Shane Berhoff - Software Engineer

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EXPERIENCE

Maxar Technologies **Melbourne, FL**
Software Development Engineer (converted from Intern) May 2025 - Present

- Designed satellite-to-satellite detection engine using Python/C++ with orbital mechanics and image processing, achieving 60x performance improvement (20min → 20sec) with micro-radian accuracy at ranges up to 3000km
- Developed subpixel-accurate camera model for space-based imaging, handling coordinate transformations between pixel space and ECI reference frame LOS vectors for 3 satellites (WV01-03), deployed in 2 production systems
- Implemented CI/CD pipeline (Docker/Kubernetes/GitLab) with automated testing/staging/versioning/deployment
- Established TDD practices, black-box testing, and custom statistical measurements to track algorithm performance

Emory Physics Department **Atlanta, GA**
Undergraduate Astrophysics Researcher Dec. 2023 - Aug. 2025

- Conducted asteroid astrometry and differential photometry for Emory's TERRA project with 24-inch DFM telescope
- Analyzed and submitted data for 7 dim (14th magnitude) asteroids (6 main belt, 1 NEO) to the Minor Planet Center

Shurhold Industries **Palm City, FL**
Software Development Intern May 2024 - July 2024

- Redesigned a product label testing and validation system for the shipping department and created a mobile interface
- Tripled efficiency of barcode type and UPC prefix validation workflows while adding history and sharing capabilities

TECHNICAL PROJECTS

geoChat - Codebase - Demo **Node.js, React, Vite, Tailwind, Socket.io, MongoDB, Docker, AWS**

- Full-stack real time local live chat application with concurrent but ephemeral user sessions and chat messages
- Anonymous and accountless, with user access done through curated OSM geofencing data (87 supported zones)
- Used by Emory students for 42 days with 1035 messages sent across 640 anonymous sessions by 99 unique users

Worldline - Codebase - Demo **TypeScript, React Native, Expo, Mapbox, Figma**

- Cross platform data visualizer for photo library metadata: EXIF statistics, location layers, cluster density processing
- Led a team of 5 developers, running Agile sprints with weekly stand-ups to hit milestones and drive contributions

course-sniper - Codebase - Demo - Releases **Rust, Chrome Devtools Protocol, GitHub Actions**

- CLI tool for automated rapid (0.05 seconds) course enrollment: login, cart information, course and time selection
- Reverse-engineered client-side HTML and JavaScript for added functionality and decreased registration time

Efficient Speech Emotion Classification - Codebase - Paper **Python, PyTorch, NumPy, Seaborn**

- Built an audio-to-image CNN classifier achieving 78.6% accuracy across 6 emotions, surpassing similar papers

Monkeytype - Pull Request - Merge Commit **Open Source Contribution, TypeScript**

- Improved keyboard monkey to type with the same hand as user across all physical and emulated keyboard layouts
- Quickly adapted to large scale codebase architecture to refactor layout conversion logic and add hand check feature

TECHNICAL SKILLS

Languages / Markup: Python, C, C++, Rust, JavaScript, TypeScript, Java, Swift, SQL, HTML5, MD, YAML, TOML
Frameworks / Libraries: React, Svelte, Micronaut, Tailwind, Express, Socket.io, React Native, Expo, PyTorch, Sklearn
Tools / Infrastructure: Git, Docker, Kubernetes, Vite, AWS, GCP, MongoDB, PostgreSQL, Redis, Linux, CI/CD, Pytest

EDUCATION

Emory University - *Bachelor of Science* in Computer Science & Engineering Physics **Atlanta, GA**
GPA: 3.99/4.0, **Dean's List:** Fall 2022, Spring 2023, Fall 2023, Spring 2024 May 2026
Relevant Courses: Systems Programming, ML/DL, DSA, Databases, Comp. Arch., PDEs, Modern Physics, Mechanics

COMMUNITY INVOLVEMENT

Alpha Epsilon Pi, *Founding Father & Exec Board* Sep. 2022 - Present

- Spearheaded chapter re-establishment by creating traditions, strong values, and fostering an inclusive community

Emory Robotics, *Subteam: Mechanical* Sep. 2023 - Sep. 2024

- CAD modeled and built 2 robots with remote control and autonomous modes for VEX Robotics Over Under