

Parker Patton

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EDUCATION

The University of Alabama

May 2028

Bachelor of Science in Mathematics, Computer Science, GPA: 3.76/4.00

Tuscaloosa, AL

Fall 2026 Coursework: Data Structures & Algorithms, Software Engineering, Calculus III, Differential Equations

EXPERIENCE

AI Safety Lab

Sep. 2026 – 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 **24-shard, 2,400-clip** GPU campaign, achieving **94.5% ASR** at **27–30 dB PSNR**.
- Mapped decoder–classifier geometry with Jacobian and gradient projections; found **47.3× above-chance** task gradient concentration while **90.7% ASR** persisted outside dominant decoder modes across 300 K400 clips.

LLM Interpretability Research

May 2026 – Sep 2026

AlgoVerse AI Research

Remote

- Designed a content-matched 2×2 **factorial experiment** with over **11,520 matched prompts** and three Llama checkpoints; extracted residual-stream representations at each transformer block; fit held-family-out linear probes.
- Identified a prompt-format confound: naive probes achieved only **0.600–0.682 AUC**, while format-controlled probes reached **0.989–0.998 AUC** and generalized across unseen formats at **0.940–0.985 AUC**.

Financial ML Research

June 2024 – May 2025

The University of Alabama at Birmingham

Birmingham, AL

- Built a diffusion-empirical model for next-day return distributions across **5 assets** and **45 walk-forward folds**.
- Raised volatility R^2 from **0.179 to 0.197**; Reduced CRPS by **0.30%** versus EWMA across **14,175 OOS** forecasts
- Presented research at ASFA Symposium; **awarded Honorable Mention** in CARSEF Math & CS.

PROJECTS

tablet.ears.cat [GitHub] | Python, TypeScript, C, ARM Firmware

Sep. 2026 – Present

- Developed custom firmware for the Gaomon S620 graphics tablet; Deployed web-installer to over **7,000 users**.
- Reverse-engineered OEM firmware; increased polling from **266Hz to 1,000Hz**; eliminated **>15ms** input latency.

NullMap (HackMIT 2026) [Link] | Python, FastAPI, Elasticsearch, React

Sep. 2026

- Built a resumable ingestion and embedding pipeline indexing **2.1M+** OpenAlex and ClinicalTrials.gov studies.
- Implemented **BM25 + kNN** retrieval for optimized LLM context, reducing cost by **88%** to **19sec** and **\$0.021**.
- Deployed in **24 hours** and won **2nd Place** in Elastic’s “Find the Signal” sponsor challenge at HackMIT 2026.

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

Mar. 2026 – Aug. 2026

- Built and published osu!3k, a multimodal dataset of **3,000 gameplay videos**, replay files, and player metadata.
- Trained CatBoost/CV ensemble; reached **0.846 R^2** and **1.84% MAE** predicting percentile from a single sample.
- 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, Solidity

ML & Data: PyTorch, scikit-learn, NumPy, pandas, CatBoost, ONNX

Backend & Web: FastAPI, PostgreSQL, Elasticsearch, Next.js, React

Tools & Platforms: Git, Linux, Docker, Slurm, Vercel, GCP, AWS, GitHub Actions