Jonathan J. Yang

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Education

Turing Scholar @ The University of Texas at Austin Austin, TX | May 2027
Bachelor of Science in Computer Science GPA: 4.00
Coursework: [1] *Computer Architecture, Data Structures and Algorithms, Discrete Math, Vector Calculus*, Computational Materials (Simulations), Probability, Matrices

Experience

Full Stack Technical Lead @ Apovo Austin, TX | Nov 2024 – Present

- **Tech:** Python, Flask, AWS (EC2, ALB, Cognito, Linux), MongoDB, REST, AI (PyTorch, RAG), Agile, A/B Testing
- Led a team of 5 through iterative sprints to launch a HIPAA-compliant care platform, introducing a developer rotation system to improve knowledge sharing and code quality.
- Developed a hybrid content- and collaborative-filtering recommendation engine with embedding and metadata similarity, doubling weekly user engagement. Used zero-shot classification AI to improve cold-start handling.
- Upped performance by >85% (TTFB <1s, TTLB <3s) via asynchronous microservices, caching, progressive rendering.
- Drove product development through IRB-approved user interviews and analytics, aligning features with patient needs.

Full Stack Developer Intern @ EduBeyond Vancouver, Canada | Mar 2023 – Feb 2024

- **Tech:** React, Next.js, NextAuth, Tailwind, Express, Docker, Vitest, Figma
- Built and tested AI-powered content summarization, chat, and quiz generation in a scalable LMS platform.
- Refactored frontend UI and backend schemas to support 30k+ users, including chat and announcement systems.
- Wrote Vitest coverage tests for backend APIs and collaborated in Agile sprints with a distributed dev team.

Student Researcher @ UH Renewable Power Grid Lab Houston, TX | Dec 2022 – Dec 2023

- **Tech:** TensorFlow, Keras, NumPy, Time-Series, ML/ANN (SVM, LSTM, LRCN), Dimensionality Reduction
- Tuned and analyzed influence of feature, model, and activation function on load prediction accuracy.
- Co-authored and presented a research poster and paper at IEEE PES 2023 and TPEC 2024[2], respectively.

Selected Projects

Generative Image Modeling Summer 2025

- Implemented a UNet-based DDPM to generate Pokémon-style images; trained from scratch on a sprite dataset.
- Designed a background noise strategy and loss function to prevent mode collapse to blank or noisy images.
- Experimented with a secondary GAN to sharpen DDPM outputs and reduce blur in generated figures.
- **Tech:** PyTorch, Python, DDPM, UNet, GANs, NumPy

Systems Project – Emulator + Memory Management Apr 2025

- Built a partial ARM64 emulator and decompiler, and POSIX-style memory and threading for C++.
- Wrote a custom memory allocator and concurrency primitives, tested against STL for throughput and correctness.
- **Tech:** C++, ARM64, Emulator Dev, Memory Management, Multithreading, gdb, valgrind, GCC

Programming Language Design (monomer.dev) Oct 2023 – Dec 2024

- Built a statically-typed OOP language with full parsing pipeline, JIT compilation, and inheritance-based type system.
- Explored parser design (LL/LR/Pratt), runtime optimizations (tail calls, precomputation), and polymorphism.
- **Java**, **C/C++**, **JIT**, **Language Design**, **Compiler Theory**

Technical Skills

Languages (highly proficient): Python, Java, JavaScript/TypeScript, SQL, C/C++, Rust, R
Tools: Pytorch, Tensorflow, Scikit-learn, Maven, Git, Bash, Docker, NodeJS, AWS, XCode, Windows, Linux, macOS, XP, Agile, TDD, Regression, Matplotlib

[1] Honors courses are in italics

[2] Jonathan Yang, Mingjian Tuo, Jin Lu, and Xingpeng Li, "Analysis of Weather and Time Features in Machine Learning-aided ERCOT Load Forecasting" 2024 IEEE Texas Power and Energy Conference (TPEC). ieeexplore.ieee.org/document/10472183