Levi Rankin

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EDUCATION

University of California, Santa Cruz — *Santa Cruz, CA*
B.S. Computer Science — *Sept 2021 – June 2025*

- Formal Coursework: Deep Learning, Machine Learning, Natural Language Processing, Game AI, Software Engineering, Computer Systems Design, Data structures & algorithms, Analysis of Algorithms, Programming Languages, Theory of Computation, Computer Architecture, Distributed Systems, Compiler Design
- Additional studies: Advanced Database Systems (CMU), Networking (Stanford), Operating Systems (MIT), Deep Learning (MIT)

SKILLS

Languages: Python, Rust, C/C++, TypeScript, Haskell, Bash, SQL
Libraries / Frameworks: PyTorch, TensorFlow, Keras, OpenCV, Electron, Tkinter
Cloud / Infrastructure: AWS, GCP, Azure, Docker, Kubernetes, Terraform, Ansible
Databases / Tooling: PostgreSQL, Prometheus, Grafana, Datadog
Other: Git, Linux, Jira, CLI tooling, LLMs, Context Engineering

EXPERIENCE

Uxly — *San Francisco, CA*
Software Engineer | *React, Typescript* — *Sep 2024 – Dec 2024*

- Built a real-time blockchain analytics platform using React and TypeScript, integrating blockchain APIs and backend services for low-latency transaction analysis.
- Developed advanced graph visualizations with dynamic clustering and community detection, reducing analysis time by 50% and enabling rapid identification of suspicious activity.
- Engineered high-performance node and pattern analysis systems with intelligent caching, achieving 99% faster queries and enhancing detection of airdrop farming and fraud.

Synthura — *Santa Cruz, CA*
Founder and Tech Lead | *Python, Pytorch* — *Apr 2024 – Jun 2024*

- Led a team of 6 to build a real-time security system using YOLOv10, PyTorch, and fine-tuned custom models, delivering major gains in detection accuracy and operational efficiency.
- Engineered optimizations cutting camera response time by 99.8% and model inference time by 85.7% through GPU acceleration, multi-threading, and advanced buffering.
- Designed a scalable backend with FastAPI and WebSockets whilst implementing dynamic object tracking, real-time motion detection, and GPU/CPU-flexible video processing architecture.

Baskin Engineering at UCSC — *Santa Cruz, CA*
Undergraduate Researcher | *Python, AnyLabeling, Roboflow* — *Jan 2024 – Jun 2024*

- Supported rip current detection research by curating and labeling large drone video datasets, creating bounding boxes, and generating thousands of diverse training images using custom frame-extraction scripts.
- Researched detection transformers and reviewed academic literature to inform model selection and improve application of advanced object detection techniques.

RECENT PROJECTS

High-Performance Network Server Benchmarking Suite | *Python, AsyncIO, Windows APIs, Socket Programming*

- Developed automated benchmark suite comparing multiple server architectures (synchronous, asynchronous, Windows-optimized, eBPF, DPDK reference) with performance testing, metrics collection, and report generation.
- Explored modern Windows networking approaches through socket buffer optimization, `TCP_NODELAY` configuration, Windows IOCP integration, and eBPF kernel bypass concepts, to identify optimal networking patterns on Windows systems.

Distributed Consensus & Blockchain Systems | *Rust, Tokio, Axum, Serde, SHA-256, HTTP/JSON, CLI*

- Implemented fault-tolerant distributed systems in Rust, integrating both HotStuff BFT and Raft consensus protocols.
- Built a HotStuff-based blockchain prototype with three-phase consensus (Prepare, Pre-commit, Commit), JSON-based persistent state, SHA-256 integrity verification, and 90-node network simulation.
- Developed a distributed key-value store using Raft for leader election, log replication, and strong consistency, with a REST API (Axum) and CLI for real-time cluster monitoring and management.
- Ensured safety and consistency under Byzantine and crash fault models, supporting automatic failover and network partition tolerance.

PAST PROJECTS

Autonomous Driving Steering Control | *Python, PyTorch, Carla*

- Achieved top-voted project leading team of 5 predicting steering angles in CARLA using various architectures for real-time control.

ML Engineer Past Life | *Python, PyTorch, TensorFlow, OpenCV, Gradio*

- 5+ Computer vision projects for object detection, segmentation, and classification with various architectures.

Data Scientist Past Life | *Python, SQL, Pandas, Numpy, Seaborn, Matplotlib, Tableau*

- 10+ projects involving data with billions of cells, deep EDA and statistical modeling, and visualizations with various tools.

Securities Analysis Tool | *Python, Tkinter*

- Interactive GUI implementing equity and bond valuation models for investment analysis (DCF, CAPM, P/E, etc).