Software Engineering & Human-Computer-Interaction

The Software Engineering and Human–Computer Interaction group is a multi-perspective group focusing on a single problem: how to help people develop software that is effective and accurate. The people this group is trying to help range from software programming; especially related to end-user programming how gender issues relate to human issues of programming and software engineering; and domain-specific expertise on refactoring tools and software upgrades; 5 best paper awards.

Julie A. Adams
Professor
PhD University of Pennsylvania
Expertise: Distributed artificial intelligence, robotics; human–machine interaction; human–robot interaction
Notable: NSF CAREER Award; DARPA Computer Science Study Panel; associate editor; IEEE Transactions on Human–Machine Systems; senior editor, Journal of Intelligent and Robotics Systems
julie.a.adams@oregonstate.edu

Margaret Burnett
Distinguished Professor
PhD University of Kansas
Expertise: Human issues of programming and software engineering; end-user programming, end-user software engineering, information bringing theory as applied to programming, how gender issues relate to software
Notable: NSF Young Investigator; ACM CHI Academy; CRA Undergraduate Research Faculty Mentoring Award; NCMC Undergraduate Research Mentoring Award; IBM International Faculty Awards; two patents; IEEE VL/HCC Most Influential Paper Award Over the Last 20 Years; OSU Excellence in Graduate Mentoring Award
burnett@eecs.oregonstate.edu

Danny Dig
Associate Professor
PhD University of Illinois at Urbana-Champaign
Expertise: Software engineering, in particular interactive program transformation, automated refactoring, concurrency and parallelism, mobile computing, and software evolution
Notable: NSF CAREER Award; two Google Faculty Research Awards; contributor to the Eclipse and NetBeans development environments; founded two workshop series on refactoring tools and software visualizations; 5 best paper awards
digd@eecs.oregonstate.edu

Martin Erwig
Professor
PhD University of Hagen
Expertise: Language design and domain-specific languages; functional programming; visual languages; end-user software engineering
Notable: Associate editor, Journal of Visual Languages and Computing; author of three books; one patent
erwig@eecs.oregonstate.edu

Carlos Jensen
Associate Professor
Associate Dean of Undergraduate Programs
PhD Georgia Institute of Technology
Expertise: Usability aspects of open source software development, distributed collaboration, and social aspects of joining open source projects; information overload; usable privacy and security
Notable: Red Hat open source champion
cjensen@eecs.oregonstate.edu

Expertise: Machine learning; deep learning; machine learning; segmentation-based object recognition and scene understanding; spatio-temporal video analysis
Notable: PASCAL VOC Challenge Winners (2009–2012); associate editor, Neurocomputing
fuxin.li@oregonstate.edu

Liang Huang
Assistant Professor
PhD University of Pennsylvania
Expertise: Natural language processing, including parsing and translation; structured machine learning; computational structural biology (RNA and protein folding); deep learning
Notable: Best Paper Award (and most cited paper), ACL 2008; two Google Faculty Research Awards; best-selling author
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Heather Knight
Assistant Professor
PhD Carnegie Mellon University
Expertise: Human–robot interaction; non-verbal machine communications; non–anthropomorphic social robots
Notable: Forbes List for 3D under 30 in Science; TED Robot Comedy talk; Human Robot Interaction Pioneer award; British Video Music Award, DK GO. This Too Shall Pass: Rube Goldberg Machine
heather.knight@oregonstate.edu

Alan Fern
Professor
Associate Head of Research
PhD Purdue University
Expertise: Artificial intelligence, including machine learning, data mining, and automated planning/control
Notable: NSF CAREER Award; OSU Promising Scholar Award; associate editor of Machine Learning Journal, Journal of Artificial Intelligence, and Artificial Intelligence Journal
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Prasad Tadepalli
Professor
PhD Rutgers University
Expertise: Artificial intelligence; machine learning; automated planning; natural language processing
Notable: Action editor, Machine Learning; associate editor, Journal of Artificial Intelligence Research
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Sinisa Todorovic
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PhD University of Florida
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Notable: Associate editor, Image and Vision Computing
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Convinced that the Torch organization can make a difference in the world, he is dedicated to fostering innovation, collaboration, and growth within the community.

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heather.knight@oregonstate.edu

Eric Walkingshaw
Assistant Professor
PhD Oregon State University
Expertise: Domain-specific languages; functional programming; type systems; variability; extensibility; human factors
walkiner@oregonstate.edu

The Artificial Intelligence and Robotics (AIR) group studies theory, algorithms, and systems for making intelligent decisions in complex and uncertain environments. The research covers most of AIR including perception and interpretation of sensor data, learning about environments, learning to make decisions, automated planning and reasoning, and interaction of AIR systems with each other and with humans.

