

Nathan Cho

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EDUCATION

Purdue University

West Lafayette, IN

B.S., Computer Science, B.S., Mathematics, Certificate in Entrepreneurship

May 2028

Selected Coursework: Systems Programming, Computer Architecture, Data Structures & Algorithms, Data Mining & Machine Learning, Linear Algebra, Applied Regression Analysis, Probability & Statistics, Numerical Methods, Information Systems

EXPERIENCE

IBM (HashiCorp)

Austin, TX

Software Development Engineer Intern

May 2026 – Aug 2026

- Built and deployed sales analytics platform transforming 24M+ raw customer records into churn-risk and advanced analytics for sales teams managing \$20M+ in ARR
- Architected a VSCode extension integrating custom MCP servers and skills with Slack and Jira APIs to generate, synchronize, and assign tickets, reducing project planning time by 91% from days to hours
- Developed an LLM output-optimization layer adopted by 18 engineers, improving token efficiency and spend by 70%
- Migrated observability for 6 data applications from Datadog to IBM Instana during post-acquisition integration
- Led a technical session for 63 IBM employees on agentic AI best practices and implementation techniques

Purdue University

West Lafayette, IN

Machine Learning Research Assistant

Aug 2026 – Present

- Developed custom Physics-Informed Neural Networks to solve differential equations with mixed boundary conditions
- Used PCA and Variational Autoencoders to infer phase transition properties in metabolites under Professor Corvalan

Caterpillar Inc.

West Lafayette, IN

Software Researcher

Aug 2025 – May 2026

- Architected a full-stack LLM platform to query Caterpillar's 2 PB telemetry store improving analysis time by 89%
- Integrated custom MCP functions and elicitation tool-calling loop driving LLM queries accuracy from 48% to 92%
- Coordinated stakeholder communication and contributed to code reviews, design documentation, and CI/CD testing

Guardian Insight Group

Remote

Software Engineering Intern

Nov 2025 – May 2026

- Developed full-stack campaign platform, engineering a recommendation engine increasing lead detection by 34%
- Designed and optimized scalable ETL pipelines in Python (Pandas) and SQL to process 15M+ voter and donor records
- Improved data matching accuracy by 15% by designing fuzzy string matching and custom probabilistic algorithms

Purdue Sigbots (Competitive Robotics)

West Lafayette, IN

Lead Software Engineer

Aug 2024 – Present

- Led 12-engineer team to 2026 World Championship Title (1/350) developing C++ autonomous robot control systems
- Implemented custom motion-control algorithms (PID, Pure Pursuit) with a 93% autonomous routine success rate
- Reduced development cycle time by 40% with modular architecture and automated CI/CD testing frameworks

PROJECTS

NathanCode | TypeScript, Node.js, React, Anthropic API

2026

- Built an AI coding agent harness from scratch with a custom tool-calling loop, integrating file-system operations, shell execution, and multi-step task orchestration via the Anthropic API
- Designed a real-time visualization interface rendering the agent's reasoning, tool calls, and decision flow, improving transparency and debuggability of autonomous code generation

TECHNICAL SKILLS

Languages: Python, C++, C, TypeScript, JavaScript, Go, Java, SQL, R

Frameworks: PyTorch, NumPy, Pandas, TensorFlow, React, Next.js, Node.js, Express, FastAPI, Flask, D3.js

Technologies/Tools: Git, Docker, Kubernetes, Terraform, AWS, Linux, PostgreSQL, Redis, REST, CI/CD, Agile