SIMON BWIRE WANDERA

SYSTEMS &
BACKEND ENGINEER

PROFILE

Elite Systems Architect and Backend Engineer with expertise in high-performance computing, Web3 infrastructure, and computational biochemistry. Specializes in Rust and C++ optimization for constrained edge hardware, and designs highly available, event-driven systems using .NET 8 and Apache Kafka. Experienced in building reliable AI pipelines and concurrency-safe smart contracts on ICP. Combines deep distributed systems expertise with a formal background in molecular biology and genomic data pipelines, mission-critical infrastructure for Web3, biotech, and enterprise-scale platforms.

CONTACT

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Nairobi , Kenya

SKILLS

- Software Development
- Python, C++, Rust, C#
- Apache Kafka

PROFESSIONAL SUMMARY

Elite Systems Architect and Backend Engineer specializing in the convergence of 1. **high-performance computing**,
2. decentralized **Web3 infrastructure**, and
3. computational **biochemistry**.

Possesses profound expertise in **Rust** and **C++ optimization**, executing constraint-driven engineering to bypass profound computational bottlenecks on constrained edge hardware.

Proven track record of architecting highly available, event-driven omnichannel systems utilizing.**NET 8** and **Apache Kafka**, designing **zero-hallucination AI pipelines**, and deploying concurrency-safe s**mart contracts on the Internet Computer Protocol (ICP).**

An exceptionally rare hybrid talent combining deep-tech distributed systems architecture with a formal academic foundation in Molecular Biology and Genomic Data Pipelines.

Uniquely positioned to deliver mission-critical infrastructure for high-stakes Web3 protocols, biotech research networks, and enterprise-scale data architectures.

CORE TECHNOLOGIES & COMPETENCIES

Low-Level & Systems Programming:

Rust (Memory Safety, zerocopy optimization, ic-cdk), C++ (SIMD Vectorization, Manual Memory Management, AVX2/SSE4.1 instruction sets).

Backend & Distributed Systems:

Python (Agentic RAG, AI Microservices),.NET 8 (Ocelot API Gateways, Transactional Database Locking), Apache Kafka (Event Streaming, Decoupled Architectures).

Backend & Distributed Systems:

Infrastructure & Data: PostgreSQL (pgvector, Strict State Management), Docker Containerization, Linux (Fedora/KDE Plasma), CRAM/BAM Genomic Data Compression formats.

Backend & Distributed Systems:

Domain Expertise: Immutable Ledgers, Decentralized Smart Contracts (WebAssembly), Offline-First Edge Architectures, Bioinformatics Alignment Algorithms.

EXPERIENCE

FOUNDER & LEAD ARCHITECT
HOSTARA (PRIVATE ARCHITECTURE)

Engineered a highly resilient, event-driven Omnichannel Operating System designed to process massive concurrent transactions within zero-trust digital economies.

Architected Zero-Hallucination AI Pipelines:

Designed a deterministic, state-aware Agentic Retrieval-Augmented Generation (RAG) framework integrating the Meta WhatsApp API with a.**NET 8** and **PostgreSQL** backend. Replaced generic **LLM prompting with Strict Function Calling** and **pgvector geographic geofencing** to guarantee absolute transactional integrity and prevent inventory overselling.

EDUCATION

Bachelor of Science in Biochemistry
(In Progress)
Expected Graduation : 2028
Kenyatta University,
Nairobi, Kenya

Engineered Offline-First Event Synchronization:

Invented a proprietary USSD Telemetry Sync Protocol bridging Flutter mobile clients to a.NET 8 backend via **C++ native integration** (Dart FFI). Ensured eventual consistency across an **Apache Kafka** distributed event bus, allowing mathematically secure escrow releases even in total network blackout scenarios.

LEAD DEVELOPER | HELIXEDGE (PRIVATE ARCHITECTURE)

Conceptualized and programmed a deep-tech, offline-first genomic surveillance platform, bypassing massive cloud computing dependencies for rural epidemiological deployment.

Optimized Edge-Compute Data Ingestion:

Leveraged Rust's strict memory-safe paradigms to engineer a highly efficient Zero-Copy ingestion layer. Utilized memory-mapped I/O (mmap) and the zerocopy crate to parse gigabytes of raw DNA sequencing data in place, reducing memory footprint by nearly 50% and eliminating fatal heap allocation bottlenecks on 4GB RAM hardware.

Accelerated Algorithmic CPU Inference

Replaced expensive GPU dependencies by deploying an INT8 Quantized Recurrent Neural Network (RNN) and executing Single Instruction, Multiple Data (SIMD) C++ algorithmic vectorization. Implemented a custom Split-Index Strategy to process massive 3.2GB genomic reference indexes within strict 1GB chunks, completely preventing system-level memory crashes on constrained nodes.

WEB3 DEVELOPER SKILLNET
(OPEN-SOURCE GITHUB REPO: BX7GAMERX)

Engineered a highly optimized decentralized smart contract canister on the Internet Computer Protocol (ICP) for immutable skill verification.

Architected Concurrency-Safe State Management:

Built a high-performance Rust backend utilizing ic-cdk and thread-local storage (thread_local!) to ensure mathematical memory safety and prevent catastrophic reentrancy vulnerabilities within complex WebAssembly execution environments.

Designed Type-Safe Cryptographic Interfaces

Implemented strict Candid (DID) interfaces for seamless, type-safe CRUD operations, facilitating highly secure, deterministic interactions between distributed client frontends and the immutable ledger backend.

SYSTEMS ARCHITECT | UHASIBUWATCH (HACKATHON)

Engineered an advanced transparency and anti-corruption detection system leveraging cryptographic ledger principles for civic technology.

Designed Immutable Data Architectures:

Architected a robust, append-only civic tech database leveraging sophisticated cryptographic hashing mechanisms to guarantee absolute data provenance. