Brooke Chalmers

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👤 she/her   🏠 Boston, MA   📅 Available May 2025

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: 3.8/4.0, Honors Program, Dean's List all semesters
    Relevant coursework: *Algorithms, Concurrent Systems, Object-Oriented Design, Cryptography, Networks*

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

Quadratic 3D, Inc., Software Engineering Co-op, Charlestown, MA   June 2024–Present
- Implement a full software solution for computer control of a prototype vat-polymerization 3D printer
- Program drivers for a variety of lasers, sensors, and other hardware modules
- Design and develop software for dispatching jobs, aggregating measurements, and monitoring usage
- Create and deploy a cloud-based system to accelerate preprocessing of 3D models for printing
- Migrate tooling from Python and C++ to Rust and apply benchmarking techniques to increase performance
- Create internal observability tools for measuring printer utilization, laser power, and other statistics

Amazon Robotics, Sensor System Development Co-op, North Reading, MA   July 2023–Dec 2023
- Created and documented a DRAM tuning process for custom ARM-based compute modules
- Developed software to support thermal, vibration, and ingress protection testing of image sensors
- Designed and implemented a software library and test suite for hardware-accelerated image processing

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 design and development of a 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 CI tooling enforcing correctness and style with feedback collected from various subteams

Northeastern University Wireless Club, Code Guru   Sept 2023 – June 2024
- Research workshop ideas and concepts related to software and electrical engineering
- Develop 2 workshops on embedded software development and low-level Bluetooth networking

Personal Projects

Amateur Radio Callsign and Repeater Recording App 🔗 ⭘   Jun 2024–Aug 2024
- Designed and implemented a web application for mobile and desktop to store and retrieve radio callsigns
- Implemented authentication and cloud storage using a NoSQL document database
- Developed RFC6350-compliant export and import features using an extended vCard format
- Distributed the application as a Progressive Web App and added support for offline usage

Modular Retro-Computer Emulation Framework for Desktop and Web 🔗 ⭘   Sept 2022–Jan 2024
- Developed a project in Rust for emulating the Commodore 64, VIC-20, and other 6502-based machines
- Implemented both GPU-accelerated desktop support and WebAssembly support for web deployment

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