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Expertise: Distributed artificial intelligence, robotics; human–machine interaction; human–robot interaction
Notable: NSF CAREER Award; DARPA Computer Science Study Panel; associate editor; IEEE Transactions on Human–Machine Systems; senior editor, Journal of Intelligent and Robotics Systems
julie.a.adams@oregonstate.edu

Research Faculty Mentoring Award; two Undergraduate Research Mentoring Award; two Google Faculty Research Awards; best-selling author
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Data Science and Engineering

The data science and engineering (DSE) group works to develop technology, processes, and software to enable effective access to and utilization of overwhelming amounts of information. The group studies the fundamental problems that arise throughout the DSE pipeline, which leads from the original noisy data measurements to decisions and visualizations enabled by the data.

Thomas G. Dietterich
Distinguished Professor (Emeritus)
PhD Stanford University
Expertise: Machine learning; safe and robust AI systems; sensor networks; intelligent user interfaces
Notable: ACM Fellow; AAAI Fellow; ARAS Fellow; past president, Association for the Advancement of Artificial Intelligence; NSF Young Investigator; past president, International Machine Learning Society
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Alan Fern
Professor
Associate Head of Research
PhD Purdue University
Expertise: Artificial intelligence, including machine learning, data mining, and automated planning/control
Notable: NSF CAREER Award; OSU Promising Scholar Award; associate editor of Machine Learning Journal, Journal of Artificial Intelligence, and Artificial Intelligence Journal
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Xiaoli Fern
Associate Professor
PhD Purdue University
Expertise: Machine learning; data mining; unsupervised learning; ecosystem informatics; natural language processing
Notable: NSF CAREER Award; action editor, Machine Learning
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David Hendrix
Assistant Professor
PhD University of California, Berkeley
Expertise: Motif finding; non-coding RNA structure and function analysis; applications of machine learning to computational biology; deep sequencing data analysis
Notable: 4 publications in “Faculty of 1000 Biology”
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Assistant Professor
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Associate Professor
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Expertise: Adaptive sensing/sampling; manifold learning; sparse representations for signal processing
Notable: NSF CAREER Award; associate editor, IEEE Transactions on Signal Processing
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Stephen Ramsey
Assistant Professor
PhD University of Maryland, College Park
Expertise: Machine learning; computational systems biology; bioinformatics; integrative computational methods to map gene regulatory networks
Notable: NSF CAREER Award; NIH K25 Career Development Award; affiliate member at the Knight Cancer Institute at OSU
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Expertise: Data mining; machine learning; anomaly detection; human-in-the-loop learning; ecosystem informatics
Notable: NSF program director
wong@eecs.oregonstate.edu
Computer Graphics and Visualization

The Computer Graphics and Visualization group consists of researchers in image processing, computer graphics, visualization, visual analytics, GPU programming, simulation, and geometry processing. The primary goals of this group are the analysis, synthesis, understanding, and manipulation of visual data such as images, video sequences, and 3D geometric content.

- **Mike Bailey**
  - Professor
  - PhD Purdue University
  - Expertise: Visualization; GPU programming; high performance computer graphics; stereographics
  - Notable: OSU Beaver Champion Award
  - Email: mj@eecs.oregonstate.edu

- **Raffaele de Amicis**
  - Associate Professor
  - PhD University of Bologna
  - Expertise: Virtual and augmented reality; virtual engineering; GeoVisualization; geometric modelling; sketch- and gesture-based interaction; digital heritage
  - Email: raffaele.deamicis@oregonstate.edu

- **Eugene Zhang**
  - Associate Professor
  - PhD Georgia Institute of Technology
  - Expertise: Computer graphics; visualization; geometry processing; computational topology
  - Notable: NSF CAREER Award
  - Email: zhang@eecs.oregonstate.edu

- **Yue Zhang**
  - Assistant Professor (Sr. Res)
  - PhD North Carolina State University
  - Expertise: Modeling and simulation of biological and physical problems; mathematical optimization; visualization
  - Email: zhangyue@eecs.oregonstate.edu

- **Bella Bose**
  - Professor and Interim Head
  - PhD Southern Methodist University
  - Expertise: Error control codes; parallel processing; fault tolerant computing; computer networks
  - Notable: IEEE Fellow; ACM Fellow; past associate editor, IEEE Transactions on Computers; Southern Methodist University CSE Academic Accomplishment Award
  - Email:bose@eecs.oregonstate.edu

- **Ben Lee**
  - Professor
  - PhD The Pennsylvania State University
  - Expertise: Computer architecture; computer networks; multimedia systems; parallel architectures
  - Notable: TCP Chair, 2018 Annual IEEE Consumer Communications and Networking Conference; Keynote Speaker, 2014 ACM International Conference on Ubiquitous Information Management and Communications; HKN Innovation Teaching Award; Alumni Professor Award for Outstanding Contribution to the College and the University; Loyd Carter Award for Outstanding and Inspirational Teaching
  - Email: benl@eecs.oregonstate.edu

Networking and Computer Systems

The group’s research deals with various aspects of information representation, transmission, processing, and understanding. Collectively, we develop novel theories, tools, algorithms, and systems for solving a variety of real-world problems that encompass multiple disciplines ranging from parallel computing and cognitive networks to coding theory and eco-informatics.

