Arthur Liang

artliang.dev

Email : artliang@mit.edu
Mobile : 646-233-7989

Education

Massachusetts Institute of Technology — Cambridge, MA
BS in Computer Science and Neuroscience, BS in Mathematics; GPA: 5.0/5.0 — *Exp. May 2026*

- **Relevant Coursework:** Deep Generative Models (G), GenAI in Bio (G), CV (G), NLP, Symmetry in ML (G), Computational CogSci, Neural Computation (TA), ML (TA), DSA, Probability & Random Variables, Algebraic Combinatorics, Topology

Research

Research Intern @ MIT CSAIL — Cambridge, MA
Investigated protein generation and representation using diffusion models, flow matching, and LLMs — *Jan. 2024 - Present*

- Project 1: Designed a decoder-only autoregressive model for joint protein sequence and structure modeling, enabling exact model likelihood estimation and controllable generation via MCMC and GPT-style tuning. Integrated motif scaffolding and RL-based fine-tuning for flexible, interpretable protein design tasks.
- Project 2: Investigated latent diffusion models for unconditional protein generation, exploring different objectives, embeddings, and masking strategies as well as performing comprehensive ablation. Scaled extensive training runs and hyperparameter sweeps across multiple environments, leveraging distributed computing to optimize resource utilization
- Project 3: Developed a substructure-aware protein representation learning framework that integrates sequence embeddings and structure-aware graphs to enable localized reasoning and referral-grounding in protein analysis. Constructed a large-scale annotated dataset of functional substructures and demonstrated strong performance on mid-level protein classification tasks, enhancing interpretability in protein language models.

Research Intern @ MIT MetaConscious Group — Cambridge, MA
Architected novel brain-like models that capture complex sensory representations of cognitive tasks — *Sep. 2023 - Jan. 2024*

- Integrated multimodal data streams into CNN-RNN architectures, allowing for the fusion of diverse sensory inputs and improving the model's ability to simulate complex cognitive processes
- Discovered that training with biologically-inspired architectures on realistic visual representations can achieve similar performance levels and similarity scores to brain activity

Research Intern @ MIT Synthetic Neurobiology Group — Cambridge, MA
Designed novel opsin variants so that our bodies don't recognize them as foreign — *Sep. 2022 - Aug. 2023*

- Employed ML protein engineering methods (Directed Evolution, GANs) and immunogenicity prediction models (NetMHCPan) to enable safer human integration of optogenetics by reducing opsin immunogenicity in the peripheral nervous system

Industry Experience

Research Intern @ Altera (now Fundamental Research Labs) — Menlo Park, CA
Built digital humans that care about us and each other — *Jul. 2024 - Sep. 2024*

- Spearheaded long-term social progression initiative towards evolving goal-driven behavior and emotional continuity. Devised and optimized for social reasoning tasks, beating internal benchmarks and standardizing how we measure agent performance
- Scoped and implemented methods for real-time virtual screen capture, visual reasoning, and low-level action execution within digital agents. Refactored brain architecture and developed infrastructure for agent interoperability beyond Minecraft

Machine Learning Engineer Intern @ Boeing AI — Seoul, South Korea
Delivered 0→1 ubiquitously-used pipeline for utilizing industry-grade VLMs — *May. 2024 - Jul. 2024*

- Project 1: Architected ensemble VLMs and formulated a transfer learning framework to automate and expedite maintenance inspections, reducing inspection time and improving defect detection rates
- Project 2: Developed a high-fidelity simulation environment for tail swapping, enabling realistic RL agent training/validation and improving policy effectiveness to optimize decision-making in disruption management

Leadership

Operations Lead @ MIT Hacking Medicine — Cambridge, MA
Organized MIT Grand Hack, an annual three-day healthcare hackathon for 500+ industry professionals — *Sep. 2022 - May 2024*

- Pioneered a fast-moving research group toward infecting, energizing, and empowering a diverse, global community in healthcare entrepreneurship and innovation to scale medicine to attack and solve healthcare problems

Workshop Coordinator @ MIT Global Teaching Labs — Seoul, South Korea
Spent two winters creating STEM curriculum for high schoolers in Korea — *Jan. 2023 - Feb. 2024*

- Developed and delivered creative, hands-on machine learning, neuroscience, and biology workshops to high schoolers

Skills, Awards, & Interests

Programming: Python (PyTorch [Lightning], TensorFlow, NumPy, Matplotlib, pandas, scikit-learn, Openfold, hydra, NetworkX, BioPython, OpenCV, RDKit), Linux & Unix, SLURM, Git, AWS EC2, Terraform, R, C++, NextJS, Cassandra, SQL, MongoDB
Awards: Google CSRMP Fellow, ISEF Finalist & Special Award Winner, AIME, USABO Top 75, National Brain Bee Winner
Interests: Taekwondo, Emergency Medical Services, Reading & Blogging, Home Cooking, Foreign Languages, Eagle Scout