Avery Chen

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Tagline: Computational humanist blending poetry, particles, and programs. I build interpretable ML for language and playful physics tools for learners.

Education

Massachusetts Institute of Technology (MIT) — B.S. in Physics & Computer Science; Minor in Comparative Literature (2019–2023)

Selected coursework: Numerical Methods, Machine Learning, Statistical Mechanics, Natural Language Processing, Scientific Writing, Modern Poetry.

Experience

Undergraduate Researcher, Computational Materials & Quantum Simulation Lab — Cambridge, MA (Sep 2022 – Aug 2023)
• Built Monte■Carlo and Langevin dynamics simulations (Python/C++), accelerating parameter sweeps by 18× via vectorization and job scheduling.
• Authored visualization widgets so non■technical collaborators could explore phase diagrams in a browser (Pyodide + WebGPU).
• Wrote lab documentation with plain■language summaries for interdisciplinary readers.

Software Engineering Intern, Prism Education — Remote (Jun 2021 – Aug 2021)
• Shipped a FastAPI microservice that scored student short answers using a lightweight transformer (DistilBERT), with bias checks and human■in■the■loop review.
• Designed error messages that teach (“why” + “next step”), reducing support tickets by ~22%.

Editor■in■Chief, Strange Attractor (Campus Literary Magazine) — Cambridge, MA (Jan 2020 – May 2022)
• Led a team of 14 editors; introduced “maker’s notes” where authors annotate drafts with decisions and doubts.
• Curated the themed issue Entropy, pairing poems with micro■essays by physicists.

Teaching Assistant, Intro to CS (Python) — Cambridge, MA (Sep 2020 – Dec 2020)
• Ran weekly recitations; created notebooks demystifying asymptotics via visual metaphors.
• Mentored 30+ students; wrote a guide on “debugging as storytelling.”

Projects

Verse2Vec: A Prosody Toolkit — NLP for poetic meter
• Trained a BiLSTM■CRF to label stress patterns on English poetry; 92% F1 on a small annotated corpus.
• Adds an interpretable “meter energy” score (see paper).

Muon■Muse — Interactive particle playground for classrooms
• Browser■based physics toy (Rust → WebAssembly, p5.js) where students draw fields and watch simulated “particles” improvise paths.
• 1,200+ classroom sessions across pilot schools (mock metric), with teacher■mode worksheets.

LitDiff — Style transfer with form constraints
• Fine■tuned a small language model to generate couplets adhering to iambic pentameter and end■rhyme constraints; includes a constraint■violation explainer.

Publications & Talks

Chen, A. (2025). Measuring Meter: Modeling Poetic Rhythm as Coupled Oscillators and Sequence Models. (sample paper)

Lightning talk: “From Scansion to Embeddings: What ML Can Explain to Poets” (Library Lab Series, 2023).

Workshop: “Physics for Poets: Thinking in Models” (community center, 2022).

Skills

Programming: Python, C++, Rust, JavaScript/TypeScript, SQL

ML/NLP: PyTorch, scikit■learn, Hugging Face, spaCy, NLTK, CRF, sequence models

Sci■Comp: NumPy/SciPy, JAX basics, Monte Carlo, PDE intuition, LaTeX

Data/Infra: FastAPI, Streamlit, Docker, Git, basic GCP/AWS, WebAssembly

Writing/Communication: developmental editing, technical blogging, public speaking

Interests

Bouldering, analog photography, building split■ergonomic keyboards, community literacy tutoring, teaching with toys.