AARON S. CRANDALL, PHD

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AT A GLANCE

Current Role:

- Clinical Associate Professor at Washington State University

Interests:

- Artificial intelligence, STEM education, smart environments, gerontechnology, UX design

Education:

- Ph.D. in Computer Science, Washington State University
- MS in Computer Science, Oregon Health and Science University
- BSEE in Computer Engineering, The University of Portland

Publishing:

- Citation Metrics, Spring 2020 –   Citations: 1129 ‖ h-index: 15
- Total Publications: 41

Academic Experience:

- 3.5 years senior instructional faculty at Washington State University – Instructed 1000+ students
- 5 years Postdoc and Research Professor at Washington State University
- Lecturer in CompSci, Capstone, engineering, AI/ML, Distributed Systems, Security, & Linux
- Advising MS graduate students, Co-advising PhD students

Grant Writing and Fundraising Experience:

- NASA: 1x CubeSat Launch | NIH Funding: $1.6M | Google: $37k | DoD/NAVSEA: $40k
- Private Donations Fundraising: $135k
- Submitted grants to: NIH, NASA, NSF, SBIR, state programs, commercial & private sources

Industry Experience:

- 2X Tech Startup CEO, 5 yrs IT systems, 2 yrs software engineering, 1 yr networking & telcom
- USPTO Patent: Recognition in Multi-Entity Environments (US 13/538,882)

Invited Talks:

- IFA+, NAE, Alzheimer's Assoc. of America, several universities

Other Projects and Service:

- Editor: Journal of Reliability of Intelligent Environments
- Lead Guest Editor: Journal of Artificial Intelligence and Smart Environments
- Committee member: Digital Health, Intelligent Env (IE), ICTAI, DH
- Reviewer for scientific journals and conferences
- CompSci captone curriculum coordinator
- Student club advising: Cougs In Space, Palouse RoboSub, Linux User's Group
- High school tutor: WASL Programming-based capstone projects, 4 years
- WSU Annual Hackathon Judge and Event Mentor, 6 years
- NSF i-Corps & WSU, UW, Spokane business plan competitions

EDUCATION

Washington State University, Pullman, WA

- Ph.D., Computer Science   February 2011
    - Dissertation Topic: "*Behaviometrics for Multiple Residents in a Smart Environment*"
    - Advisor: Diane J. Cook

Oregon Health & Science University, Portland, OR

- M.S., Computer Science   March 2007

University of Portland, Portland, OR

- B.S., Electrical Engineering   December 2000

RESEARCH

Research Interests:

- STEM Education, Artificial Intelligence, Smart Environments/Ubiquitous Computing, Behaviometrics, Gerontechnology, User Experience

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PUBLICATIONS

Citation Metrics as of Spring 2020:   Citations: 1129 ‖ h-index: 15

Dissertation.

Crandall, Aaron S. (2011). "Behaviometrics for Multiple Residents in a Smart Environment". PhD thesis. Washington State University.

Journal Articles.

Hajiamini, Shervin, Behrooz Shirazi, and Aaron Crandall (2018). "A Dynamic Programming Framework for DVFS-based Energy-Efficiency in Multicore Systems". In: *IEEE Transactions on Sustainable Computing*. (awaiting release).

Hajiamini, Shervin, Behrooz Shirazi, Aaron Crandall, et al. (June 2018). "Impact of Cache Voltage Scaling on Energy-Time Pareto Frontier in Multicore Systems". In: *Sustainable Computing: Informatics and Systems* 18, pp. 54–65. DOI: https://doi.org/10.1016/j.suscom.2018.02.011.

Hu, Yang et al. (2016). "Smart home in a box: usability study for a large scale self-installation of smart home technologies". In: *Journal of Reliable Intelligent Environments* 2.2, pp. 93–106.

Thomas, Brian L., Aaron S. Crandall, and Diane J. Cook (2015). *A Genetic Algorithm Approach to Motion Sensor Placement in Smart Environments*. Accepted DOI: 10.1007/s40860-015-0015-1. DOI: 10.1007/s40860-015-0015-1.

Cook, Diane J., Aaron S. Crandall, Brian L. Thomas, et al. (2013). "CASAS: A Smart Home in a Box". In: *Computer*. Vol. 46. 7. IEEE, pp. 26–33. DOI: 10.1109/MC.2012.328.

Seelye, Adriana M. et al. (2013). "Naturalistic assessment of everyday activities and prompting technologies in mild cognitive impairment". In: *Journal of the International Neuropsychological Society* 19.4, pp. 442–452. DOI: 10.1017/S135561771200149X.

