and CMOS VLSI readout circuits for portable fluorescence sensors, high-performance thin film optical filters, and packaging processes for integrated fluorometers
- **Xu Zhang**: enabling new paradigms of nano-devices and their system-level integration by leveraging the emerging nanomaterials
- **Siyang Zheng**: biomedical micro/nano technologies and their applications to cancer and infectious diseases

DEPARTMENT HIGHLIGHTS

- **Carnegie Mellon University's IEEE-Eta Kappa Nu (IEEE-HKN) Honor Society** received the Outstanding Chapter Award.
- The university’s competitive hacking team, the Plaid Parliament of Pwning (PPP) won its fifth hacking world championship at the DefCon security conference.

STUDENT HIGHLIGHTS

- **Carnegie Mellon University's 2017-18 Student Population: 1,195**
  - B.S.: 532
  - M.S.: 433
  - Ph.D.: 230

2020 RANKINGS

<table>
<thead>
<tr>
<th>Undergraduate</th>
<th>Graduate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical: 8</td>
<td>Electrical: 8</td>
</tr>
<tr>
<td>Computer: 2</td>
<td>Computer: 3</td>
</tr>
</tbody>
</table>
Carleton College
Department of Computer Science
Northfield, MN USA

Carleton College is a private, coeducational, highly selective, liberal arts college of 2,000 students. Nationally recognized as the nation’s top college for undergraduate teaching, Carleton is known for its academic rigor, intellectual curiosity, and sense of humor.

Department Overview

- There are 9 tenure track full time faculty with a wide range of research interests. The department currently has an open position for a 10th tenure track faculty member.
- Computer Science is the largest major on campus and the department typically graduates between 55-65 majors annually.
- Many graduates of the department go on to industry jobs at companies such as Google, Amazon, and Target. Graduates have also gone on to graduate school at programs including Cornell, University of Washington, and University of Michigan.
- The department has a robust and active weekly seminar series (complete with tea!).

Student Experiences

- The department supports a large cohort of students that annually attend the Grace Hopper Conference with 18 attending in 2019, of whom 8 received external travel scholarships.
- Lovelace is an active student group whose goal is to increase gender diversity in computer science and technology.
- DevX is an active student group that provides a collaborative space for students interested in developing their computer science, design, or marketing skills, and using those skills to build projects together.

Research Highlights

- Faculty have active research programs across a wide range of areas including machine learning, algorithms, data visualization, and human computer interaction.
- Student researchers regularly present their research at top quality international conferences. A number of recent students have received prestigious awards including the Goldwater Scholarship and NSF Graduate Research Fellowships.
- Faculty have received external funding from the NSF (multiple grants), as well as from internal grants.

Contact Us
Web: carleton.edu/computer-science/
Email: cs@carleton.edu
Phone: (507) 222-5728

Facebook: facebook.com/CarletonCollegeCompSci/
Twitter: twitter.com/carleton_cs
Student highlights
In Fall 2019, Computer Science and Information Systems had its largest incoming class.

Undergraduate students participated in two programming contests: the CCSC-MW (Consortium for Computing Sciences in Colleges: Midwest) on September 2018, at Ball State University, in Muncie, IN. and the ACM ICPC Midwest Region (ACM International Collegiate Programming Contest) on November 2018. Students received 3rd Place out of twenty teams at CCSC-MW.

Faculty research highlights

Young Park presented and published “Predicting Personalized Student Performance in Computing-Related Majors via Collaborative Filtering” at the ACM Conference on Information Technology Education and “Recommending Personalized Search Terms for Assisting Exploratory Website Search” at the ACM/IEEE Joint Conference on Digital Libraries.

Vladimir Uskov co-edited three books: Smart Education and e-Learning 2019, Smart Universities: Concepts, Systems, and Technologies, and Smart Education and e-Learning 2018. All books were published by Springer International Publishing. Dr. Uskov chaired a session on Smart Engineering Education at the IEEE World Engineering Education conference in Dubai, UAE.

