Jason Bhalla

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Will Relocate — jasonbhalla — jasonbhalla

Education

Stevens Institute of Technology — *B.S. Computer Science; B.S. Mathematics* 09/2023 – Present

- **GPA**: 4.0 ; **Graduate Certificates**: Software Engineering; Machine Learning; Data Science and Data Engineering
- **Selected Courses**: Databases, Distributed Systems, Cloud Computing, Operating Systems, Concurrent Programming, Deep Learning, Software Metrics, Data Mining, Systems Programming, Programming Languages, Theory of Computation, Quantum Information, Security, Computer Architecture, Algorithms, Data Structures, Discrete Structures, Linear Algebra, Nonlinear Optimization, Stochastic Calculus, Intermediate Statistics, Probability Theory, Proofs
- **Involvement**: CS Club *(President)*, Society of AI *(Co-Founder; Head of Research)*, ACM Chapter *(Founder)*, CS Dept Advisory Council *(Advisor)*, Math Dept Advisory Board *(Board Chair)*, Endowment Quant Fund *(Team Head; Quant Analyst)*, Honor Societies [G&T, UPE *(President)*, PME *(President)*], Math Club, Linux Club, Women in CS, ColorStack, SWE Club, Physics Society, NYC Group Theory Coop., NYC AI Furnace, Homeless Services Volunteering

Experience (Professional & Research)

Teaching Assistant, Theory of Computation — *Stevens Institute of Technology* 09/2026 – Present

- Leading instruction and mentoring in automata, computability, reductions, and complexity, helping students translate computational problems into formal models and rigorous proofs while strengthening abstract and algorithmic reasoning.

Chief Technology Officer — *KwantumLabs* 06/2026 – Present

- Directing technology strategy and system architecture for an AI-first research platform of independently deployed services, guiding technical direction from data pipelines and model integration through to the client-facing products.
- Designing and shipping agentic AI systems, services, and interfaces that turn raw research data into decision-ready insights for enterprise clients, pairing deterministic analysis with bounded model-generated traceable narrative.
- Establishing the engineering standards the platform runs on, including data governance and privacy boundaries, provenance and reproducibility, automated testing, verification gates before deployment, and repeatable release process.
- Partnering with research scientists and company leadership to translate methodology into production software, and scaling the platform, infrastructure, and engineering practices to handle usage as a multi-tenant, self-serve product.

Software Engineer Intern — *Advantest* 05/2025 – 09/2025

- Designed and shipped a modular driver framework and ATE software for semiconductor test subsystems, enabling concurrent orchestration of heterogeneous instruments, reliable execution at scale, and efficient performance evaluation.
- Implemented fault-tolerant hardware driver modules in the central test platform with rigorous input validation, bounded retries, structured telemetry, and graceful degradation, hardening interfaces against device/I-O failures.
- Instrumented components with structured logging and metrics; added automated CI checks and tests to catch regressions early and support fast, low-risk deployments; documented APIs and usage patterns for reuse across projects.
- Collaborated with hardware, firmware, and test engineering to design, test, deploy, and maintain solutions end-to-end.

Undergraduate Researcher — *Stevens Institute of Technology* 06/2024 – 12/2025

- **Fall 2025**: Built a modular library implementing iterative generators for incidence-style data models, with graph-based storage, validation pipelines, and visualization components optimized via profiling, tests, and continuous integration.
- **Summer 2025**: Built transformer-augmented local-search pipelines over large graph state spaces using heuristic operators, deep learning, and hyperparameter tuning to learn scalable finite approximations of infinite algebraic structures.
- **Summer 2024**: Developed models to test quantum information algorithms, including quantum state estimation, error-correcting code design, and entanglement distribution, analyzing complexity, convergence, and noise robustness.

Selected Personal Projects

MidiCompiler — *Compilers, Programming Languages, Go, Type Systems, IR, Parsing, Static Analysis, Code Generation*

- A statically typed music DSL featuring a lexer/parser, AST, semantic analysis, IR lowering, type checking, and deterministic MIDI code generation, designed to explore compiler architecture, language design, and code generation.

QueryNudge — *ML, Feature Eng., Offline Eval. (MRR/NDCG), Model Serving (FastAPI), Info. Retrieval (BM25), LTR, GBTs*

- A query reformulation system using BM25 retrieval and LightGBM (TF-IDF baselines) to predict if rewrites improve relevance and rank "nudge suggestions", boosting MRR/NDCG in a reproducible offline eval and interactive demo UI.

Cognitive Pathfinder — *Python, Full-Stack, Graph Algorithms, Geospatial Analysis, APIs, UI/UX, Optimization, Cloud*

- A multimodal graph-theoretic and API-based routing engine providing a personalized pathfinding algorithm based on user-specific costs, finding the optimal route/path that optimizes a user's preferences rather than strictly travel time.