Chen, Chao, Diane J. Cook, and Aaron S. Crandall (2013). "The User Side of Sustainability: Modeling Behavior and Energy Usage in the Home". In: *Pervasive and Mobile Computing* 9.1, pp. 161–175.

Cook, Diane J., Aaron S. Crandall, Geetika Singla, et al. (2010). "Detection of Social Interaction in Smart Spaces". In: *Cybernetics and Systems: An International Journal* 41.2, pp. 90–104. DOI: http://doi.org/br9dcr3.

Crandall, Aaron S. and Diane J. Cook (2009). "Coping with multiple residents in a smart environment". In: *Journal of Ambient Intelligence and Smart Environments* 1.4, pp. 323–334. DOI: 10.3233/AIS-2009-0041.

Conference Articles.

Ghildyal, Abhijay et al. (2019). "Autonomous Navigation of UAV in Orchards using Depth Estimation". In: *AgriControl*. [Under Review].

Hajiamini, Shervin et al. (Oct. 2018). "A Dynamic Programming Technique for Energy-Efficient Multicore Systems". In: *Ninth International Green and Sustainable Computing Conference (IGSC)*, pp. 1–6. DOI: 10.1109/IGCC.2018.8752159.

Fritz, R. et al. (June 2017). "Health-Assistive Smart Homes With A Clinician-In-The-Loop". In: *Innovation in Aging* 1.suppl_1, pp. 683–683. ISSN: 2399-5300. DOI: 10.1093/geroni/igx004.2437. URL: https://doi.org/10.1093/geroni/igx004.2437.

Zulas, A Leah, Aaron S Crandall, and Maureen Schmitter-Edgecombe (2014). "Caregiver Needs from Elder Care Assistive Smart Homes: Children of Elder Adults Assessment". In: *Human Factors and Ergonomics Society*. Vol. 58. HFES 1, pp. 634–638. DOI: 10.1177/1541931214581150.

Crandall, Aaron S., Leah Zulas, et al. (2012). "Visualizing Your Ward: Bringing Smart Home Data to Caregivers". In: *Emerging Technologies for Healthcare and Aging Workshop in the Proceedings of Computer Human Interaction*. CHI'12.

Zulas, Leah et al. (2012). "Caregiver Needs from Elder Care Assistive Smart Homes: Nursing Assessment". In: *Human Factors and Ergonomics Society*. Vol. 56. 1, pp. 125–129.

Crandall, Aaron S. and Diane J. Cook (2012). "Smart Home in a Box: A Large Scale Smart Home Deployment". In: *Workshop on Large Scale Intelligent Environments*. WOLSIE'12, pp. 169–178. DOI: 10.3233/978-1-61499-080-2-169.

Thomas, Brian L. and Aaron S. Crandall (Mar. 2011). "A Demonstration of PyViz, a Flexible Smart Home Visualization Tool". In: *IEEE International Conference on Pervasive Computing and Communications Workshops*. PerCom Workshops, pp. 304–306. DOI: 10.1109/PERCOMW.2011.5766889.

Crandall, Aaron S. and Diane J. Cook (2010). "Using a Hidden Markov Model for resident identification". In: *Proceedings of the International Conference on Intelligent Environments*. IE'10, pp. 74–79.

Cook, Diane et al. (2009). "Collecting and disseminating smart home sensor data in the CASAS project," in: *CHI Workshop on Developing Shared Home Behavior Datasets to Advance HCI and Ubiquitous Computing Research*. CHI '09.

Crandall, Aaron S. and Diane J. Cook (2008a). "Attributing Events to Individuals in Multi-Inhabitant Environments". In: *IET International Conference on Intelligent Environments*. IE '08. Amsterdam, The Netherlands: IOS Press, pp. 1–8. ISBN: 978-0-86341-894-5.

– (2008b). "Resident and Caregiver: Handling Multiple People in a Smart Care Facility". In: *AI in Eldercare: New Solutions to Old Problems*. Menlo Park, California, USA: AAAI Press, pp. 39–47. ISBN: 978-1-57735-394-2.

Jakkula, Vikramaditya R., Aaron S. Crandall, and Diane J. Cook (Oct. 2007). "Knowledge Discovery in Entity Based Smart Environment Resident Data Using Temporal Relation Based Data Mining". In: *Proceedings of the IEEE International Conference on Data Mining Workshops*. ICDM'07. Washington, DC, USA: IEEE Computer Society, pp. 625–630. DOI: 10.1109/ICDMW.2007.60.

Jakkula, Vikramaditya R. and Diane J. Cook (2007). "Using Temporal Relations in Smart Environment Data for Activity Prediction". In: *Proceedings of the 24th International Conference on Machine Learning*. DOI: 10.1.1.94.5377.

