Alexander Mcneilly

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Education

Massachusetts Institute of Technology — Cambridge, MA

B.S. in Computer Science with Mathematics — *Sep 2022 – May 2026*

Coursework (including Fall 2024): Design and Analysis of Algorithms, Software Performance Engineering, Low-level Programming, Computer Architecture, Algorithms, Probability and Random Variables, Linear Algebra
Activities: MIT Informatics Tournament, MIT Pokerbots Tournament (Top 20, 2023), MIT OpenCode, CodeForces

Skills

Languages: Python, C++, C, TypeScript, JavaScript, Rust, SQL, Java, WLSL, Go
Tools: Linux, Git, Node.js, React, GraphQL, Express, Flask, AWS, Redux, WebGL, Three.js, Socket.io

Experience

MIT Informatics Tournament — Lead Software Engineer — *Fall 2023 — Present*

- Recruit, lead, and collaborate with software team handling **15,000+** submissions across **two** international contests
- Improved infrastructure capacity **150%**, supporting **2,300+ contestants** from **70+ countries**
- Secured **$30,000+** in sponsorship from top firms, including **Jane Street, Citadel,** and **Jump Trading**

MIT STEP Lab — Software Engineering Intern — *Summer 2024*

- Wrote shader code for **3D web-based simulation tool**, boosting render framerate **172% (22 to 60 FPS)**
- **Tripled** supported geometries in simulations by updating and extending file model import functionality
- Conducted cross-browser **performance testing** for consistent WebGL rendering

MIT Media Lab — Software Engineering Intern — *Feb 2024 – Mar 2024*

- Worked on **AI-powered** language learning features for smart glasses using **Python** and **GPT-4**
- Implemented UI/UX changes to **Android** companion app, including dark mode UI and persistent transcription

Jane Street — IN FOCUS Software Engineering Participant — *Jan 2024*

- Create bond and ETF trading bot in **Python** for electronic trading competition
- Applied **functional programming** knowledge in **OCaml** to develop local multiplayer snake game

MIT EECS — Teaching Lab Assistant (Programming and Data Science in Python) — *Fall 2023*

- Enhanced **100+** students' Python skills with **50+** hours of debugging assistance and code reviews
- Created benchmark solutions and test suites for **two critical problem sets** given to **300+ students**

Projects

Essence of Programming YouTube Series [Ongoing] | *TypeScript, WebGL, Processing*

- Creating **TypeScript animation tool** based on Manim for programming tutorials
- Producing videos on debugging, garbage collection, recursion, backtracking; based on MIT's 6.1010 class
- Emulating **3Blue1Brown** style to teach fundamental and advanced programming concepts

Ashland Interpreter + Standard Library [Ongoing] | *Rust, LLVM, Clang, C++*

- Building **Rust and C++-based** interpreter and library optimized for competitive programmers
- Design comprehensive **standard library** with common competitive coding algorithms

YOLOpoly with Friends | *React, Node.js, Socket.IO, Express.js, Postgres*

- Created fast-paced **multiplayer Monopoly-style game** with options trading
- Implemented **real-time trading system** for fast-paced gameplay experience

Obscura Chess Engine | *C++, CPython, C, Linux, Git*

- Developed custom chess engine with advanced **move generation algorithms** and obscure variants
- Implemented **alpha-beta pruning** and **transposition tables** for efficient position evaluation

Splocks: Code Graphics Easily On The Web | *Three.js, WebGL, React, Node.js, Express.js, Postgres*

- Created **Scratch-style** 3D graphics programming platform (transitioned to work on similar MIT STEP Lab project)
- Designed block functions and hierarchy for browser-based 3D **block coding language**