RYAN BROOKS

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EDUCATION

Brown University **Providence, RI**
M.S. Computer Science Sep 2026 - Expected May 2028
- Current coursework in Computer Vision and Deep Learning

University of Rhode Island **Kingston, RI**
B.S. Computer Science, B.S. Applied Mathematics, Data Science Minor Sep 2022 - May 2026
- GPA: 3.88/4.0, Dean's List (all semesters), Algorithms TA (Spring 2026), First-Year CS Mentor

PROFESSIONAL EXPERIENCE

Human-Centered Experimental Technologies (HAX) Lab, University of Rhode Island **Kingston, RI**
Research Software Engineer June 2026 - Sep 2026
- Architected and developed PEBERS, an end-to-end SvelteKit/TypeScript research platform for authoring, validating, publishing, and running configurable participant studies with reusable tasks and measurement systems.
- Engineered reliable study execution with versioned studies, material fingerprinting, session management, validation, and recovery workflows to protect research data from concurrent configuration and deployment changes.
- Collaborated with two lab members to integrate independently built components and iterate on PEBERS through demos and feedback, delivering a documented platform for ongoing lab studies and future development.

OMNI Digital Services **Providence, RI**
Software Engineer Jan 2024 - Sep 2026
Software Engineering Intern July 2023 - Dec 2023
- Delivered 15+ production websites and web applications across multiple industries, handling the full project lifecycle across UI/UX, frontend/backend development, CMS integration, SEO, testing, and client iteration.
- Maintained and extended Project Starter, OMNI's PHP/MySQL/JavaScript platform for generating client sites by establishing semantic releases and expanding site-generation infrastructure for easier and more consistent site versioning and deployment.
- Built reusable event, blog, sitemap, administration, and security systems, generalizing client features for reuse across later projects, reducing project setup and completion timelines by an average of 3-4 weeks.
- Optimized SEO and site performance through keyword research, content structure, responsive development, and Lighthouse auditing, achieving targeted Ahrefs health scores of 100 and monitoring performance post-launch.

PROJECTS & RESEARCH

Context Graph: Cross-Layer Codebase Modeling Research Sep 2025 - Present
- Created Context Graph, a VS Code static-analysis system that models Python and JavaScript/TypeScript codebases as a language-neutral dependency graph for understanding architecture and cross-layer relationships.
- Implemented project-wide analysis and interactive React visualization with symbol resolution, call-flow grouping, change-impact analysis, and incremental updates to make complex code relationships explorable.
- Continuing to refine the system through developer demos and feedback while preparing a user study to evaluate graph-based navigation and comprehension of unfamiliar codebases.

Scrabble Board Letter Recognition Nov 2025 - Dec 2025
- Developed an end-to-end computer vision pipeline in MATLAB to detect Scrabble boards, correct perspective via homography, segment and normalize grid tiles, and enable automated letter classification from real-world images.
- Built and evaluated a PCA/SVD-based k-NN letter classifier, generating a synthetic dataset of 2,600 samples with controlled lighting and geometric perturbations to achieve 90-94% test accuracy.

Compass Assets: Digital Asset Distribution Platform July 2020 - Present
- Architected and continue to operate a production video game asset-distribution platform serving 26,000+ assets and ~4,000 monthly downloads, built as an Nx monorepo of ~20 deployable applications and services.
- Engineered a distributed application architecture with independently deployed Astro/React applications, Cloudflare Workers, and VPS services, managing shared packages, interfaces, and persistent data while delivering continuous releases to users.
- Automated platform operations and content delivery through GitHub Actions CI/CD, migrations, scheduled jobs, monitoring, and Python tooling, with internal systems supporting debugging, testing, releases, storage, and database management.

TECHNICAL SKILLS

Languages: Python, Java, C++, MATLAB, JavaScript, TypeScript, PHP, HTML/CSS
Web & Data: React, Astro, SvelteKit, Node.js, REST APIs, MySQL, SQLite
Tools & Platforms: Git, GitHub Actions, Cloudflare Workers, R2, Nx, Firebase, WordPress, cPanel