Vedant Modi

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SUMMARY

Computer science and mathematics undergraduate at Tufts University with great interest in creating and maintaining open-source projects. Previously, I have worked with frontend and backend technologies to create reliable, maintainable products. Now, I am looking for more opportunities to build scalable products of the same quality.

EDUCATION

Tufts University   August 2022 – May 2026
GPA 3.85, BS Computer Science, BS Mathematics   *Somerville, MA*

Relevant Coursework: Algorithms, Network security, Machine structure, Data structures, Multivariable calculus, Linear algebra

EXPERIENCE

Tufts University, Department of Computer Science   May 2023 – Present
Course Assistant for Machine Structure, Assembly Programming, and Data Structures   *Somerville, MA*

- Host office hours aiding students in course assignments and explaining lecture topics
- Deliver comprehensive lectures about topics and reinforce concepts via coding exercises for weekly 30+ student lab
- Grade student assignments by studying submissions for functionality, testing, and course coding standards
- Contribute to course infrastructure—autograding software, unit tests, organizing TA grading, and project solutions

Tufts JumboCode   Sept. 2023 – May. 2024
Full Stack Developer   *Somerville, MA*

- Developed an app helping the Emerald Necklace Conservancy inform visitors about the organization's parks through an interactive, animated full-stack web app.
- Connected information with MongoDB database protected with HTTPAuth for admin to maintain and update page information.
- Created and documented React components in TypeScript for team to reuse in building a cohesive user interface across all pages.

Tufts University, Office of Academic Space Management   May 2023 – Present
Receptionist   *Somerville, MA*

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

RELEVANT PROJECTS

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

- Created a Turing Complete virtual machine supporting I/O, machine arithmetic, logic, and memory tested 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.
- Recreated the venerable HP15-C via Assembly instructions derived from the Universal Machine's ISA.

World Clock | *JavaScript, HTML, CSS*   August 2023

- Constructed a web application showing the time of user-chosen cities, with a helpful, responsive map to aid in visualization.
- Integrated OpenStreetMap and MapBox libraries for graphics. APIs were chosen as they best met the scalability requirements.
- Published application to personal website with custom autocomplete search bar and tracked development with Git

vfl | *C, Python*   October 2023 – February 2024

- Designed a file format that encodes flight itineraries into bitpacked data.
- Wrote a collection of Python modules that aid the compression, like quantizing timezones, or finding the UTC offset of an airport, given its code.

SSH Setup Guide | *shell, LaTeX*   March 2024

- Wrote a concise guide for setting up a secure connection to a server.
- Described how to create public/private key pair to authenticate with server, how to setup a shell alias to quickly login to a server, and how to use key for password-less authentication in an SFTP connection.
- Created GitHub Actions pipeline to compile TeX→ PDF, publish to repository releases and webpage.

arith | *C*   October 2023

- Wrote a JPEG-style compressor/decompressor utilizing a block-wise transformation.
- Broke transformation into separate modules to thoroughly test functionality in each step.

Encrypted IM | *Python*   January 2024

- Implemented a peer-to-peer encrypted instant messenger using the AES-256 CBC cipher, as a practice in network programming and encryption.

SKILLS AND INTERESTS

Programming Languages: C/C++, Python, x86-64 Assembly, TypeScript, React, Node.js
Tools and Technologies: DevOps, Docker, MongoDB, SQL, Tailwind CSS
Spoken Languages: Proficiency in English, Hindi, Spanish, and French
Media: Droneography, Photoshop, Lightroom, After Effects, Davinci Resolve Studio, Premiere Pro, InDesign, Wordpress
Travel: Hiking mountains, traveling to novel destinations, searching for amazing flight deals
Standards: Expert in recalling IATA airport codes, ISO country codes, and timezones
Woodworking: Prowess using power tools like a saw (miter, table, band) and drill