

Shawn Liu

U.S. Permanent Resident, no sponsorship required

ML / Research Engineer · published AI researcher · two production LLM systems live
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EDUCATION

Columbia University · M.S. in Computer Science

Entered Fall 2026 · Expected January 2028

University of California, Irvine · B.S. in Computer Science, GPA 3.844 / 4.0 · Dean's Honor List, all quarters

September 2022 - June 2026

SKILLS

Languages: Python, TypeScript / JavaScript, SQL, C / C++

ML: PyTorch, scikit-learn, NumPy, pandas, machine learning, deep learning, computer vision, knowledge distillation

Models: transformers (CLIP / ViT / VideoMAE), graph neural networks, hyperdimensional computing

LLM systems: LLM agents, RAG, retrieval evaluation (recall@k, MRR), LLM evaluation, structured outputs, Anthropic API

Systems: FastAPI, Pydantic v2, SQLite / FT55, PostgreSQL, React, Node / Express, REST APIs, data pipelines, OAuth / JWT

Infra: Git, Docker, Fly.io, AWS S3, CI/CD, Linux, CUDA, distributed systems

PROJECTS

Loop · LLM scheduling agent, live at loop-study.com Python, FastAPI, SQLite, React / TypeScript, Anthropic API, Fly.io

May 2026 - present

- Built an LLM agent that turns a career goal and weekly availability into a study plan on Google Calendar: five LLM nodes propose, deterministic code validates and schedules, and every calendar write passes a human approval gate with post-write verification and rollback.
- Grounded plans in BM25 retrieval over a 242-document curated corpus, graded on 75 labeled queries at recall@5 0.76 and MRR 0.71 with pinned floors. Measured a dense-embedding hybrid (+0.08 MRR) and shipped BM25 alone rather than add a second provider to the serving path.
- An unmeasured prompt change fails the build: the CI evaluation harness re-grades committed LLM recordings offline on every push and pins every prompt by SHA-256; 5,152 tests across backend and frontend.

Foothold · transfer-credit navigator, live at foothold-transfer.com solo · Stellic Pathfinders 2026 entry

July 31 - August 21, 2026

- Tells a California community college student which of their courses will transfer to a target UC or CSU. The verdict is deterministic, computed from 352,024 ASSIST articulation rows across 115 colleges and 15 campuses, and every finding carries a citation.
- Drafts appeal letters with one Claude node, validates every course code and agreement key in the letter against the findings, and falls back to a template letter after two failed repairs.

Crash Anticipation · dashcam collision advisories PyTorch, YOLO11n, ByteTrack · github.com/ShawnnnLiu/Crash-Anticipation

November 2025 - July 2026

- Flags an impending crash from dashcam video a mean 3.05 s before impact, with 3 false alarms across 301 no-crash test videos. A 21.88M-parameter VideoMAE teacher distilled into a 2.95M-parameter MobileNetV2-GRU student runs one frame per step in 2.45 ms (408 fps, RTX 5070 Ti).
- Rebuilt the benchmark after the first version scored AP 1.0 on all-positive manifests: 1,130 real no-crash videos and time-to-event labels with a guard band.

Arrhythmia Classifier · MIT-BIH leakage study PyTorch, wfdb · github.com/ShawnnnLiu/Arrhythmia_Classifier · team of 2

November 2025 - August 2026

- Showed that beat-wise splits leak patient identity: the same 64,966-parameter CNN scores 98.36% test accuracy beat-wise and 83.88% patient-wise. Wrote a split search over 50,000 sampled patient assignments that keeps all six classes in the test set.

EXPERIENCE

BiasLab, UC Irvine · Undergraduate ML Researcher

June 2024 - June 2026

- Cut UAV carrier-landing failures by 65% against the legacy optical markers in adverse-weather simulation, deck-crew collisions included, in work with the U.S. Navy. The pose-estimation and symbolic-reasoning model in PyTorch holds the landing whenever it sees a person on the deck.
- Aligned a trainable event-camera encoder to CLIP's frozen image-text space for zero-shot video anomaly detection: 57.7 / 64.1 / 54.4 AUC on XD-Violence / UCF-Crime / ShanghaiTech, +5.5 and +5.2 points over frame-based CLIP on the latter two. WACV 2026.
- Characterized real CKKS-FHE noise in Microsoft SEAL under GNN operations and built a calibrated noise-injection simulation of encrypted graph inference; a noise-adaptive bootstrapping schedule cut projected bootstrapping overhead about 4x at over 90% accuracy in simulation.

BioIntelligence Lab, UC Irvine · Undergraduate ML Researcher

December 2025 - July 2026

- Antimicrobial peptide MIC prediction from structure: a GCN over ESMFold-predicted conformations, one residue per node, fused with SVM geometric descriptors, with ablations isolating what 3D conformation adds.

AdamsFoods · Full-Stack Contractor · adamsfoodswholesale.com

June 2025 - August 2025

- Built and shipped a live wholesale e-commerce platform in React and Node / Express with S3 signed-URL media and JWT role-guarded admin routes.

AdamsFoods · Full-Stack Contractor

June 2024 - August 2024

- Built the internal inventory system tracking 300+ SKUs, with CRUD, low-stock alerts, CSV export, and a 3D warehouse map. It replaced handwritten logs and saves staff 5-7 hours a week.

PUBLICATIONS

Cross-Modal Event Encoder: Bridging Image-Text Knowledge to Event Streams · WACV 2026

Integrating Symbolic & Neural Mechanisms for Adversarially Robust HDC · ISLPED 2026

Geometric Priors for Generalizable World Models via Vector Symbolic Architecture · NeurIPS 2025 NeurReps Workshop

Optimal Hyperdimensional Representation for Learning & Cognitive Computation · Frontiers in AI 2026