

Quan Nguyen

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EDUCATION

Georgia Institute of Technology

Atlanta, GA

Bachelor of Science in Computer Science

May 2028

- GPA: 3.58/4.00
- Relevant Coursework: Data Structures & Algorithms, Computer Organization & Programming, Objects & Design, Discrete Math, Object-Oriented Programming

EXPERIENCE

Georgia Institute of Technology

January 2026 – Present

Research Assistant

Atlanta, GA

- Built the instructor grading workflow for a CS 2050 interactive textbook end to end: **FastAPI** results and overview endpoints, a typed **TypeScript** client, and **React** dashboards (course overview, per-question statistics, manual score overrides) feeding a Canvas-ready gradebook CSV export
- Developed the student answer flow across the stack: a **React** reader with debounced progress autosave submits versioned answers that the backend grades server-side, so answer keys never reach students
- Engineered a **Python** ETL pipeline that scraped and cleaned 62 public data-center filings across Georgia, filling missing energy and water demand figures with physics-based estimates
- Implemented a **Flask/MySQL** backend on **AWS**, with unit and end-to-end tests, that scores each submission's code efficiency for the student sustainability dashboard
- Co-authored a research paper on the platform's methodology with a 4-person team, using AI coding tools (**Cursor**, **Claude Code**) throughout development

PROJECTS

Stochastic Equity Price Forecaster | C++, CUDA

May 2026

- Parallelized **Monte Carlo** simulations on a GPU with **CUDA**, cutting runtime from 1,748ms to 35ms. A 49× speedup over single-threaded CPU
- Scaled to 1M simulations (30M price calculations) while holding end-to-end latency under 40ms
- Derived drift and volatility from 10 years of historical trading data (2,613 days) with 5th/95th-percentile confidence intervals
- Generated on-GPU random sampling across all simulation threads for independent, statistically sound draws

PCAP Network Traffic Analyzer | C++, TCP/IP

July 2026

- Parsed raw network captures byte-by-byte in dependency-free **C++**, walking **Ethernet/IPv4/TCP/UDP** layers with no external libraries
- Recovered **DNS** hostnames from packet payloads with bounds-checked reads, staying crash-free on malformed real-world input
- Auto-detected capture byte order (big/little-endian) and rejected unsupported formats, extending compatibility to any capture tool
- Validated on 5,000 live packets, aggregating traffic into 13 bidirectional flows in 15ms end-to-end

CivicGraph | Java, Graph Algorithms

July 2026

- Modeled a city road network as a graph with a **union-find** (path compression + union-by-rank), detecting when new roads merge isolated neighborhoods in $O(1)$ per insert
- Computed shortest routes that avoid chosen intersection types via a modified **Dijkstra** in $O(R \log R)$
- Built a minimum-wiring utility grid with **Kruskal's** MST on the same union-find in $O(W \log W)$

TECHNICAL SKILLS

Languages: Python, SQL, Java, C++, C, C#, CUDA, JavaScript, TypeScript

Frameworks & Tools: Docker, AWS, Flask, Django, Spring Boot, Kubernetes, REST APIs, MySQL, React, Pandas, NumPy, Git, Agile/Scrum, Linux (KVM/QEMU, VFIO/IOMMU), Cursor, Claude Code