- **Patrick Chiang**
  - Associate Professor
  - PhD Stanford University
  - Expertise: Energy-efficient VLSI systems (on/off chip interconnects; robust, near-threshold computing); power-constrained, wireless electronic devices
  - Notable: NSF CAREER Award; DOE Early Career Award; past associate editor, IEEE Transactions on Biomedical Circuits and Systems
  - Email: pchiang@eecs.oregonstate.edu

- **Bechir Hamdaoui**
  - Associate Professor
  - PhD University of Wisconsin at Madison
  - Expertise: Wireless communication networks; mobile computing; resource optimization; network management; network privacy and security
  - Notable: NSF CAREER Award; IEEE Communications Society Distinguished Lecturer; associate editor, IEEE Transactions on Wireless Communications; past associate editor, IEEE Transactions on Vehicular Technology; past associate editor, Wireless Communications and Mobile Computing Journal; past associate editor, Journal of Computer Systems, Networks, and Communications
  - Email:hamdaoui@eecs.oregonstate.edu

- **Thinh Nguyen**
  - Professor
  - PhD University of California at Berkeley
  - Expertise: Wireless communication; networking; signal processing; machine learning; information theory; coding; stochastic processes
  - Email:thinhq@eecs.oregonstate.edu
Cybersecurity
This group develops tools and techniques to protect sensitive data and infrastructure against malicious attacks. They study problems that arise as a result of computation and storage in hostile environments. Work includes adversarial threat modeling, design of novel protection mechanisms, and analysis of their guarantees.

Rakesh Bobba
Assistant Professor
PhD University of Maryland at College Park
Expertise: Secure protocols; access controls; key management; power grid and other critical infrastructures; cyber-physical systems, cloud computing
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Mike Rosulek
Assistant Professor
PhD University of Illinois at Urbana-Champaign
Expertise: Cryptography; secure multi-party computation
Notable: NSF CAREER Award; Google Faculty Research Award
rosulekm@eecs.oregonstate.edu

Jesse Walker
Research Professor
PhD University of Texas at Austin
Expertise: Networking; systems security; cryptography; commutative algebra; algebraic geometry
Notable: Served as Intel’s Chief Cryptographer
walkjess@oregonstate.edu

Attila Yavuz
Assistant Professor
PhD North Carolina State University
Expertise: Applied cryptography; network security and privacy
Notable: NSF CAREER Award
Attila.Yavuz@oregonstate.edu

Glencora Borradaile
Professor Emeritus
PhD University of Illinois at Urbana-Champaign
Expertise: Approximation algorithms; planar graphs; combinatorial algorithms
Notable: NSF CAREER Award
Glencora@eecs.oregonstate.edu

Paul Cull
Professor Emeritus
PhD University of Chicago
Expertise: Algorithms, theory of computation, mathematical biology
Notable: Life Membership, Association for Computing Machinery; holder of five awards in mathematical biology
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Theoretical Computer Science
The Theoretical Computer Science group explores the limits of computation in developing algorithms and protocols that provide provable performance guarantees such as correctness and privacy. The group has strengths in developing algorithms that take advantage of geometric and topological properties to solve classic problems.

Amir Nayyeri
Assistant Professor
PhD University of Illinois at Urbana-Champaign
Expertise: Computational geometry; computational topology
Notable: NSF CAREER Award
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Eugene Zhang
Associate Professor
PhD Georgia Institute of Technology
Expertise: Computer graphics; visualization; geometry processing; computational topology
Notable: NSF CAREER Award
zhange@eecs.oregonstate.edu

Programming Languages
The Programming Languages group studies the design, implementation, and formalization of programming languages. The group’s research includes work on language design, type systems, functional programming, and visual languages.

Martin Erwig
Professor Emeritus
PhD Oregon State University
Expertise: Domain-specific languages; functional programming; type systems; variability; extensibility; human factors
erwig@oregonstate.edu

Eric Walkingshaw
Assistant Professor
PhD Oregon State University
Expertise: Domain-specific languages; functional programming; visual languages; end-user software engineering
Notable: Associate editor, Journal of Visual Languages and Computing; author of three books; one patent
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Glencora Borradaile
College of Engineering
Dean’s Professor
PhD Brown University
Expertise: Approximation algorithms; planar graphs; combinatorial algorithms
Notable: NSF CAREER Award
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PhD Georgia Institute of Technology
Expertise: Computer graphics; visualization; geometry processing; computational topology
Notable: NSF CAREER Award
zhange@eecs.oregonstate.edu
Communications and Signal Processing

The group’s research focuses on addressing various challenges related to the modeling, design, and analysis of next-generation networking and computer systems. We develop novel theories, algorithms, and systems for solving a variety of real-world problems that encompass multiple disciplines, including parallel and high-performance computing, coding and information theory, computer networking, stochastic modeling and reasoning, cloud computing, computer architecture, and wireless communication.