Faculty updates
Scott Williams, who joined the department as a tenure track Lecturer in Fall 2018, won the first year teaching award for the entire university. Adam Byerly, who is also a Lecturer, won this same honor last year. Owen Schaffer accepted a tenure track Assistant Professor position; he is finishing his PhD degree in Computer and Information Sciences from DePaul University and has a MA degree in positive organizational psychology from Claremont Graduate University. Sam Hawkins accepted a tenure track Assistant Professor position; he has a PhD degree in computer science from the University of South Florida and a MS degree from Emory University. David Brennan is continuing as a Visiting Instructor position; he has a BS degree from Bradley and an MS degree from Carnegie Mellon University in Information Systems Management, Business Intelligence and Data Analytics. Owen and Sam started teaching in Fall 2019.
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

Certificate Program Offered
- (Online) Software Engineering Certificate

Some of Recent Publications
- “srcDiff: A Syntactic Differencing Approach to Improve the Understandability of Deltas,” Journal of Software: Evolution and Process (Dr. Decker)
- “Contextualizing Rename Decisions using Refactorings and Commit Messages,” 2019 9th IEEE Int’l Working Conf. on Source Code Analysis and Manipulation (Dr. Decker)
- “An Open Dataset of Abbreviations and Expansions,” 35th IEEE Int’l Conf. on Software Maintenance and Evolution (Dr. Decker)
- “Open-Source Oriental Game and Endgame Database,” 3rd Int’l Conf. on Innovation in AI (Dr. Kresman)
- “Automated Object Tracking in Sterile Pharmacy Compounding,” WSCG’19 (Dr. Lee)
- “Fairness-Aware Auction Mechanism for Sustainable Mobile Crowdsensing,” Int’l Conf. on Wireless Algorithms, Systems, and Applications (Dr. Li)
- “Experience of Incorporating NIST Standards in a Digital Forensics Curricula,” 7th Int’l Sympo. on Digital Forensics and Security (Drs. Roy, Wu)

Digital Forensics and Cybersecurity
NEW CURRICULUM FOR GOVERNMENT STANDARDS

- Drs. Yan Wu and Sankar Roy are developing a digital Forensics curriculum designed to teach students to use techniques and equipment to identify cyber criminals and their methods, supported by a grant from the National Institute of Standards and Technology (NIST).
- New Digital Forensics Lab
  - Forensics Software & Hardware Tools
  - Dedicated Cybersecurity Servers
  - Configurable Networks

Current Grants
- NSF CRI: CI-P: Collaborative: Towards a Program Analysis Collaboratory (Dr. Dyer)
- NIST Incorporating Standards Education into Digital Forensics Curricula (Drs. Wu and Roy)
- NSF SaTC: Core: Small: Collaborative: Data-driven Approaches for Large-scale Security Analysis of Mobile Applications (Dr. Roy)

For more information
Department of Computer Science
419-372-2337 | Email: bgcs@bgsu.edu | Website: bgsu.edu/cs
3 NSF CAREER AWARDS

MICHELLE SANDER: AN INNOVATOR IN FIBER LASERS FOR CANCER RESEARCH
LEI TIAN: BREAKING BARRIERS IN OPTICAL TOMOGRAPHY
SAHAR SHARIFZADEH: CHANGING THE WAY WE LOOK AT SOLAR ENERGY

FACULTY HIGHLIGHTS

DAVID BISHOP: ELECTED TO THE NATIONAL ACADEMY OF ENGINEERING
JI-XIN CHENG: ELECTED FELLOW AND RECEIVED LIPPINCOTT AWARD FROM THE OPTICAL SOCIETY
SIDDHARTH RAMACHANDRAN: ELECTED DOD VANNEVAR BUSH FACULTY FELLOW
SAHAR SHARIFZADEH: AMONG NATURE’S MOST IMPACTFUL FACULTY
IEEE FELLOWS: DAVID CASTAÑÓN, SIDDHARTH RAMACHANDRAN, VENKATESH SALIGRAMA

MAJOR RESEARCH FUNDING

$7.5 MILLION DOD MURI GRANT AWARDED TO IOANNIS PASCHALIDIS TO DEVELOP NEURO-INSPIRED AUTONOMOUS ROBOTS

$6 MILLION NIH BRAIN INITIATIVE GRANTS AWARDED TO JI-XIN CHENG AND MICHELLE SANDER FOR NON-INVASIVE STUDY OF THE HUMAN BRAIN

ECE AT A GLANCE

STUDENTS

465 BACHELORS ↑ 11%
221 MASTERS ↑ 13%
144 PHD ↑ 19%

FACULTY

FULL PROFESSORS 32
ASSOCIATE PROFESSORS 13
ASSISTANT PROFESSORS 9
NATIONAL ACADEMY MEMBERS 3
SOCIETY FELLOWS 34
EARLY CAREER AWARDS 27

25% OF ECE FACULTY OVER THE LAST 5 YEARS ARE NEW HIRES

BU Boston University College of Engineering
Department of Electrical & Computer Engineering

2018-2019 FACULTY OPENINGS
bu.edu/eng/ecefacultysearch
New Hires

The Boston University Department of Computer Science proudly welcomes our four newest faculty members. They have joined the department as part of BU’s overall plan to increase the size of the computer science faculty by 50 percent in a five-year span.