Jakkula, Vikramaditya, Diane J. Cook, and Aaron S. Crandall (Sept. 2007). "Temporal pattern discovery for anomaly detection in a smart home". In: *The IET International Conference on Intelligent Environments*. IE '07, pp. 339–345. ISBN: 978-0-86341-853-2.

Book Chapters.

Crandall, Aaron S and Diane J Cook (2016). "Current state of the art of smart environments and labs from an ambient assisted living point of view". In: *Active and assisted living: technologies and applications*, pp. 11–28.

Zulas, A. Leah and Aaron S. Crandall (2014). "Assessing Professional Caregiver Needs In Assistive Smart Homes". In: *Handbook of Smart Homes, Health Care and Well-being*. Springer International Publishing, pp. 1–10. DOI: 10.1007/978-3-319-01904-8_14-1.

Crandall, Aaron S. and Diane J. Cook (2013). "Behaviometrics for multiple residents in a smart environment". In: *Human Aspects in Ambient Intelligence*. Springer, pp. 55–71.

– (Apr. 2011). "Tracking systems for multiple smart home residents". In: *Behaviour Monitoring and Interpretation*. Ed. by B. Gottfried and H. Aghajan. Vol. 9. Ambient Intelligence and Smart Environments. Nieuwe Hemweg 6B, 1013 BG Amsterdam, The Netherlands: IOS Press. ISBN: 978-1-60750-730-7. DOI: 10.3233/978-1-60750-731-4-65.

– (2010a). "Learning Activity Models for Multiple Agents in a Smart Space". In: *Handbook of Ambient Intelligence and Smart Environments*. Ed. by Hideyuki Nakashima, Hamid Aghajan, and Juan Carlos Augusto. Springer US, pp. 751–769. DOI: 10.1007/978-0-387-93808-0_28.

– (2010b). "Tracking systems for multiple smart home residents". In: *Ambient Intelligence and Smart Environments*. IGI Global, pp. 65–82. DOI: 10.3233/978-1-60750-731-4-65.

Jakkula, Vikramaditya R., Aaron S. Crandall, and Diane J. Cook (2009). "Enhancing Anomaly Detection Using Temporal Pattern Discovery". In: *Advanced Intelligent Environments*. Ed. by Achilles D. Kameas et al. Springer US, pp. 175–194. DOI: 10.1007/978-0-387-76485-6_8.

Crandall, Aaron S. (2004). "Survive Catastrophic Internet Loss (Hack #45)". In: *BSD Hacks*. O'Reilly Media. ISBN: 978-0-596-00679-2s.

Other Scientific.

Crandall, Aaron S, Diane J Cook, and Maureen Schmitter-Edgecombe (2016). "Introduction to the Technologies for Healthy Aging Minitrack". In: *Hawaii International Conference on System Sciences*. HICSS. IEEE, pp. 3437–3437.

Crandall, Aaron S., Brian L. Thomas, and Diane J. Cook (2012). "Exploring Smart Home Sensor Placement Algorithms". In: *Washington State University Academic Showcase*.

Crandall, Aaron S. and Diane J. Cook (2010). "Bayesian Updating for Individual Tracking in Smart Homes". In: *Washington State University Academic Showcase*.

– (2008). "Smart Home Resident Detection and Identification Using Simple Sensors". In: *Washington State University Academic Showcase*.

Crandall, Aaron S., Diane J. Cook, et al. (2008). "CASAS Project: A Comprehensive Smart Home Research Testbed". In: *Washington State University Academic Showcase*.

SUPPORT

Funded Grants:

- "CougSat - An Educational Vehicle for Future Space Engineers"
  – NASA CubeSat Launch Initiative (CSLI) (PI) 2017–2020 $12k + Satellite Launch
- "Palouse Robosub UUV Artificial Intelligence Updates and Robonation 2020 Competition"
  – DOD / NAVY / NAVSEA (PI), 2019–2020 $20,000
- "Training Program for Undergraduate Gerontechnologists"
  – HHS, NIH R-25 Education Grants (CO-I) (Score: 11) 2013–2019 $1,604,828
- "CougSat I Project"
  – Boeing (PI), 2019 $10,000

