

Triaksha Singh

206-605-6394 | triakshasingh@gmail.com | <https://github.com/triakshasingh> | <https://www.linkedin.com/in/triakshasingh/>

Education

University of Washington, Seattle

September 2024 – June 2027

Bachelor of Science in Electrical And Computer Engineering

Seattle, WA

Skills

Languages: Python (advanced), C++, Java, MySQL, HTML, CSS, JavaScript

Quant / Data: NumPy, pandas, SciPy, scikit-learn, statsmodels, Matplotlib

Core CS: Data Structures & Algorithms, Time Complexity Analysis, OOP, Multithreading Fundamentals

Mathematics: Probability, Regression, Linear Algebra, Numerical Methods

Systems: Linux, Git

Experience

Allbritton Lab – UW Bioengineering

February 2026 – Present

Research Intern

Muscat, Oman

- Architected end-to-end communication pipeline between ESP32 firmware and Raspberry Pi controller using WiFi + structured JSON messaging, enabling reliable real-time device-to-server synchronization
- Designed and implemented distributed device state management logic across firmware, backend agents, and web dashboard, ensuring consistent execution of multi-stage workflows under concurrent user access
- Debugged and integrated multi-layer system components (embedded firmware, Linux-based controller, Node.js backend, MongoDB, Socket.IO telemetry) to centralize communication flows and improve system reliability and scalability

Inntech

June 2025 – September 2025

AI/ML Intern

Muscat, Oman

- Engineered modular Python data-processing pipelines for structured datasets, reducing manual overhead by ~40% while improving computational reliability and system maintainability
- Designed and validated predictive computation workflows with rigorous error analysis and cross-validation, integrating outputs into backend systems with clean, scalable architecture

Husky Robotics Team

October 2024 – May 2025

Mechatronics Engineer

Seattle, WA

- Built performance-critical distributed ROS2 services in C++/Python on Linux, reducing end-to-end control latency by ~30% through asynchronous messaging and execution profiling
 - Integrated Betaflight flight-control stack to establish deterministic servo signal pipelines between transmitter input and actuator output
 - Debugged cross-layer failures across embedded firmware, Linux services, and hardware interfaces to ensure stable real-time system behavior
-

Projects

Volatility Estimator Toolkit

- Designed modular financial analytics engine in Python for large-scale time-series processing using structured, reusable computation pipelines
- Implemented rolling-window and exponentially weighted statistical estimators with configurable parameters and validated computational correctness across varying input regimes
- Optimized performance of high-volume time-series computations using vectorized NumPy operations, eliminating iterative loops and reducing execution time on large datasets
- Benchmarked estimator stability and computational trade-offs under simulated market shocks to evaluate robustness and responsiveness

Limit Order Book & Matching Engine

- Built price-time priority limit order book with $O(\log P)$ price-level updates and $O(1)$ cancel via hash index + intrusive linked lists
- Implemented deterministic matching for market and limit orders with partial fills and constant-time order lookup by order ID
- Benchmarked 1,000,000 synthetic events at 102,056 events/sec; engine-only latency p50 5.29 μ s, p95 13.18 μ s, p99 20.33 μ s (Python)
- Designed modular architecture separating order book state, matching logic, and simulation/benchmark harness