Marco Gaboardi
Assistant Professor
Programming languages, differential privacy, formal verification

Vasiliki Kalavri
Assistant Professor
Distributed data processing and streaming, graph analytics

Sarah Adel Bargal
Research Assistant Professor
Computer vision, machine learning

Bryan A. Plummer
Research Assistant Professor
AI, visual recognition, scene understanding

Department News

Professor Margrit Betke leads a group that applies a $1M NSF grant to communication research. She also participates in a BU-led team using a $7.5M MURI grant.

Assistant Professor Emily Whiting was named a 2019 Sloan Research Fellow for her research on computer graphics and computational fabrication.

Professor Leonid Levin was elected to the National Academy of Sciences for his lifetime contributions to the theory of computation.

The Department announced two interdisciplinary joint majors: Statistics and Computer Science, and Linguistics and Computer Science.

BU announced a new, 17-floor Data Sciences Center that will be the hub for data and computer science on campus.

BU was selected as one of five 2019 BRAID Affiliate School for our commitment to diversity and inclusion in computer science.
Department of Computer Science  
Binghamton University  
https://www.binghamton.edu/cs/index.html

Faculty:
- 32 full-time faculty members: 9 professors, 6 associate professors, 12 assistant professors, 5 full-time lecturers, 1 part-time lecturer and 5 adjuncts.

Students
- 1,078 students: 558 undergraduates, 366 MS and 79 PhD students with an additional 75 students that are part of our Dual Diploma Program with Turkey.
- NEW Fall 2019 enrollments: 174 undergraduates, 180 MS and 14 PhD students

New Faculty Hire
Dr. Jeremy Blackburn, University of South Florida. Research interests include Measurements, Data science, Social media, and Social network analysis. Joined in Fall of 2019

Research Highlights:
- A new university Organized Research Center (ORC): The Center for Information Assurance and Cybersecurity (CIAC) was established in Spring 2019 and will be directed by CS faculty Dr. Ping Yang as the founding director.
- Selected recent grants and gifts
  - Jeremy Blackburn, “Monitoring Cross-Platform Trends in Hate Speech”, Facebook, $50,000
  - Shiqi Zhang: “AI for autonomous vehicle rider service”, Ford University Research Program (URP), $50,000
- Faculty continue to publish in top venues: USENIX Security, ESORICS, CCS, ICDCS, MICRO, DAC, FSE, INFOCOM, ACM MM, TOMM, TOMPECS, MobiSys, TKDE, TLT, IJCAI, NIPS, EMNLP, AAAI, ...

Other Highlights:
- Dr. Lijun Yin won Lois B. DeFleur Faculty Prize for Academic Achievement
- Dr. Ken Chiu won Chancellors Award for Excellence in Faculty Service
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 been able to major in computer science. But Barnard has not had a program of its own until 2019. Computer Science at Barnard has grown dramatically in the last four years, from 8 majors in 2015 to 33 in 2019, making it one of the ten largest majors at Barnard.

**January 2019: Barnard hires its first Computer Science faculty member**

Rebecca N. Wright (previously on the faculty at Rutgers University) is the Druckenmiller Professor of Computer Science and the Director of the Diana T. and P. Roy Vagelos Computational Science Center. She is Barnard's first Computer Science faculty member.

**July 2019: Barnard starts a faculty fellows program for new Computer Science PhDs**

Sarah Morrison-Smith (Ph.D., University of Florida, 2019) joins Barnard as the inaugural Roman Family Teaching and Research Fellow in Computer Science. These 2-3 year positions contribute to the Barnard program in Computer Science and to the professional development of the fellows.

**We're hiring!** We are hiring one assistant professor and a second Roman Fellow to start in Fall 2020, and expect additional hiring in following year. More information at cs.barnard.edu.