- "Real time 3D tracking for action games"
  – University of Washington Buerk Center Prototype Fund (PI), 2019 $1,563
- "Laser RevEng - Next Generation Laser Tag Technologies Phase-2"
  – NSF I-Corps (PI), 2019 $5,000
- "Upgrades to WSU observatory: networking, lighting, and inclusive updates"
  – WSU tech fee fund (Co-PI), 2019 $18,000
- "CougSat I Project"
  – Boeing (PI), 2018 $15,000
- "Hardware Prototyping for Laser Tag Platform"
  – University of Washington Buerk Center Prototype Fund(PI), 2018 $1,805
- "Laser RevEng - Next Generation Laser Tag Technologies"
  – NSF I-Corps (PI), 2018 $5,000
- "AUVSI Student AUV Competition - CS"
  – DOD / Navy / NAVSEA (PI), 2018 $10,000
- "Key Components of CougSat Prototyping"
  – Boeing (PI), 2017 $10,000
- "AUVSI Student AUV Competition - CS"
  – DOD / Navy / NAVSEA (PI), 2017 $10,000
- "Robot Control via RGB Video and Convolutional Neural Networks"
  – Google (CO-PI) 2016 $37,763

Submitted, Under Review:

- "Multi-disciplinary undergraduate training program in health-assistive smart environments (renewal)"
  – NIH/ NIH R-25 Education Grants (Co-I) 2020–2025 $1.8M
- "CougDrive-I: an Accessible CubeSat Hall Effect Thruster for Cislunar Orbits"
  – NASA 2019 $400,000
- "VR-based 'Choose Your Own Adventure' lab training"
  – WSU STEM education program (Co-PI) 2019 $50,000
- "SBIR Phase I: 3D real time tracking technologies"
  – NSF SBIR (PI) 2019 $280,000

SOLICITED DONATIONS

- Capstone program commercial donations, 2016–2020 $85,000
- CougSat and Cougs in Space undergraduate cubesat program, 2017–2019 $48,000
- WSU Crimson Code Hackathon, 2018 $7,000
- CougSat and Cougs in Space undergraduate cubesat program, 2016–2017 $21,300
- Student Server Mini "Condos," Private Donations, 2013 $2,500
- Kinect Sensors for Senior Capstone Project, Microsoft, 2013 $1,000
- MedMinder Intelligent Pill System, MedMinder, 2013 $650

PATENTS

USPTO, Issued:

- Activity Recognition in Multi-Entity Environments (US 13/538,882)

Instructor:

- Software Design Project I, *CptS 421, WSU*   Fall 2016–2020
  CS Capstone series - Year long engineering projects with heavy external sponsor and mentor collaboration. Currently stands at 20 total project teams per term. Brought in new companies and raised $66k additional funds over prior years for the program.

- Software Design Project II, *CptS 423, WSU*   Spring 2017–2020 & Fall 2019
  CS Capstone series - Year long engineering projects with heavy external sponsor and mentor collaboration. Currently stands at 19 total project teams. Brought in new companies and raised $66k additional funds over prior years for the program. Serve as curriculum coordinator for computer science course series.

- Advanced Data Structures in Java, *CptS 233, WSU*   2019–2020
  3rd *CS course in major, starting algorithm analysis, data structures.*
  Created teaching materials and rubrics to train students in the course in using Git version control to manage and work on projects. Overhauled class projects to include examples of DevOps style testing.

- Object Oriented Design Principles, *CptS 321, WSU*   2018, 2019
  CS course in major, centers around designing software effectively through object oriented structures and patterns.
  Created teaching materials and rubrics for the course. Included major overhaul of materials and included the use of Git to manage projects.

- Advanced Data Structures in C/C++, *CptS 223, WSU*   2016–2019
  3rd *CS course in major, starting algorithm analysis, data structures, and introduces Linux as a development platform.*
  Created teaching materials and rubrics to train students in the course in using Git version control to manage and work on projects. Overhauled class projects to include examples of DevOps style testing.

Indpendent Study Courses:

- Rubber Duck Debugging to improve chatbot capabilities, *CptS 499, WSU*   Fall 2019
  Building and using a 'rubber duck' style strategy to improve the behavior of deep learning-based chatbots.

- 3D Tracking and Localization Tech Development, *CptS 499, WSU*   Spring 2019
  Directed study for the fusion of inertial measurement data and ultra wide band radio trilateralization to improve high accuracy tracking in 3D spaces.

