

AARON S. CRANDALL

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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
- MSCS in Computer Science, Oregon Health and Science University
- BSEE in Computer Engineering, The University of Portland

Publishing:

- Citation Metrics, Spring 2017: Citations: 596 || h-index: 13
- Total Publications: 32

Academic Experience:

- 1 year senior instructional faculty at Washington State University
- 5 years postdoc and research professor at Washington State University
- Lecturer and co-lecturer in CompSci, engineering, AI, ML, Distributed Systems, Security, & Linux
- Co-Advising graduate students

Grant Writing and Fundraising Experience:

- PI NASA: \$12k + CubeSat Launch — PI NIH Funding: \$1,604,828 — PI Google Research \$37,763
- Private Donations Fundraising: \$26,550
- Submitted grants to: NIH, NSF, State programs, university, commercial & private sources

Industry Experience:

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

Invited Talks:

- IFA+, 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: Intelligent Env (IE), ICTAI, DH
- Reviewer for scientific journals and conferences
- Engineering capstone project advisor, 5 years
- Student club advising: Cougs In Space, Linux User's Group, Amateur Radio
- High school tutor: WASL Programming-based capstone projects, 4 years
- WSU Annual Hackathon Judge, 4 years

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
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RESEARCH

Research Interests:

- Artificial Intelligence, Smart Environments, Behaviometrics, Gerontechnology, Engineering of Ubiquitous Computing, Big & Behavioral Data, User Experience
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PUBLICATIONS

Citation Metrics as of Spring 2017:

Citations: 596 || h-index: 13

SUPPORT

Funded Grants:

- “CougSat - An Educational Vehicle for Future Space Engineers”
CubeSat Launch Initiative (CLSI), PI, NASA, 2017, \$12k + Satellite Launch
 - “AUVSI Student AUV Competition - CS”
PI, DOD / Navy, 2017, \$10,000
 - “Robot Control via RGB Video and Convolutional Neural Networks”
Co-PI, Google 2016, \$37,763
 - “Training Program for Undergraduate Gerontechnologists”
CO-I, HHS, NIH R-25 Education Grants (Score: 11) 2013-2018, \$1,604,828
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SOLICITED DONATIONS

- CougSat and Cougs in Space undergraduate cubesat program: \$21,300 2016–2017
 - Student Server Mini “Condos,” Private Donations: \$2,500 2013
 - Kinect Sensors for Senior Capstone Project, Microsoft: \$1,000 2013
 - MedMinder Intelligent Pill System, MedMinder: \$650 2013
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PATENTS

USPTO, Issued:

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

USPTO, Under Review:

- Clutter Detection for In-Home Safety of Seniors Using Augmented Reality
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TEACHING EXPERIENCE

Instructor:

- Software Design Project II, CptS 423, WSU Spring 2017
CS Capstone series - Year long engineering projects with heavy external sponsor and mentor collaboration. Brought in new companies and raised \$26k additional funds over prior years for the program. Serve as curriculum coordinator for computer science course series.
- Advanced Data Structures in C/C++, CptS 233, WSU 2016–2017
3rd CS course in major, starting algorithm analysis, Linux, data structures, and introduces Linux as a development platform
- Software Design Project I, CptS 421, WSU Fall 2016
CS Capstone series - Year long engineering projects with heavy external sponsor and mentor collaboration. Brought in new companies and raised \$26k additional funds over prior years for the program
- 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
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
- 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, and IT projects.

Chief Executive Officer, BehaviorMetrics, LLC Spring 2015–Present

- Founder and CEO for a gerontechnology-focused technology startup, BehaviorMetrics, 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 for \$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 by 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, The 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 dormitories

Engineering Internship, Nabisco Co. Summer 1998

- Built network backup systems for bakery floor computers, which were irreplaceable at the time
- Networked HVAC controls to speed up maintenance ticket responses
- Developed Web-based inventory reporting to assist purchasing department decision making

STUDENTS - CO-ADVISING

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

STUDENTS - COMMITTEE MEMBER

- Bryan Minor (PhD Summer 2016)

INVITED TALKS

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 BehaviorMetrics Product for Enabling Aging in Place," PKC Summer 2015

IEEE Washington Region 6 Annual Gathering, Pullman, WA

- “Bevy360: A BehaviorMetrics Product for Enabling Aging in Place,” IEEE Social EU-US Frontiers of Engineering, National Academy of Engineering, Seattle, WA Summer 2015
- “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**
- “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
- “Using SSH,” Linux User’s Group WSU Fall 2010, 2011, & 2015
- “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**
- Computer Science Ph.D. Student of the Year 2008–2009
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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
- 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
 - Flagship project is the CougSat - a cubesat for STEM training

- Student Club Advisor: Ham Radio Club**, Washington State University 2013–Present
- Faculty advisor for the student group related to amateur radio projects and education
- Student Club Advisor: Hurling At WSU**, Washington State University 2015–Present
- 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 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 new students to either the undergrad or grad programs
- College Research Promotional Events**, Washington State University 2008–Present
- Present past and ongoing research within the department to visitors from industry, alumni, fellow research institutions, and prospective students

COMMUNITY DEVELOPMENT

- WSU Annual Hackathon Judge and Planner**, WSU ACM Student Club 2014–2016
- 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

PROFESSIONAL SOCIETIES AND ACTIVITIES

- Editor:**
- Journal on Reliability of Intelligent Environments 2015–2017
- 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) 2016–2017
- 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–present
- Boy Scouts of America, Eagle Scout

SCIENTIFIC PUBLICATION REVIEWING

Journals:

- Sensors 2016–2017
- Pervasive and Mobile Computing 2011–2016
- North American Power Association (NAPS) 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) 2016–2017
- International Conference on Intelligent Environments (IE) 2010 & 2014–2017
- 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