

Alexander Kozik

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EDUCATION

Cornell University

Ithaca NY

B.A. Honors Computer Science, B.A. Mathematics

Aug 2022 – May 2026

- **Relevant Coursework:** Machine Learning, Deep Learning, Analysis of Algorithms, OOP and Data Structures (Honors), Systems Organization, Systems Programming, Functional Programming, Programming Languages and Logics, Discrete Structures, Probability Theory, Advanced Linear Algebra, Multivariable Calculus, Real Analysis, Macroeconomics
- **GPA: 4.1/4.0** Dean's List, Focus on Machine Learning and Software Engineering

EXPERIENCE

Salesforce

May 2025 - Aug 2025

Software Engineer Intern

Seattle, WA

- Implementing custom formula field functionality in Salesforce Data Cloud using **Java**, **SQL**, and **Apache Spark**.
- Developing UI in **React** and **TypeScript** with **REST API** for metadata explorer, enabling users to browse data schemas.

CMSX

Aug 2023 – Present

Frontend Lead & Fullstack Engineer

Ithaca, NY

- Maintain Cornell's official CS course management system, used by **10,000+ students** in **100,000+ line** codebase.
- Lead frontend team by designing project architectures, reviewing PRs, and interviewing candidates for technical roles.
- Architected and built the student-facing frontend in **React/TS**, enhancing user experience and code maintainability.
- Implemented **APIs** with serializable data structures, enabling secure communication between the frontend and backend.

Carnegie Mellon University - Software and Societal Systems

May 2024 - Aug 2024

Software Engineer and Research Intern

Pittsburgh, PA

- Worked on the interpreter for SASyLF, a programming language for writing proofs, implementing core features in Java
- Created a modular testing framework using **Python** to automate unit tests and integration tests, ensuring code reliability.
- Implemented a polymorphic module system for SASyLF, providing type-safe code reuse similar to Java generics for classes

Cornell Generative AI

Feb 2025 - Present

AI/ML Engineer & Project Manager

Ithaca, NY

- Developed AI agent for QuickFi automating insurance certificate validation and compliance verification processes.
- Built frontend and vector database for ClassGPT, enabling professors to create AI tutors for course-specific content.
- Manage cross-functional project teams and coordinate development workflows for multiple AI-driven applications.

Cornell Computing and Information Science

Aug 2023 – Present

Teaching Assistant

Ithaca, NY

- **Courses:** Machine Learning, Analysis of Algorithms, Data Structures and Functional Programming
- Recipient of the **CS Course Staff Award** for providing exceptional service to students (awarded to less than 10% of TAs).
- Lead office hours helping students with assignments, debugging code in **Python/Java/C++**, and grading assessments.

PROJECTS

C-Torch - Math/Machine Learning Library | C++

- Developed a high-performance **math library** supporting numerical methods, multivariate calculus, and linear algebra.
- Implemented 15+ ML models, such as neural networks and kernel SVMs, achieving 99%+ accuracy on classification tasks.
- Implemented DQN and Policy Gradient agents achieving **97%+ win rates** in autonomous gameplay.
- Achieved 26x performance speedup through compiler optimizations and low-level memory management techniques.

LambdaScript - Custom Programming Language | TypeScript, OCaml, Jest, OUnit

- Built interpreter for custom functional programming language, achieving **50% performance improvement** over Python.
- Designed parser and type inference algorithm to validate programs and provide developer feedback during execution.
- Implemented core language features including pattern matching, functions, algebraic data types, and polymorphic types.

HabitStack - Habit Tracking Application | React, TypeScript, JavaScript, SASS, Express.js, Firebase, Vite

- Built full-stack habit tracking application with **OAuth2**, monthly calendar interface, and real-time goal management.
- Developed **TypeScript APIs** and **Express.js backend** integrated with **Firebase** for seamless data persistence.
- Implemented live chat functionality using database connections, enabling low-latency communication between users.

CritterWorld - Evolving Artificial Life Simulator | Java, JavaFX, SceneBuilder, Gradle, JUnit

- Built **JavaFX** GUI with **multithreading** to visualize real-time interactions and evolution of virtual organisms over time.
- Implemented custom programming language with AST parser and interpreter to model organism behavior and mutations.
- Developed pathfinding algorithms including **A*** and **Dijkstra's** for intelligent organism navigation and movement.

Visual Attention Image Captioning - Show, Attend, Tell Implementation | PyTorch, Python

- Implemented attention-based image captioning model achieving **superior METEOR scores** vs. original paper.
- Built soft and hard attention mechanisms with **REINFORCE** and backpropagation for stochastic/deterministic attention.
- Developed encoder-decoder architecture using **ResNet-50** and **LSTM** with attention visualization.

TECHNICAL SKILLS - FOR SWE

Languages: Python, JavaScript, TypeScript, Java, C/C++, Go, Rust, SQL, HTML/CSS, OCaml

Frontend: React, Next.js, Redux, Material-UI, TailwindCSS, SASS, JavaFX, Electron.js, JSP

Backend & Databases: Express.js, Flask, Firebase, Apache Spark, REST APIs, Node.js

DevOps & Tools: AWS, Docker, Kubernetes, Git, Linux, Gradle, Maven, JUnit, Jest, Vite

TECHNICAL SKILLS - FOR ML

Languages: Python, JavaScript, TypeScript, Java, C/C++, Go, Rust, SQL, HTML/CSS, OCaml

ML Frameworks & Libraries: PyTorch, TensorFlow, NumPy, Pandas, Scikit-learn, OpenCV, Matplotlib, Seaborn

Machine Learning: Neural Networks, Computer Vision, NLP, Reinforcement Learning, Deep Learning

Data & Cloud: Apache Spark, Firebase, AWS, Docker, Data Preprocessing, Feature Engineering