

# Mara Kirdani-Ryan

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I work to move computing from a force magnifying societal oppression to a force for collective liberation by intersecting computer science, sociology, and social work to surface, deconstruct, and challenge computing's cultural norms.

## Education

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### University of Washington

Ph.D. in Computer Science & Engineering

Seattle, WA

2018 – 2024

### Carnegie Mellon University

B.S. & M.S. in Electrical & Computer Engineering

Pittsburgh, PA

2013 – 2017

## Publications

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### Peer-Reviewed

#### “Taught to be Automata”: Examining the Departmental Role in Shaping Initial Career Choices of Computing Students

Mara Kirdani-Ryan, Amy J Ko, Emilia A Borisova

*Computer Science Education* pp. 1–27. Taylor & Francis, 2023

#### The House of Computing: Integrating Counternarratives into Computer Systems Education

Mara Kirdani-Ryan, Amy J Ko

*Proceedings of the 53rd ACM Technical Symposium on Computer Science Education* pp. 279–285. ACM, 2022

### Book Chapters

#### Operating Systems

Amy J. Ko, Mara Kirdani-Ryan

Chapter in: *Critically Conscious Computing: Methods for Secondary Education*, <https://criticallyconsciouscomputing.org/>

Edited by: Amy J. Ko, Anne Beitlers, Brett Wortzman, Matt Davidson, Alannah Oleson, Mara Kirdani-Ryan, Stefania Druga, and Jayne Everson, 2023

### Magazine Articles

#### It's time for more Critical CS Education

Amy J Ko, Alannah Oleson, Mara Kirdani-Ryan, Yim Register, Benjamin Xie, Mina Tari, Matthew Davidson, Stefania Druga, Dastyni Loksa

*Communications of the ACM* pp. 31–33. ACM, 2020

## Awards & Honors

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2018 Dora Zee Ling Endowed Fellowship in Computer Science & Engineering

University of Washington

2017 ECE Department Outstanding Teaching Assistant

Carnegie Mellon University

## Professional Appointments

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### University of Washington • Code & Cognition Lab

Seattle, WA

Doctoral Researcher • Advised by Amy Ko

2018–2024

- Researching cultural change within computing; surfacing computing's cultural norms and challenging address them

### Carnegie Mellon University • Abstract Research Group

Pittsburgh, PA

Research Assistant • Advised by Brandon Lucia

2017 – 2018

- Explored intermittent HW design and extended software models to guarantee consistency across HW interrupts

### Apple Computer

Cupertino, CA

GPU Software Intern

May 2017 – August 2017

- Transitioned memory architecture for Intel GPU driver to map-based system

### Cisco Systems • Cloud Platform Team

Boxborough, MA

Software Engineering Intern

May 2016 – August 2016

- Worked with application teams to implement infrastructure for alert correlating and squashing

## National Security Agency

CAE in Cyber Operations Intern

Baltimore, MD

June 2015 – August 2015

- Surveyed a variety of security contexts and threat models and worked on a challenge problem of high operational interest; TS/SI clearance

## University of Rochester · Music Research Lab

NSF REU Scholar · Advised by Mark Bocko

Rochester, NY

June - August, 2014

- Designed and created an acoustic camera, programmed in Matlab

## Teaching

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### University of Washington

Seattle, WA

**Instructor of Record** · Deconstructing Cultural Norms in Computer Science

Winter 2023

Teaching Assistant · The Hardware/Software Interface

Winter 2023

Teaching Assistant · The Hardware/Software Interface

Winter 2022

**Instructor of Record** · The Hardware/Software Interface

Summer 2021

Teaching Assistant · The Hardware/Software Interface

Spring 2021

Teaching Assistant · Computer Systems Architecture

Fall 2019

### Carnegie Mellon University

Pittsburgh, PA

Head Teaching Assistant · Introduction to Embedded Systems

Spring 2018

Teaching Assistant · Secure Coding

Spring 2018

Teaching Assistant · Introduction to Embedded Systems

Fall 2017

Teaching Assistant · Introduction to Computer Architecture

Spring 2017

Teaching Assistant · Logic Design and Verification

Fall 2016

Teaching Assistant · Structure and Design of Digital Systems

Spring 2016

Teaching Assistant · Structure and Design of Digital Systems

Fall 2015

Teaching Assistant · Structure and Design of Digital Systems

Spring 2015

## Notable Projects

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### Hardware

- 2016 **Game Boy Advance** Emulated original hardware on a Zedboard, capable of running the system BIOS as well as several small games
- 2016 **MIPS Core** Designed and implemented a 2-way superscalar, branch-predicting, pipelined version of MIPS R2000. Won the class performance competition with 467Mhz clock speed.

### Software

- 2017 **TAPIR** Extended existing work in intermittent computing to operate in a multithreaded context while maintaining idempotence
- 2015 **Pebbles Operating System** Designed and implemented an Unix-style OS, complete with demand paging, 25 system calls, support for user-space device drivers, and a user-space thread library
- 2015 **MapReduce** Created a MapReduce framework in Java capable of recovering from server failure
- 2017 **Indoor Localization** Used an RFID network to track approximate locations and provided a framework for data analytics
- 2017 **Table Occupancy Detection** Created a system to allow users to pair their phone with a table, as well as detect occupancy