

Jack Hogan

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Computer Science and Artificial Intelligence double major (minor in Mathematics) with hands-on experience in software engineering, AI/ML research, and technical leadership. Passionate about deep reinforcement learning and developing systems that enable models to reason, adapt, and learn complex behaviors. Experienced in creating production-ready software and advancing machine learning architectures, with applications in robotics, vision, and low-data learning. Seeking opportunities to contribute to impactful projects at the intersection of applied AI research and scalable, high-performance systems.

Experience

Era Labs

Full-Stack Engineer

📅 August 2026 – Present 📍 San Francisco, CA

- Designed and implemented a patent-pending firmware architecture supporting dynamic peripheral registration and bytecode execution for ~100ms idea iteration.
- Designing and fabricating circuits for new product lines with microamp-scale power draws and efficient layouts.
- During my fellowship with Era from 2025-2026, I designed a cohesive software stack for registering, finding, and collaborating with Beacons, a hardware/software solution for fostering real-time social connections at events, using traditional and LLM-based machine learning techniques.

Peraton Labs

Machine Learning Researcher

📅 May 2025 – Present 📍 Silver Spring, MD

- Created a new pipeline for concurrently testing different GNN architectures, speeding up testing by 2-3x.
- Investigated and implemented multiple bleeding-edge GNN architectures, improving task accuracy by 50%+.
- Developed and presented a technical report on a novel GNN architecture, demonstrating significant performance gains and guiding next-phase research.

Leidos Innovation Center

Software Engineering Intern, High-Performance Systems

📅 May 2024 – August 2024 📍 Arlington, VA

- Created and refined GPU-based signal processing algorithms in CUDA, Rust, and Python for real-time applications, improving performance by 400%.
- Developed a real-time machine learning system to lock onto hidden radar targets using PyTorch with 85%+ accuracy.
- Resulting work will be deployed to active defense platforms.

Peraton

Software Engineering Intern

📅 May 2023 – August 2023 📍 Chantilly, VA

- Automated document processing systems using AI-based parsing systems to increase processing efficiency.
- Authored and presented a whitepaper on systems and processes developed.
- Managing daily intern standups and kept tasks on track.
- Created data ingest and management dashboards for U.S. contractors.

Alluja LLC

Founder

📅 2020 – Present 📍 Chantilly, VA

Objective

Machine learning researcher with a passion for deep reinforcement learning, where I hope to discover new and innovative ways to make models learn complex policies with applications in problem analysis, critical thinking, robotics, vision, and low-data learning. Seeking opportunities to leverage technical expertise, leadership skills, and a commitment to innovation in challenging and impactful projects revolving around deep reinforcement learning, reasoning, policy optimization, and robotics.

Education

Purdue University Honors College

Computer Science B.S., Artificial Intelligence B.S.; Minor in Mathematics; Graduating Spring 2026

📅 Fall 2022 – Spring 2026 📍 West Lafayette, IN

- 3.7 GPA
- Relevant Coursework: Data Structures, Graduate Machine Learning, Artificial Intelligence, Analysis of Algorithms, Abstract Algebra
- Study Abroad: University College Dublin, Spring 2024 – Coursework in cognitive psychology, philosophy of mind, and human decision-making related to AI's cognitive, reasoning, and ethical foundations.

Skills/Exposure

- | | | |
|--------------|-------------------|--------------|
| • Java | • C | • GStreamer |
| • C# | • C++ | • Unix |
| • Python | • SvelteKit | • Systemd |
| • SQL | • Django | • PulseAudio |
| • MongoDB | • Actix Web | • CUDA |
| • Swift | • Flask | • CUTLASS |
| • Kotlin | • Spring Boot | • NumPy |
| • Svelte | • Express | • PyTorch |
| • JavaScript | • SwiftUI | • Pandas |
| • TypeScript | • UIKit | • Burn |
| • HTML | • Jetpack Compose | • SciPy |
| • CSS | | • Astro |
| • Rust | • React | |
| | • Leptos | |

- Creator of multiple products including mobile apps (SwiftUI), libraries (Swift, Rust), backend servers (Rust, Python), and frontends (Svelte, Leptos) impacting 5,000+ users.
- Komori, a Discord Siri Shortcuts integration, with paid downloads on the App Store.
- Alluja WebSockets, a WebSocket testing client for macOS, with 100+ downloads.

Research & Leadership

Purdue Hackers

Engineering Division Lead & Interim President

📅 Jan 2022 – Present 📍 West Lafayette, IN

- Overseeing all engineering projects for Purdue Hackers, a 2000+ member student organization focused on innovation and rapid prototyping.
- Managed a team of 10+ officers, balancing budget and time constraints while delivering multiple large-scale technical initiatives.
- Designed and maintained infrastructure for the Passports initiative, including authentication and management systems in Rust and TypeScript, supporting hundreds of active users.
- Led development of The Sign, a meter-tall Conway glider installation representing the club's logo; project was accepted to Hackaday and drew 1,000+ online views.
- Spearheading the Beacons project in collaboration with Era Computer, deploying early prototypes at student events.
- Organized and ran major events, including a 200+ person callout, hack nights, and technical workshops, while guiding a smooth presidential transition.

Detecting Source Code Plagiarism in Submitted Assignments

Lead Researcher

📅 Spring 2023 – Fall 2025 📍 West Lafayette, IN

- Selected by Purdue faculty to lead an independent research project addressing plagiarism detection in the Computer Science program.
- Designing a language-agnostic detection system using Abstract Syntax Trees, parsing techniques, and machine learning to identify similarity beyond surface-level code patterns.
- Conducted large-scale testing across multiple courses, targeting 1,000+ student submissions annually to improve fairness and academic integrity.
- Preparing a sole-author paper for submission to NeurIPS presenting novel methods for scalable, cross-language plagiarism detection.

Purdue Orbital

Avionics Design Lead

📅 Jan 2023 – Jan 2025 📍 West Lafayette, IN

- Led a team of 15+ members to create a custom fault-tolerant system for rocketry systems.
- Developed systems for collecting data for avionics missions using Rust.

Tools

• EC2 • ECS • S3 • Docker • Docker Compose

Associations

- Purdue Hackers
- Purdue Orbital
- Purdue University Ski & Snowboard Club
- Boiler Book Club
- Purdue Theme Park Engineering & Design
- Mensa International