- Social Media Geolocation Visualization, *CptS 499, WSU*   Spring 2015
  Directed study for a novel visualization of multiple social media sources

- Security Basics, *CptS 499, WSU*   Fall 2012 & 2013
  Hands-on lecture and workshop course to introduce students to the security of computers, systems, and networks

- Linux IT Basics, *CptS 499, WSU*   Spring 2012
  Developed a hands-on lecture and workshop course to introduce students to using Linux as a platform to provide network services

Co-Instructor:

- Gerontechnology, *CptS 485/Psych 485, WSU*   2015–2016
    Two part course covering the field of Gerontechnology
    Funded course through NIH R25 Grant for undergrad education with a focus on future graduate studies in Gerontechnology
- Special Topics in Machine Learning, *CptS 580, WSU*   Fall 2011
    Developed materials on: Neural Networks, Evolutionary Computation, Clustering, and Self-Organizing Maps
- Advanced Distributed Systems, *CptS 580, WSU*   Spring 2011

Guest Lecturer: Lectured in place of the primary instructor on an as-needed basis.

- Gerontechnology, *CptS 580 / Psych 507, WSU*   2012, 2017–2018
    Developed course material on topics of: sensors, data, and smart home technologies
- Programming Tools, *CptS 224, WSU*   2009–2011
    Developed course material on topics of: source control, debugging, and Make
- Distributed Systems, *CptS 464, WSU*   2010
    Developed course material on topics of: pervasive computing
- Introduction to Artificial Intelligence, *CptS 440, WSU*   2009

Teaching Assistant:

- Concurrent Programming, *CptS 483/580, WSU*   Fall 2009
- Introduction to Artificial Intelligence, *CptS 440/540, WSU*   Spring 2008, Fall 2009
- Program Design and Development, *CptS 121, WSU*   Fall 2008
- Computer Security, *CptS 427/527, WSU*   Spring 2008
- Parallel Processing, *CptS 580, WSU*   Spring 2008
- Neural Networks, *CptS 434/534, WSU*   Fall 2007 & 2008

Lab Section Instructor:

- Program Design and Development, *CptS 121, WSU*   Fall 2008

PROFESSIONAL EXPERIENCE

Clinical Associate Professor, Washington State University   2016–Present

- WSU's School of Electrical Engineering and Computer science senior instructional faculty.
- Specializing in computer science courses, both in core CS topics such as data structures as well as software engineering through the senior capstone course series
- Serve as computer science capstone course coordinator and commercial outreach lead
    - Currently mentor / oversee 34 project teams
    - Collaborate with university fundraising to support program with targets of $150k/year, currently at $80k, up from $10k two years ago
    - Recruit projects from over 30 companies, with a continual year to year growth of around 30% for the last four years
- Increased cross-discipline projects and student STEM experiences through new senior design projects involving multiple engineering disciplines
- Improved student outcomes through new student clubs and experience opportunities in the areas of: space engineering, computer security, robotics, and IT projects.

Chief Executive Officer, Laser RevEng, LLC   Fall 2017–present

- Founder and CEO for a tactical entertainments-focused technology startup, Laser RevEng, LLC
- Leading efforts to develop and integrate real time location tracking technologies, augmented reality, and user experience design for the company
- Participating in the NSF I-Corps training program

- Leading a team with 4 other engineers and business/communications company members
- Developing an IP portfolio in conjunction with the WSU Office of Commercialization
- Participated in three business plan competitions:
    WSU (4th place) – Univ Wash (2nd round) – NWBPC (final round)

Chief Executive Officer, BehavioMetrics, LLC   Spring 2015–2017

- Founder and CEO for a gerontechnology-focused technology startup, BehavioMetrics, LLC
- Licensed technologies from Washington State University to transition from research to commercial offerings
- Lead business development, fundraising, and technology development of smart home tech for senior care

Assistant Research Professor, Washington State University   Summer 2012–2016

- WSU's School of Electrical Engineering and Computer science and the Center for Advanced Studies in Adaptive Systems (CASAS)
- Research areas include advanced machine learning approaches, human factors for smart home technologies, and large scale smart home deployments

Postdoctoral Research Associate, Washington State University   Spring 2011–Summer 2012

- Research included novel approaches to sensor placement, gerontechnology user needs surveying, and continued research on tracking and identification
- Work included construction and maintenance of a large scale smart home research testbed (19 homes), development of research software infrastructure, department recruiting efforts, and senior capstone project advising

Research Assistant or Teaching Assistant, Washington State University   Fall 2006–December 2010

- Research assistant for WSU's CASAS research center developing smart homes
- Teaching assistant for a wide variety of computer science courses, as detailed in the teaching section of this vitae

R&D Software Engineering Internship, Schweitzer Engineering Laboratories   Summer 2007

- Architected and implemented a C37.118 Synchrophasor network server to increase company's footprint in distributed power grid monitoring

Systems Engineer, Adaptx   Fall 2005–Fall 2006

- IT and software engineer for a growing startup company
- Implemented digital pen mapping system for FalconView, which lead to company's first sales on the order of $3 million in licensing fees

