Brooke Chalmers

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she/her Boston, MA & Portland, ME Available May–December 2024

Education

Khoury College of Computer Sciences, Northeastern University, Boston, MA Sept 2021–Present
Candidate for Bachelor of Science in Computer Science expected graduation May 2025
GPA: 3.88/4.00, Honors Program, Dean's List all semesters
Relevant coursework: *Object-Oriented Design, Algorithms, Theory of Computation, Intro to Cybersecurity*

Skills

Programming Languages: Python, Rust, TypeScript/JavaScript, C++, CSS, Java, MOS 6502 Assembly
Tools and Frameworks: Git, Linux (CLI), React, Node, Tailwind, Redis, ROS, Docker, Bash, VS Code

Work Experience

Amazon Robotics, Sensor System Development Co-op, North Reading, MA July 2023–Dec 2023

- Develop software to support thermal and vibration testing of sensors
- Design and implement a test suite to benchmark hardware-accelerated image capture and processing
- Create and document a DRAM tuning process for custom ARM-based compute modules

Northeastern U. College of Arts, Media, and Design, Research Assistant, Boston, MA Jan 2023–May 2023

- Researched Android internals, audio libraries, and C++ compilation tools
- Implemented a toolchain for compiling low-level audio applications for rooted Android phones
- Created example projects to demonstrate the toolchain's use in an educational environment

Khoury College of Computer Sciences, Teaching Assistant, Boston, MA Sept 2022–Dec 2022

- Provided one-on-one assistance to students in an accelerated fundamentals of computer science course
- Conducted labs, planned assignments, and graded submissions for 70 students as part of a small team
- Implemented and deployed infrastructure in Rust used for testing student submissions

Leadership Experience

Northeastern University Mars Rover Team, Engineering Lead Sept 2021–Present

- Communicate with electrical, firmware, and software teams to establish deadlines and deliverables
- Lead development of an entirely new base station control interface leveraging React and TypeScript
- Implement a low-latency system for video streaming over long-range radio using GStreamer and RTSP
- Conduct onboarding lectures and write reference materials covering React, ROS 2, Git, etc.
- Develop and deploy communications infrastructure supporting IP networking over various ISM bands
- Develop CI tooling enforcing correctness and style with feedback collected from various subteams

Personal Projects

Modular Retro Emulation Framework for Desktop and Web Sept 2022–Present

- Develop a project in Rust for emulating the Commodore 64, VIC-20, and other 6502-based machines
- Implement both GPU-accelerated desktop support and WebAssembly support for web deployment
- Organize a small team to extend support for additional systems and peripherals

LiDAR-based Expressive MIDI Controller Feb 2022–May 2022

- Designed a musical instrument with a LiDAR sensor to track the position of the user's hands
- Implemented a rule-based strategy in Python to process point cloud data and control Ableton Live

Addressable LED Choker and Companion Android App Sept 2021–June 2022

- Built several necklaces using addressable WS2812B LED strips and various ARM microprocessors
- Devised a resilient serial protocol for selecting an animation and providing parameters
- Developed an app with React Native to send animation commands over USB or Bluetooth