Vedant Modi

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Education

Tufts University August 2022 – May 2026

GPA 3.69, BS Computer Science, BS Mathematics, Dean's List (Fall 2022, Spring 2024, Spring 2025) *Somerville, MA*

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

Skills

Programming Languages: C/C++, Python, TypeScript, 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 & Concurrent Programming, Hyperparameter Tuning

Experience

Software Engineering Intern – Markets Technology, Commercial & Investment Banking June 2025 – Present

J.P. Morgan Chase & Co. *New York, NY*

- Optimized trading platform latency by developing a microservice that asynchronously listens to and aggregates data from multiple data pipelines, reducing bottlenecks and improving real-time information delivery to traders.
- Recognized as **top 5 hackathon team among 2000+ teams** for building an AI-powered travel recommendation tool and marketing assistant by leveraging an agentic RAG workflow to give detailed user suggestions and promotional feedback.

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

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.

Movie Recommendations | *Python, Jupyter Notebook, Scikit-learn* April 2025

- Established clear understanding of unsupervised learning workflow (initialization, training, tuning, evaluation) and utilty of various accuracy metrics by building various latent factor models to recommend movies from Movielens100k database to users.

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