Research Systems Engineer, Oregon Graduate Institute / OHSU   Summer 2002–Summer 2005

- Win32, Solaris, Linux servers, desktops. Wireless network planning and support
- Developed several in-house tools to complete research projects with faculty, including outdoor wireless networks, high-speed grant submission scripts to NSF Fastlane, and Linux kernel interfaces for honeypot security testing

IT Consultant, Wilco Farmers   March 2002

- Windows workstation support and development of sales reporting tools, which increased sales in the next quarter by 15% due to more accessible metrics analysis

Power & Lighting Engineer, PAE Consulting Engineers   Summer 2001–Fall 2001

- Building-scale power design, site surveys and illumination engineering

Co-Op, Cypress Semiconductor   Summer 2000–Summer 2001

- Ported place and route software from Solaris to Linux which addressed a shift in 34% of customer build environments and opened up new sales opportunities

Telecommunications Student Worker, University of Portland   Spring 1999–Summer 2000
- Phone, network, and student support. Developed web-based computer registration systems to significantly reduce university IT support calls from students in campus dormatories

Engineering Internship, Nabisco Co.   Summer 1998
- Built network backup systems for bakery floor computers, which were irrplaceable at the time
- Networked HVAC controls to speed up maintenance ticket reponses
- Developed Web-based inventory reporting to assist purchasing department decision making

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STUDENTS - ADVISING

- Abhijay Ghildyal (Masters of CompSci expected 2020): Vision processing for drone guidance in orchards

STUDENTS - CO-ADVISING

- Shervin Amini (PhD completed Spring 2019): "Dynamic power management in multi-core systems"
- Brian Thomas (PhD completed Summer 2017): "Occupancy detection and prediction for smart environments"

STUDENTS - COMMITTEE MEMBER

- James Irwin (Masters of CompSci, Summer 2020)
- Zhaodong Wang (PhD of CompSci, Fall 2019)
- Oscar de Haro (MS of Mechanical Engineering, Fall 2019)
- Hu Yang (PhD Spring 2019)
- Bryan Minor (PhD Summer 2016)

INVITED TALKS

Intel Wireless IoT Technologies Research Group, Portland, OR
- "Smart Homes and Artificial Intelligence for Gerontechnology and Aging Support,"   Spring 2018

2016 National Academy of Neuropsychology Annual Conference, Seattle, WA
- "Workshop on Technologies for Healthy Aging," NAN   Fall 2016

2016 Hawaii International Conference on System Sciences, Kauai, HI
- "Introduction to the Technologies for Healthy Aging Minitrack," HICSS   Winter 2016

2016 Life Science Washington Leadership Summit, Spokane, WA
- "Panel on Lessons Learned Transitioning Technology out of the Laboratory," LSW   Spring 2016

2015 Palouse Knowledge Corridor Investment Forum, Moscow, ID
- "Bevy360: A BehavioMetrics Product for Enabling Aging in Place," PKC   Summer 2015

IEEE Washington Region 6 Annual Gathering, Pullman, WA
- "Bevy360: A BehavioMetrics Product for Enabling Aging in Place," IEEE Social   Summer 2015

EU-US Frontiers of Engineering, National Academy of Engineering, Seattle, WA
- "Smart Homes as a Decision Support Framework," NAE FOE   Fall 2014

IFA+, Co-located with IFA, Berlin, Germany
- "Decision Support in Healthcare with Smart Environments and AmI," IFA+   Summer 2014

Alzheimer's Association, Heart of America Chapter, Prairie Village, Kansas

- "Smart Environments for Monitoring Cognitive Decline," Defining Hope Conference   Fall 2013

Oregon Health & Science University, Portland, Oregon

- "Smart Environments and Behaviometrics," Biomedical Eng. & ORCATECH   Spring 2012

Washington State University, Pullman, Washington

- "Using Git with Python projects," Python Working Group   Fall 2019
- "What is Net Neutrality?," Issues and Forums Committee of WSU   Spring 2018
- "Using SSH," Linux User's Group WSU   Fall 2010, 2011, 2015, & 2017
- "Bevy360: Technology-based Circles of Care for Seniors," IEEE Palouse Chapter   Fall 2015
- "LaTeX for technical writing," Linux User's Group WSU   2014 & 2016
- "WSU CASAS Commercialization Efforts," WSU i3   Fall 2013
- "Virtual Currency Technologies and Bitcoin," Computer Security Group   Fall 2013
- "Smart Environments and Behaviometrics," WSU Vancouver, ENCS   Spring 2012
- "Introduction to Linux," Linux User's Group WSU   Fall 2010 & 2011
- "Identification and Tracking of Smart Home Residents," (Preliminary Exam)   Fall 2010
- "Introduction to Smart Homes," IEEE Palouse Chapter   Fall 2009
- "Linux Security Fundamentals," WSU Computer Security Group   Fall 2009

