

# Vedant Modi

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## Tufts University

August 2022 – May 2026

GPA 3.73, BS Computer Science, BS Mathematics, Dean's List (Fall 2022, Spring 2024, Spring 2025, Fall 2025) Somerville, MA

Relevant Coursework: Distributed systems, Machine learning, Algorithms, Machine structure, Data structures, Statistics/Probability theory, Operating systems, Modeling, Abstract algebra, Programming language theory, Compilers, Embedded systems, Network security, Linguistics

**Skills**  
**Programming Languages:** C, C++, Embedded C, Python, TypeScript, Go, Rust, Scala, x86-64 Assembly, Standard ML, OCaml  
**Tools, Technologies & Concepts:** Git (version control, peer code review), Node.js, Docker, CI/CD, AWS, MongoDB, PostgreSQL, Test Automation Frameworks, Firmware Quality Testing, Unit, Integration, Regression, and Sanity Testing, Test Suite Automation, Report Generation, Spreadsheet Parsing and Data Validation, Operating System, Network Programming, Embedded Systems, Hardware Schematics, Datasheet Interpretation, Compiler Engineering, Scikit-learn, NumPy, Pandas, Matplotlib, TensorFlow, Keras, PyTorch, Tailwind CSS, Figma, HTML, React  
**Relevant Certifications:** AWS Certified Cloud Practitioner

## RELEVANT EXPERIENCE

### Software Engineering Intern – Markets Technology, Commercial & Investment Banking

June 2025 – August 2025

J.P. Morgan Chase & Co.

New York, NY

- Built end-to-end and deployed production monitoring application for high touch bond trading platform, enabling performance analytics across **5 critical data enrichment services** for over **100,000+ trades per day** and improving trade execution in global markets. Flagged **20% of requests** suffering extreme latency in key service, driving target optimizations that significantly improved trade execution workflow.
- Expanded scope of product ownership by iterating on features and incorporating feedback from stakeholders in **5+ widespread locations**. Enhanced the application to provide actionable metrics for **99% of requests**, iterated on live troubleshooting features, and ultimately achieved **100% alignment with the product vision**.
- Demonstrated product proficiency and facilitated product improvements by delivering a live presentation of the application to **teams across 20+ locations**, including senior executives and key stakeholders, resulting in actionable feedback, effectively showcasing the tool's utility, and providing technical points of improvement for line of business.
- Brought application from concept to completion **within 10 weeks** using the firm SDLC; managing feature development, testing, stakeholder approval, and critical business periods such as code freezes. Enabled future work within the SDLC by creating a maintainable and well-documented codebase.
- Prototyped an AI-powered travel recommendation tool later adopted by firm, leveraging an agentic RAG workflow to give detailed user suggestions and promotional feedback. Recognized among **the top 5 teams** in New York City offices for effective presentation and innovative product.
- Proactively expanded domain knowledge within **2 weeks** by attending learning sessions, organizing regular coffee chats with experienced developers and management, and studying technical documentation to accelerate project progress.

### Teaching Fellow for Machine Structure & Assembly Programming

January 2025 – Present

Tufts University, Department of Computer Science

Somerville, MA

- Improved **200+ students'** ability to engineer large-scale, low-level programs by encouraging rigorous testing, building modular architecture, creating powerful data abstractions, writing strong documentation, and harnessing standard libraries.
- Elevated students' experience by reviewing **100+ program design submissions**; ensured constructive grading comments to help students create effective implementations.
- Probed students on implementation choices and debugging solutions in **2000+ interactions** during personal office hours.
- Enriched **100+ students'** developer soft skills (i.e. pair programming, product ownership) by introducing one-on-one code reviews.
- Improved student comprehension by leading review session for **100+ students** covering key course content and exam preparation.
- Introduced new concepts to **30+ students** weekly by delivering comprehensive lectures and visualizing course concepts.

## RELEVANT PROJECTS

### File Copy | C/C++, Bash

September 2025 – October 2025

- Developed a fault-tolerant network file transfer application, as measured by error-free transfer on unreliable systems, by designing a packet-level protocol over UDP that handles retransmissions, timeouts, and disk-write errors.
- Ensured protocol reliability by stress-testing 10+ GB directory transfers under packet duplication, drops, reordering, and artificial delay, as well as simulated disk-level faults like slow or failed block reads/writes.
- Improved protocol tunability by implementing a modular class hierarchy that reduced code duplication and enabled precise control of client-server packet handling.

### RPC Generator | C/C++, Python, TCP Socket programming, Metaprogramming

November 2025

- Designed a transparent remote procedure call generator supporting arbitrary C++ function prototypes, verified by successful invocation of functions with large arguments across networks.
- Ensured reliable structured data recovery across TCP's stream abstraction, as measured by correct deserialization across various test cases such as nested structs and arrays, by designing a text protocol that encodes explicit lengths for all variable-size fields and handles partial reads.

### Arrivals Board | Go, Embedded C

February – March 2026

- Delivered real-time NYC subway arrivals across all 24 lines to an OLED display, by building a serverless Go function that deserializes a protobuf feed and serves parsed JSON to an ESP32, which forwards arrival data to an STM32 over UART for rendering.

### Universal Machine | C, x86-64 Assembly, Bash

November 2023 – December 2023

- Created a Turing Complete virtual machine by **implementing a custom memory subsystem** with a segment table supporting dynamic allocation and deallocation, separated functionality using **object-oriented programming techniques** into I/O, machine arithmetic, and logic; validated correctness with a custom unit-testing framework.
- Optimized the program by analyzing x86-64 Assembly instructions and **qcachegrind** and minimized expensive operations such as dereferencing or allocation through reuse of memory; verified performance gains via benchmarking against **1,000,000,000+ instruction** binaries

## EXTRACURRICULAR ACTIVITIES

**Spoken Languages:** Proficiency in English, Hindi, Urdu, Spanish, and French

**Media:** Droneography, Photoshop, Lightroom, After Effects, Davinci Resolve Studio, Premiere Pro, InDesign, Wordpress