JEREMY ZAY

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EDUCATION

Wesleyan University, Middletown, CT   Expected Grad: May 2026
Bachelor of Arts, GPA: 3.76/4.00
Majors: Computer Science, Mathematics, Integrative Sciences

EXPERIENCE

Lab Researcher — Thayer Lab, Wesleyan University   May 2024 – Present
- Adapted diffusion models (DDPM, TargetDiff) with classifier guidance to generate candidate molecules optimized for protein binding implemented using PyTorch.
- Applied prompt-driven techniques from image generation (DALL·E 2, Stable Diffusion) to steer sampling toward chemically viable regions targeting mutant p53.
- Generated and evaluated 10 candidate molecules with AutoDock Vina binding scores below –8 kcal/mol, including one achieving –8.76 against the Y220C mutant p53.
- Presented findings at the UC Merced Mercury Conference and Wesleyan Biophysics Retreat; selected to present at ACS NERD 2025.

Teaching Assistant, Wesleyan University   Jan 2022 – Present
- Led weekly help sessions (4 hrs/week) and graded ~30 assignments per week across four core CS courses (Python, C, AI, HPC).
- Taught data structures, search algorithms (DFS, BFS, A*), Bayesian inference, and reinforcement learning techniques (MDPs, Q-learning) to 100+ students.
- Supported labs for courses in Python, C, and HPC, helping students debug code, implement data structures, and run distributed jobs on Linux clusters.
- Tutor at the Scientific Computing and Informatics Center (SCIC), offering one-on-one help with programming, data analysis, and HPC workflows.

PROJECTS

Chess Engine   June 2025 – Present
- Built a full Java chess application with local, LAN, and AI play modes, featuring a seamless, bug-free interface and fast real-time performance.
- Designed and implemented all frontend and backend components, including game state management, move validation, and multiplayer networking.
- Integrated a high-performance Java engine (~3500 Elo) for offline play; currently pending release on the macOS App Store.

eQoScan (WesHack 2024)   Nov 2024
- Developed a dynamic QR code platform to enforce reusable container returns, preventing image spoofing through time-bound QR generation.
- Led a 4-person team across frontend (HTML/CSS), Flask backend, and Swift-based iOS scanner.
- Awarded the ActualFood Internship Prize at WesHack 2024 for sustainability innovation.

SKILLS

Languages: Python, C, Java, OCaml, SML, Swift, SQL, JavaScript, Bash
Frameworks: PyTorch, NumPy, Pandas, Matplotlib, scikit-learn, RDKit, Flask, PyGame
Tools: Git, Docker, Vim, Linux (HPC cluster usage, bash scripting)

ACTIVITIES

President, Wesleyan Table   Sept 2022 – Present
- Organize and lead weekly practices, training players to better their technique while improving my own skill.
- Host campus tournaments, and compete in regional NCTTA events.

Member, Wesleyan Coding Club – CODE WES   Sept 2022 – Present
- Participate in hackathons and collaborative projects, including eQoScan.

RELEVANT COURSEWORK

Machine Learning (Graduate-level), Artificial Intelligence, Algorithms & Complexity, Program Analysis, Computer Networks, Probability & Statistics, Real Analysis