Oregon State University, Corvallis, Oregon

- "The CASAS Smart Home Research Project," Computer Science Colloquium   Fall 2011

Cypress Semiconductor, Beaverton, Oregon

- "Smart Home Technologies," Cypress Technical Talk Series   Fall 2011

University of Portland, Portland, Oregon

- "Smart Home Technologies and Elder Care," ACM Student Chapter   Summer 2011

University College Dublin, Dublin, Ireland

- "CASAS Smart Homes for Tracking and Behaviometrics Technologies,"
  CASL Colloquium   Summer 2009

AWARDS AND FELLOWSHIPS

Washington State University, Pullman, WA

- WSU business plan competition, 4th place   2018
- Computer Science Ph.D. Student of the Year   2008–2009

DEPARTMENTAL SERVICES

Curriculum Coordinator: CompSci Senior Design, Washington State University   2016–Present

- Responsible for the coordination, development, and advancement of the computer science senior design (capstone) program at EECS
- Continually in contact with industry partners to secure projects and to incorporate industry feedback about needed training for new graduates
- Raised the number of companies involved in capstone from 2 in 2016 to 15 in 2019
- Raised industry donations to capstone from $20k/year in 2016 to $80k/year in 2020
- While leading capstone, the quantity of students has roughly tripled and I have continually reviewed and updated the program to match both the needs of the students and the needs of modern technologies used in industry

- Currently proposing overhauls to the program to include more professional mentorship, leadership training, and improved project scoping

Curriculum Coordinator: CptS 223 - Advanced Data Structures, Wash. St. Univ.   2016–Present

- Lead curriculum development for the computer science advanced data structures course
- Used industry feedback to redesign course materials to better prepare students for internships and careers including:
  - Changed the course to be taught on the GNU/Linux operating system platform
  - Introduced Git as a version control tool and requiring all project work be submitted via Git for grading
  - Converted all assignments to use google test / google mock to introduce testing into the early curriculum
  - Added DevOps style Continuous Integration to all assignments
- Gathered and documented course materials for ABET review

Washington STate Academic RedShirt (STARS) Program Mentor, Wash. St. Univ.   2016–2019

- Serve as a mentor in the Washington STate Academic RedShirt (STARS) Program for need-based, notably underrepresented, students transitioning from high school to an engineering program

ABET Capstone Materials CS Lead, Washington State University   2019

- Assembled and documented the CS capstone courses during the departmental ABET review.
- Guided tours and spoke with the ABET representatives on behalf of the department.

Advise, Attend, and Judge Crimson Code Hackathon, Washington State University   2012–2019

- Advise students during preparation for annual hackathon events
- Attend hackathons to mentor teams
- Participated in hackathon (not competition stage): 2016, 2018 & 2019
- Judged hackathon: 2013–2015, & 2017

Student Club Advisor: Cougs in Space, Washington State University   2016–present

- Faculty advisor for the student group focused on training, education, and outreach for students in the field of space and space engineering
- Guided club from 6 members in 2016 to 120 members in 2019 - making it the largest club in Voiland College Engineering and Architecture
- Engaged multiple companies in supporting and mentoring CiS teams, including Blue Origin, NASA, Planetary Resources, Raytheon, Systima Technologies, Boeing, and Lockheed Martin
- Flagship project is CougSat I - a cubesat for STEM training
- Currently developing CougDrive I - a cubesat ready Hall Effect Thruster for CougSat II and Cislunar (send it to the moon!) satellites

Student Club Advisor: Palouse RoboSub, Washington State University   2018–present

- Faculty advisor for a student club which designs and builds an autonomous underwater vehicle.
- The RoboSub is used to compete in the AUVSI annual competition, and is backed by my NAVSEA grants

Student Club Advisor: Linux User's Group, Washington State University   2016–present

- Faculty advisor for the local LUG group, which promotes and teaches open source software

Student Club Advisor: Ham Radio Club, Washington State University   2013–2018

- Faculty advisor for the student group related to amateur radio projects and education

Student Club Advisor: Hurling At WSU, Washington State University   2015–2017

- Faculty advisor for the student group participating and promoting in the sport of hurling

Student Club Advisor: Computer Security Group, Washington State University   2012–2016

- Faculty advisor for the student group related to all aspects of security systems

Senior Capstone Project Faculty Advisor, Washington State University   2009, 2010, 2012–2014
- Participate in the engineering school's senior capstone project process by being the faculty advisor to senior design teams

