

Kyle Krowpman

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Applied Scientist working on adversarial detection at scale. Sequence models over behavioral and transactional event histories, with emphasis on evaluation that stays predictive under adaptive attackers and delayed labels.

EXPERIENCE

Applied Scientist

Dec 2022 – Present

Amazon.com

Seattle, WA

- Own fraud detection for all Amazon US digital products and subscriptions end to end: event-history feature generation, training and evaluation, deployment, monitoring, retraining.
- Built a repayment risk model for direct debit transactions, recovering approximately \$30MM in annual revenue.
- Design and deploy sequence models for fraud detection over temporally ordered user and transaction behavior, where attackers observe enforcement decisions and adapt to them.
- Lead temporal evaluation and ablation design for sequential models (leakage-aware splits, backtests) so that offline results remain predictive of production behavior under drift and delayed feedback.
- Building agentic systems that surface novel fraud modus operandi from behavioral and transaction signals and convert them into deployed decision rules, compressing the loop between a new attack pattern emerging and a countermeasure taking effect.
- Own fraud evaluation for the launch of Amazon Leo (Project Kuiper), standing up detection on a new subscription surface with no historical fraud data.

SELECTED PROJECTS

PanoptOS: Automated-Agent Detection from Behavioral Time Series

Personal project [technical report]

- Built an end-to-end detection system for automated accounts in Old School RuneScape from public leaderboard data alone, deriving labels at scale from account disappearance after operator enforcement; framed crawl budget allocation as a multi-armed bandit over Bayesian estimates of ban rate and novelty.
- Designed a dual-branch Transformer over irregularly sampled behavioral snapshots with Fourier time encoding, gating an account-name branch so lexical signal is suppressed when behavioral evidence is decisive; deployed int8-quantized inference on a Raspberry Pi with no measurable loss.
- Introduced an integrated time-AUC metric measuring how quickly a model becomes useful after discovery, rejecting a far higher latest-history AUC as operationally misleading; scored 0.985 against 0.950 for a reproduction of the closest published baseline.
- Published methodology and training code while withholding production orchestration, model weights, and scoring tooling so the release cannot be used to target named individuals.

Weiawaga: Neural-Network Chess Engine

Personal project

- Open-source engine in Rust combining alpha-beta search with neural-network evaluation; built automated self-play and tournament regression testing to validate model updates.

DOCTORAL RESEARCH

Ph.D. Researcher — ATLAS Experiment (CERN)

2018 – 2022

Michigan State University [dissertation]

East Lansing, MI

- Developed neural classifiers for rare-signal identification in collider data, separating events of interest from backgrounds exceeding them by many orders of magnitude, with rigorous uncertainty treatment and reproducible analysis pipelines in a large collaborative codebase.

EDUCATION

Michigan State University

East Lansing, MI

Ph.D., Physics

2016 – 2022

West Virginia University

Morgantown, WV

B.S., Physics; Minors: Mathematics, Economics

2012 – 2016

TECHNICAL SKILLS

Languages: Python, Rust, C++, SQL

Deep Learning: Transformers, sequence models (LSTM/TCN), irregular time series, variable-length batching, ablation design, temporal validation, quantization

Detection & Adversarial ML: Abuse and fraud detection, anomaly detection, imbalanced and positive-unlabeled learning, adversarial evasion, delayed feedback, drift, calibration, bandits and active data collection

ML & Data: PyTorch, scikit-learn, NumPy, pandas, PostgreSQL; Linux, Docker, Git