Bella Bose
Professor and Interim Head
PhD Southern Methodist University
Expertise: Error control codes; parallel processing; fault tolerant computing; computer networks
Notable: IEEE Fellow; ACM Fellow; past associate editor, IEEE Transactions on Computers, Southern Methodist University CSE Academic Accomplishment Award
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Expertise: Adaptation and learning; nonlinear signal processing; application of signal and information processing to neural engineering and biomedical applications, structural health monitoring, audio and communication systems
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Expertise: Statistical signal processing; statistical learning theory; power systems state estimation; security of cyber-physical system
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Expertise: Wireless communication systems; PLLs; regulators and sensors with emphasis on energy efficiency
Notable: IEEE Solid State Circuit Society Pre-Doctoral Achievement Award
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Andreas Weisshaar
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Notable: IEEE Fellow; past NSF program director; associate editor, IEEE Transactions on Components and Packaging Technologies
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Integrated Electronics

The Integrated Electronics research cluster emphasizes cooperation and innovation amongst faculty members whose research focuses on various aspects of integrated circuits and systems, microelectronic components and sensors, and advanced communication systems.

Arun Natarajan
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Expertise: mm-wave and sub-mm-wave integrated circuits and systems for high-speed wireless communication and imaging
Notable: NSF CAREER Award; Oregon State Engineering Young Faculty Award; IEM Research Fellowship; associate editor, IEEE Transactions on VLSI Systems; associate editor, Transactions on Microwave Theory and Techniques
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Expertise: Data converters; switched capacitor circuits; analog and mixed-mode integrated circuits
Notable: Member of National Academy of Engineering; IEEE Life Fellow; Semiconductor Industry Association Alum; IEEE CAS Mac Van Valkenburg Award; IEEE Kirchoff Award; IEEE CAS Golden Jubilee Medal; IEEE Millennium Medal; IEEE CAS Technical Achievement Award & Education Award; IEEE & IEM Society Andrew Chi Prize; IEEE Centennial Medal; IEEE CAS Darlington Award; hon. doctorate, Tech Univ of Budapest; past assoc. ed, J of The Franklin Institute; past ed, IEEE Trans on Circuit Theory; former VP, IEEE Circuits & Systems Society
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John F. Conley, Jr.
Professor
PhD The Pennsylvania State University
Expertise: Thin film materials and devices; atomic layer deposition; MM devices: TFTs; reliability; structure of electrically active point defects; directed assembly & device applications of nanomaterials
Notable: IEEE Fellow; ONAMI Signature Faculty Program chair; guest editor, IEEE Transactions on Device and Materials Reliability; Chair, 2017 AVS International Conference on Atomic Layer Deposition, IEEE International Integrated Reliability Workshop chair
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Pallavi Dhagat
Associate Professor
PhD Washington University, St. Louis
Expertise: 3D printed magnetic materials and devices; biomedical imaging and sensing using magnetic nanoparticles; novel data storage and signal processing devices based on interactions between acoustic waves and spin waves; advanced measurements techniques for magnetic materials
Notable: NSF CAREER Award
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Albrecht Jander
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Notable: IEEE Fellow; Paul Rappaport Award; two Intel Achievement Awards
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Assistant Professor
PhD University of Texas at Austin
Expertise: Nano-photonics devices – photonic crystals and surface plasmons; energy-efficient photonic devices for optical interconnects; optical sensors including surface-enhanced Raman scattering and Infrared absorption
Notable: Program committee member and session chair, SPIE Photonics West; conference chair, SPIE/ICOS Photonics Asia
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PhD Colorado State University
Expertise: Solid state materials and devices (thin film synthesis, device characterization, and modeling)
Notable: IEEE Fellow; National Academy of Inventors Fellow; Society for Information Display Fellow; co-inventor of the first transparent transistor; lead author of Transparent Electronics (Springer 2008); co-founder of Inproa Corporation; OSU Sigma Xi Researcher of the Year
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Expertise: Rhetoric and composition; higher education leadership; educational program design; including service learning, transformational learning, and qualitative research
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Notable: OSU Student Learning and Success Teamwork Award; OSU Outstanding Faculty Research Assistant Award
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Expertise: Computer science education; cognitive development, problem solving, scientific computing, parallel processing, high-performance computing, virtual classroom environments, Access Grid Node technology, computational science outreach
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