Languages & Skills, Honors & Awards, Interests

- **Languages & Skills**: Agentic AI, Python, C++, Java, C, C#, Git, OCaml, Go, Linux, ML, Full-Stack, End-To-End, User-Facing SW, UI/UX, Maps, Infra, DBMS, Cloud, Theory, Optimization, Services, Silicon, SW/FW/HW Integ.
- **Honors & Awards**: Dean's List (Every Semester), Edwin A. Stevens Scholar, Presidential Achievement Scholar, SSMIF Top Scholar, UPE National Scholar, PME National Scholar, Stevens G&T University Scholar, Eagle Scout
- **Interests**: ① Consumer & Enterprise Products, ② Systems & Infrastructure, ③ Theoretical Computer Science & Math

Campus Leadership & Volunteering

Chapter President — *Upsilon Pi Epsilon Computer Science National Honor Society* 08/2026 – Present

- Elected President of Stevens' UPE chapter, leading the university's computer science honor society and chapter strategy.
- Driving technical, professional development, and academic initiatives for top high-achieving computer science students.
- Coordinating chapter programming and community engagement, aligning members around execution and growth.

Chapter President — *Pi Mu Epsilon Mathematics National Honor Society* 08/2026 – Present

- Elected Chapter President of Pi Mu Epsilon, leading the Stevens chapter of the national mathematics honor society.
- Owning chapter strategy and execution across academic programming, professional development, and math outreach.

Math Dept. Representative — *Stevens School of Engineering Dean's Advisory Council* 05/2026 – Present

- Appointed as Mathematical Sciences' sole undergraduate representative to the Dean's Advisory Council, advising SES leadership on academic priorities and student concerns and translating peer feedback into actionable recommendations.

Chapter Founder & President — *Association of Computing Machinery* 01/2026 – Present

- Founded and scaled Stevens' ACM chapter, establishing governance, recruiting, and growing a technical community.
- Built faculty and industry partnerships to expand technical events, mentorship, and career development opportunities.
- Led chapter strategy and national ACM coordination, owning operations, external partnerships, and long-term growth.

CS Dept. Advisor — *Stevens School of Computing Dean's Advisory Council* 01/2026 – Present

- Selected by the CS Department to represent students on the Dean's Advisory Council and advise School leadership.
- Shaping curriculum and academic priorities by translating student feedback into actionable program recommendations.

Chair of the Board — *Stevens Mathematics Department Advisory Board* 09/2025 – Present

- Elected Chair of the Mathematics Department Student Advisory Board, leading representatives across class years and advising department leadership on curriculum, program strategy, initiatives, and student feedback and experience.

Co-Founder & Head of Research — *Stevens Society of Artificial Intelligence* 05/2025 – Present

- Co-founded Stevens' AI society and leading its undergraduate research team, driving ML and agentic AI projects from problem formulation and dataset design through implementation, evaluation, benchmarking, and publication.
- Directing research on modern ML and agentic systems, designing experiments, reproducing state-of-the-art papers, analyzing model behavior, and extending prior work through novel architectures, methods, and evaluation pipelines.
- Leading technical paper discussions and build faculty/industry research partnerships, connecting students with mentorship, projects, and publication opportunities.

Honor Committee Chair — *Stevens Gear & Triangle Honor Society* 09/2025 – 05/2026

- Elected Chair of the Honor Committee, leading academic-integrity education and student outreach across the society.
- Partnered with faculty and mentored peers to reinforce academic standards, accountability, and ethical scholarship.

President — *Stevens Computer Science Club* 05/2025 – 05/2026

- Led the organization; grew membership 60% (195 to 310+) and average weekly meeting attendance 210% (27 to 84).
- Directed technical workshops, competitions, events, and initiatives to educate and strengthen the campus engagement.
- Co-organized and ran the university's first public hackathons, opening global participation with external sponsorship.

Head of Multifactor Strategies — *Stevens Student-Managed Investment Fund* 01/2024 – 05/2025

- Led 6 Quantitative Analysts to engineer multifactor regression and systematic allocation workflows for the ˜$1M fund, owning research, model development, and implementation from prototype through production-ready deployment.
- Built end-to-end automated Python-based ETL pipelines for financial data ingestion, cleaning, normalization, factor construction, portfolio optimization, backtesting, and performance tracking, enabling reproducible systematic research.
- Reproduced and extended academic factor models across time horizons and market regimes; tuned parameters, benchmarked strategies using risk-adjusted metrics, and translated empirical results into recommendations for leadership.