

Parker Patton

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EDUCATION

The University of Alabama

Aug. 2025 – Present

Expected Graduation: Dec 2028 (BS/MS Pure Math)

Tuscaloosa, AL

Fall 2026 Coursework: Real Analysis, Data Structures & Algorithms, Calculus III, Differential Equations

EXPERIENCE

LLM Interpretability Research

May 2026 – Present

Algoverse AI Research

Remote

- Investigating **unverbalized evaluation awareness** in LLMs under Madhur Panwar, targeting ICLR submission.
- Developed an **auditable dataset pipeline** yielding **2,880** bilingual (English/Japanese) prompts; Implemented **cross-model generation** by Qwen and Gemini, blind verification, and deterministic semantic and formatting QC.
- Designed a **six-level incentive titration** across bilingual scenarios to separate explicit evaluation recognition from latent behavioral adaptation.

AI Safety Lab

Sep. 2025 – Present

The University of Alabama

Tuscaloosa, AL

- Developed a low-dimensional latent-space attack using v2v models to generate adversarial inputs for downstream classifiers; executed **3,652 trials** across **686 source videos**, evaluating every result after 8-bit GIF serialization.
- Achieved **89.5% ASR** (265/296 eligible Kinetics-400 clips) at **27–30 dB PSNR**; mapped the dimension–fidelity frontier, with **47% ASR from only 16 randomly sampled latent dimensions**.
- Characterized robustness across perturbation bases, video VAEs, and classifiers; **44/90** successful attacks remained misclassified after re-encoding through CogVideoX.

Financial ML Research

June 2024 – May 2025

The University of Alabama at Birmingham

Birmingham, AL

- Developed **volatility-conditioned DDPM** (PyTorch) to generate plausible price paths across **8 assets**.
- Found higher point-forecast MAE vs. ARIMA (**0.083 vs. 0.066**), but demonstrated superior uncertainty calibration (**CRPS = 0.057**, **DM $p = 0.002$**) and realistic variance structure.
- Presented research at ASFA Symposium; **awarded Honorable Mention** in CARSEF Math & CS.

PROJECTS

CS2Desk [GitHub] | Python, TypeScript, Next.js, SQLite

Jul. 2026 – Present

- Built a CS2 trade-up search engine that ingested **147,000+ Steam listings** and **2.25M bid levels**, evaluated **151,000+ contracts**, and ranked opportunities by expected profit, risk, and market depth.
- Modeled Steam fees, float-constrained outcomes, bid-side liquidity, and fillability to reject nominally profitable but non-executable contracts.
- Deployed optimizer (Python/SQLite) with dashboard (Next.js); Searches **50,000 contracts in under 2s**.

osu!rankguess [GitHub] | Python, PyTorch, FastAPI, ONNX, PostgreSQL

Mar. 2026 – Present

- Built and published osu!3k, a multimodal dataset of **3,000 gameplay videos**, replay files, and metadata across **1,767 players**; automated replay ingestion, rendering, metadata joins, and quality filtering.
- Trained a CatBoost/PyTorch ensemble achieving **0.846 R^2** and **1.84-point MAE** on an unseen test set.
- Deployed a FastAPI/ONNX platform on Vercel with replay parsing, CPU inference, and PostgreSQL storage.

Independent Smart-Contract Security Research | Solidity, Foundry, EIP-712, HyperEVM

June 2026

- Responsibly disclosed **2 settlement vulnerabilities** in live options contracts by reverse-engineering EIP-712 signatures, packed calldata, and balance-debit paths.
- Found **38 post-expiry settlements** across **800 live transactions** and reproduced both flaws on a mainnet fork.

TECHNICAL SKILLS

Languages: Python, C/C++, TypeScript, SQL (Postgres, SQLite), Java

Frameworks: PyTorch, NumPy, pandas, Next.js

Quantitative Skills: Diffusion Models, Time-Series Forecasting, Statistical Testing, Financial Data Engineering

Developer Tools: Git, Docker, Google Cloud Platform, AWS, Linux, Vercel, Supabase, Github Actions