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Education

Massachusetts Institute of Technology (MIT)   **May 2026/2027**
- BS in Computer Science Engineering   *Cambridge, MA*
- MEng in Electrical Engineering and Computer Science
- Relevant Coursework: Algorithms, Software Performance & Development, Machine Learning
- Python, C, C++, HTML, CSS, JS/TS, Threejs, Django, OpenGL, Git, Linux

Experiences

Full-Stack Software Developer & Project Manager   **May 2025 - Present**
STEP Research Lab   *Cambridge, MA*
- Led daily standups with a team of 10 to develop an educational block-based programming game.
- Revamped the 3D Rendering Engine to improve performance by over 20% to handle millions of agents.
- Redesigned the lighting system, viewport, and model engine for code maintainability and bug-safety.
- Added user-facing features with backend integration using Django and MySQL database.
- Installed SSL certificate on an Apache Mediawiki server to provide HTTPS connection.
- Improved vertex and fragment shaders using OpenGL language for better textures and GPU usage.
- Refactored legacy renderer codebase to modern ES6+ modules to adapt to the R155 Threejs library.

Software Performance Projects   **September 2024 - December 2024**
6.172 / 6.1060   *Cambridge, MA*
- Implemented custom malloc using binned free-list, achieving 90% performance of the Linux Version.
- Simulated gravitational attraction on thousands of spheres and rendered using ray-tracing techniques.
- Sped up matrix multiplication using SIMD AVX-instructions and cache-prefetching.
- Accelerated performance of a chess-variant engine using BitHacks and Zobrist Hashing techniques.
- Efficiently computed the principal variation using Alpha-Beta Pruning and Scout Search.
- Introduced parallel search, thread locks, and LazySMP to further boost the performance of the engine.

Full-Stack Software Developer   **September 2023 - December 2023**
MIT IS&T + Japanese Department   *Cambridge, MA*
- Developed a front-end submission portal using Node.js for Dr.Aikawa's new project-based course.
- Integrated back-end database using MongoDB to handle large amounts of data.
- Established connection with remote server to allow 30+ students to submit projects seamlessly.
- Tested the query system using AI-generated projects to ensure the quality of the system.

Teamwork & Leadership

MIT EMS System Admin Officer   **January 2024 - Present**
Emergency Medical Technician   *Cambridge, MA*
- Coordinated in a team to provide emergency medical services for the Cambridge-Boston Community.
- Practiced leadership and close cooperation in stressful environments to coordinate patient movement.
- Handled significant responsibilities to support organizational goals through effective planning.
- Maintained servers and communicated with fellow officers to assess and implement software solutions.
- Scraped internal user information from websites to automate email alerts and notifications.
- Streamlined the scheduling system for 90+ users to improve experience during weekly shift schedules.

Stuff learned from SLNova internship

Full-Stack Software Developer + Product Manager (Scrum Master)

<u>Front-End:</u> HTML/CSS, Javascript/Typescript, Pre-ES6, Plovr (Google Closure Server), Three js, WebGL, Block-Based Programming UI, Powerful 3D World Simulation Engine, Computational Modeling, Educational Games

<u>Back-End:</u> Mediawiki, SSL Certificate (HTTP->HTTPS), GPU Programming, OpenGL (GLSL), Django Python Framework, MakeFile, Apache Server (AWS), Shaders, High Performance Computing / Optimization on Vertex & Fragment Shaders and Rendering, Ubuntu VM, PHP, MySQL, Rest API for AWS S3

Skills: Team Management, Reading Legacy Code (Pre-ES6), Writing Documentations, Improving Exisitng Codebase, First two weeks thrown into the massive codebase without much help but was able to understand it, Reading past students' research papers to get a better understanding