

Michael Sheng

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EDUCATION

Georgia Institute of Technology

Expected Graduation May 2027

B.S. Computer Science; Concentration in Intelligence, Modeling, and Simulation

GPA: 4.0/4.0

Coursework: Computer Systems & Networks, Differential Equations, Multivariable Calculus, Analysis of Algorithms

TECHNICAL SKILLS & AWARDS

Languages: Python, Typescript, Javascript, HTML, CSS, PHP, Java, C#, C, C++ MATLAB, Rust

Machine Learning: NumPy, PyTorch, Pandas, Deep Reinforcement Learning

General: React, NodeJS, NestJS, UI/UX Design, Microsoft Azure, GCP, AWS, SQL Server, PostgreSQL, MongoDB, Protobuf/gRPC, REST API Design, JWT Authentication, ThreeJS, OpenGL, Git, BitBucket, Docker, Agile, Scrum

Awards: MIT Battlecode 2025 Finalist, 5x MAA AMC Honor Roll/AIME Qualifier

EXPERIENCE

Software Engineer Intern

Jun 2025 – Aug 2025

Carbon, Inc.

Redwood City, CA

- Engineered a production-quality fullstack system for a 3D print post-processing machine using **React** for frontend, **mobx** for state management, **NestJS** for backend API services, and **Jest** to create comprehensive testing suites; Reduced server computational requirements, helping cut production costs by **80%** compared to a previous model
- Built user facing interfaces to control physical machine components using **Protobuf** and **gRPC**, **reducing request latency by 60%** and enabling real-time data streaming, critical for safety procedures
- Engaged in **Agile Development** practices with diverse engineering team, participating in code reviews, contributing points to biweekly **Sprint Retrospectives**, and completing user stories to follow **Scrum** procedures

Undergraduate Research Assistant

Jan 2025 – Present

Rahnev Computational Perception Lab

Atlanta, GA

- Led a research project using **Bayesian statistics** to analyze internal evidence in various representations of the human visual system including neural network architectures (**CNNs**, **AlexNet**, **RTNet**), creating a theoretical quantitative model for decision-making and confidence in human perception
- Created an optimization framework using **Bayesian Adaptive Direct Search (BADS)** for function minimization to fit model decision boundaries and parameters to experimental results from Adler & Ma (2018)
- Designed an automated data pipeline for the lab using **MATLAB**, **NumPy**, and **Pandas** that has processed over **120,000+ high-dimensional raw data points** obtained from four physical experiments and contributed large amounts of evidence to the Open Confidence Database

Fullstack Developer & Event Organizer

Nov 2024 – Present

Hexlabs, Inc.

Atlanta, GA

- Developed fullstack custom judging platform for HackGT, deploying servers and interactions with **MongoDB databases** on **GCP** and managing **server scaling for over 1,500 concurrent users** during HackGT 12
- Created frontend pages for two HackGT events using **React** and handled DNS and web deployments on **Cloudflare Pages**, gathering 4,000 applications for HackGT 12 (**+30% increase over previous year**)

PROJECTS

Graphling | Typescript, ThreeJS, WebGL, GLSL, C++

Jul 2025 – Present

- Created the first Open-world, First-person 3D Graphing Calculator using **ThreeJS** and **C++/WebAssembly**
- Implemented several adaptive mesh construction algorithms including **Dual Contouring**, **Marching Cubes**, and dynamic vertex shaders, capable of efficiently graphing both explicit and implicit multivariable functions
- Engineered a **chunked level-of-detail** system to substantially increase render capacity, boosting multithreading efficiency and drawing graphs to distances reaching $\pm 30,000$ from the origin
- Implemented a breakthrough gradient-based lighting system for explicit functions, increasing render performance by over **6,000%** and drastically reducing GPU load

Pixelterm | Python, NumPy

Jan 2024 – Jul 2024

- Created a 60FPS **graphics rendering framework** in Python for rendering images, videos, and graphical applications in terminals and built a full 2D platformer game using the library
- Achieved over **300% rendering optimizations** by vectorizing frame buffers with **NumPy** and implementing a specialized Dirty Rectangles algorithm for Unicode characters
- Packaged the framework and published to PyPI with a streamlined outward facing API, example projects, and comprehensive documentation, accumulating over **1,500 total installations**