Student Recruiting, Washington State University   2007–Present
- Volunteer to assist during university and departmental recruiting events. These events have included tours of the department research labs, introducing prospective students to either the undergrad or grad programs

College Research Promotional Events, Washington State University   2008–Present
- Present past and ongoing research to visitors from industry, alumni, fellow research institutions, and prospective students

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COMMUNITY DEVELOPMENT

WSU Annual Hackathon Judge and Planner, WSU ACM Student Club   2014–2017
- Coordinate with student organizers during event planning
- Attend and judge competition entries along with industry leaders

High School Capstone Advisor, Colfax and Pullman High Schools   2009–2011
- Duties included one on one sessions with local high school seniors interested in a computer science career. The sessions included guided instruction in programming projects, real-world engineering preparation and group work.

Linux User's Group @ WSU, WSU   2007–2014
- Participated in the LUG student group for events, advocacy and help desk work
- Served as the group's elected Treasurer for the 2009 & 2010 school years
  - Reconciled group financials with university
  - Spearheaded fund raising for over $1000/year to fund events
- Worked on the group's biannual computer gaming events

Washington State University Computer Security Group, WSU   2009–2012
- Member of this student group, focused on exploring computer and network security

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PROFESSIONAL SOCIETIES AND ACTIVITIES

Editor:
- Journal on Reliability of Intelligent Environments   2015–2018

Lead Guest Editor:
- Journal of Artificial Intelligence and Smart Environments
  Thematic Issue on Challenges in Engineering Smart Environments   2014

Demos and Videos Track Committee:
- International Conference on Intelligent Environments (IE)   2014

Advertising Committee:
- International Conference on Intelligent Environments (IE)   2013

Workshop Committee:
- SmartHealthSys (UbiComp)   2014
- Workshop On Large Scale Intelligent Environments (WOLSIE)   2013

Program Committee:

- Digital Health Summit (DH)   2016–2018
- International Conference on Tools with Artificial Intelligence (ICTAI)   2012 & 2013
- International Workshop on Situation, Activity and Goal Awareness (SAGAware)   2012
- International Conference on Computational Informatics
  and Technology Enhanced Education (ICCITEE)   2012 & 2013

Professional Memberships:

- Association for Computing Machinery, Member   2009–present
- Institute of Electrical and Electronics Engineers, Member   2010–present

Society Memberships:

- Lions International, Member   2008–2014
- Boy Scouts of America, Eagle Scout

CERTIFICATIONS

Collaborative Institutional Training Initiative (CITI Program)

- Responsible Conduct of Research for Engineers
- Human Subjects Research - Social/Behavioral Research Course
- CITI Conflicts of Interest - Conflicts of Interest

Washington State University

- Institutional Review Board (IRB) training
- Helping Entities Implement Privacy and Security Protections (HIPPA)
- Family Educational Rights and Privacy Act (FERPA)

SCIENTIFIC PUBLICATION REVIEWING

Journals:

- Sensors   2016–2019
- Pervasive and Mobile Computing   2011–2016
- North American Power Association (NAPA)   2014
- International Journal of Ad Hoc and ubiquitous Computing   2013
- Computing   2012
- International Journal of Computer Engineering Research (IJER)   2012
- ACM Transactions on Autonomous and Adaptive Systems (TAAS)   2012
- ACM Transactions on Intelligent Systems and Technology (ACM-TIST)   2012
- International Journal of Computer Engineering Research   2012
- Journal of Computer Science and Technology   2010

Conferences:

- Digital Health Summit (DH)   2016–2019
- International Conference on Intelligent Environments (IE)   2010 & 2014–2018
- Pervasive Computing (PerCom)   2014
- Ubiquitous Computing (UbiComp)   2014
- IEEE International Conference on Tools with Artificial Intelligence (ICTAI)   2013
- ACM SIGKDD Conference on Knowledge Discovery and Data Mining   2012
- International Workshop on Situation, Activity and Goal Awareness (SAGAware)   2012

- IEEE SmartGridComm Symposium on Wide-Area Monitoring,
  Protection & Control (WAMPAC)   2012
- PerCom Workshop on the Impact of Human Mobility on Pervasive Systems (PerMoby)   2012
- International Conference on Advances in Computing, Comm. and Informatics (ICACCI) 2012
- SeaCube International Workshop Series   2011
- IEEE PerCom Workshop on Smart Environments (SmartE)   2010
- IEEE International Conference on Tools with Artificial Intelligence (ICTAI)   2010
- IEEE Consumer Communications and Networking Conference   2010