Vedant Modi

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Education

Tufts University August 2022 – May 2026

GPA 3.73, BS Computer Science, BS Mathematics, Dean's List (Fall 2022, Spring 2024, Spring 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++, Python, TypeScript, Golang, React, Rust, x86-64 Assembly, Standard ML, OCaml
Tools, Technologies & Concepts: Node.js, Docker, CI/CD, AWS, MongoDB, PostgreSQL, Scikit-learn, NumPy/Pandas/Matplotlib, TensorFlow/Keras, PyTorch, Tailwind, Figma, HTML, Unit/Integration Testing, Functional & Asynchronous Programming, Network Programming, Hyperparameter Tuning
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 faciliated 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.

Teaching Assistant for Data Structures, Machine Structure & Assembly Programming May 2023 – December 2024

Tufts University, Department of Computer Science *Somerville, MA*

- Strengthened course infrastructure for **200+ students** by improving autograding software, staff software, and assignment solutions; contributed **20+ unit tests** to autograder by finding edge behavior in students' submissions.
- Graded assignments by studying **200+ submissions** for functionality, testing, and course coding standards.
- Reinforced course objectives and debugging principles during **2500+ student interactions** by explaining lecture topics and assignments in office hours.

Full Stack Developer September 2023 – May 2024

Tufts JumboCode *Somerville, MA*

- Enhanced the information display for the **1,000,000+ annual visitors** of the Emerald Necklace Conservancy by designing a full-stack iOS/web application in a tight-knit, agile team
- Created a secure page modification system for park administration by maintaining a MongoDB database for information, and an authentication system for editing privileges
- Automated database maintenance using PyMongo, reducing manual data handling tasks, and speeding up database work **by 30%**
- Designed a cohesive user interface for **50+ pages** by creating and documenting React components in TypeScript

Receptionist May 2023 – Present

Tufts University, Office of Academic Space Management *Somerville, MA*

- Service community via organizing mail, and analyzing building usage for largest academic buildings on Tufts campus.

Visual Communications Intern May 2021 – August 2021

Texas Heart Institute *Houston, TX*

- Designed graphics, created animations, and presented work to the *Houston Chronicle* representing cardiological research for publicity

Relevant Projects

Globetrotter | *TypeScript/JavaScript, Node.js, Python, React, PostgresSQL* July 2024 – Present

- Created an animated, interactive travel sharing product by modeling, planning, and writing a full stack web application
- Designed a modern, lively frontend with a responsive map, menu, and user statistics page using React, Tailwind CSS, and APIs from Mapbox and deck.gl
- Unified user interface by **modeling 50 components** in Figma before development
- Displayed **over 40,000 airports** on map client using RESTful APIs to communicate between frontend and backend
- Enhanced airports data by synthesizing **20+ large-scale, open-source datasets** using CRUD applications developed in Python
- Hosted backend server by managing a PostgresSQL database within a Docker container on an AWS EC2 instance

Universal Machine | *C, x86-64 Assembly, Bash* November 2023 – December 2023

- Created a Turing Complete virtual machine using **object-oriented programming principles**, separating functionality like I/O, machine arithmetic, logic, and memory; tested components with custom-devised 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
- Recreated the venerable HP15-C via Assembly instructions derived from the Universal Machine's ISA

Reading Level Classification | *Python, Jupyter Notebook, Scikit-learn* March 2025

- Demonstrated robust understanding of supervised learning workflow (preprocessing, training, performance evaluation) by building robust models (MLPClassifier, LogisticRegression) to classify text by reading level.

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