Alex Cabral (she/her)

PhD Candidate with teaching and industry experience

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Education

2024 (expected)	PhD in Computer Science	Harvard University
2017	MS in Computational Linguistics	University of Washington
2012	BS in Computer Science	Columbia University

Publications

Alex Cabral, Vaishnavi Ranganathan, Jim Waldo. Cellular LTE and Solar Energy Harvesting for Long-Term, Reliable Urban Sensor Networks: Challenges and Opportunities. (In review)

Ayina Anyachebelu, **Alex Cabral**, Marah I. Abdin, Pallavi Choudhury, Madeleine I.G. Daepp. Characterizing The Effects of Structural Fires on Fine Particulate Matter with a Dense Sensing Network. *Scientific Reports* 13, 2023.

Alex Cabral*, Madeleine I.G. Daepp*, Tiffany Werner, Raed Mansour, Charlie Catlett, Asta Roseway, Chuck Needham, Nneka Udeagbala, Scott Counts. The "Three-Legged Stool": Designing for Equitable City, Community, and Research Partnerships in Urban Environmental Sensing. *ACM CHI Conference on Human Factors in Computing Systems*, ACM CHI '23, Hamburg, Germany, 2023.

Madeleine I.G. Daepp, **Alex Cabral**, Vaishnavi Ranganathan, Vikram Iyer, Scott Counts, Paul Johns, Asta Roseway, Charlie Catlett, Gavin Jancke, Darren Gehring, Chuck Needham, Curtis Von Veh, Tracy Tran, Lex Story, Gabriele D'Amone, Bichlien H Nguyen. Eclipse: An End-to-End Platform for Low-Cost, Hyperlocal Environmental Sensing in Cities. *ACM/IEEE International Conference on Information Processing in Sensor Networks*, IPSN '22.

Alex Cabral, Asta Roseway, and Paul Johns. Design and Implementation of A Mobile Urban Low-Cost Environmental Sensor Network. IEEE Sensors Conference, 2021.

Posters and Abstracts

Alex Cabral and Jim Waldo. Power Analysis of a Large-Scale Solar-Powered Urban Sensor Network. ACM COMPASS '23. (Accepted)

Alex Cabral. PhD Forum Abstract: Designing Large-Scale Wireless Urban Environmental Sensor Networks. *Proceedings of the 22nd International Conference on Information Processing in Sensor Networks*, IPSN '23, San Antonio, USA, 2023.

Alex Cabral, Vaishnavi Ranganathan, Jim Waldo. Connectivity Analysis of a Large-Scale 4G LTE-M Urban Sensor Network. *USENIX Symposium on Networked Systems Design and Implementation*, NSDI '23.

Alex Cabral. Analyzing Data to Identify Factors that Affect the Collection of Free Food Items. *Proceedings of the Conference on Computing & Sustainable Societies*, ACM COMPASS '19.(**Spotlight Poster**)

Alex Cabral and Quinten Steenhuis. A Web Tool for Negotiating Negative Housing Conditions. *Proceedings of the Conference on Computing & Sustainable Societies*, ACM COMPASS '19.

Invited Talks

2023	CSforAllPA Summit Panelist for a panel focused on the experiences of people with disabilities in Computer Science programs
2022	Harvard Cities and Tech Online Course I provided expertise on low-cost urban sensor networks and the future of smart cities for the upcoming Harvard Online *Cities and Digital* course.

Awards and Honors

June 2023	NSF Travel Grant Recipient for MobiSys 2023
May 2023	NSF Travel Grant Recipient for CPS-IoT Week 2023
March 2023	CRA-WP Grad Cohort Workshop for Inclusion, Diversity, Equity, Accessibility, and Leadership Skills Selected Attendee
Sept 2022	NextProf Nexus Selected Attendee
May 2020 & 2021	Certificate of Special Distinction in Teaching
2018 – 2023	Harvard Graduate School Prize Fellowship

Volunteering and Service

2023	CSCW Workshop Co-Organizer Serving as a co-organizer for the Data-Enabled Sustainability workshop at the CSCW 2023 conference.
June 2023	ACM COMPASS Shadow PC Member Served as a member of the shadow program commitee for ACM COMPASS, writing three paper reviews.
October 2022	SenSys Workshop Organizer I formed and organized the first ever Urban Sensor Networks workshop at the ACM SenSys 2022 conference. The workshop brought together an international group of researchers to discuss the future of urban sensor network research.
2021 – 2022	Harvard GSAS Graduate Student Council Representative
2019 – 2020	Harvard PhD CS New Student Mentor
2018 – 2020	Harvard CS Graduate Council Member

Patent

2014	Predictable Organic Tile Layout Each of a plurality of ordered tiles is sequentially fit into a first open location within a scrollable two-dimensional matrix. The open locations into which any particular tile may be fit are limited by a non-zero, positive offset value that specifies how far from an immediately previous tile that tile may be backfilled.

Work Experience

Mar 2021 – Sep 2022	Part-Time Researcher – Microsoft Research As a member of the Urban Innovation Initiative, I led and contributed to research for a distributed, low-cost air quality sensing network in Chicago. My projects included an exploration of cellular signal and solar power for the future of IoT and the design and development of spatio-temporal algorithms to improve sensor calibration.
Apr – Dec 2021	Course Content Developer – HarvardX I worked with two Computer Science professors to create content for an online course title Data Privacy and Technology. I led the creation of multiple case studies including biomedical research ethics via the story of Henrietta Lacks, genetic data rights as told by the discovery of the Golden State Killer, and the future of privacy with an examination of deepfakes. The course has consistently high course ratings, averaging over 4.5 of 5 stars with each cohort.
Summer 2020	Research Intern – Microsoft Research I worked with the Urban Innovation Initiative to conduct studies using low-cost air quality sensors in the Boston metro area. I evaluated the potential to crowdsource urban air quality via mobile sensors, and deployed a set of stationary sensors to measure the impact of a new bus lane in Chelsea, MA.
2016 – 2018	Curriculum Developer – CodeCombat I designed and wrote Computer Science curriculum guides for middle and high school teachers with no former Computer Science education. I incorporated a variety of activities to introduce Computer Science concepts and developed an approved curriculum for AP Computer Science Principles.
2015 – 2018	Computer Science, Robotics, and Math Teacher As a middle and high school teacher, I developed lessons, assignments, and assessments for AP and Introductory Computer Science, Precalculus, and Robotics courses. I worked with a colleague to design a makerspace and corresponding interdisciplinary lesson plans. Outside of school, I mentored a club for female students interested in Computer Science and Electrical Engineering and coached a competitive high school robotics team.
2013 – 2016	Software Engineer – Microsoft I wrote, implemented, and analyzed tests for the Xbox One Subscriptions service. As a member of the Xbox 360 team, I built internal development and testing tools for backwards compatibility; developed an automated reporting system that collected, analyzed, and created visualizations for large datasets generated by millions of Xbox 360 users; and planned, designed, implemented, and analyzed tests for a number of features and services on the Xbox 360.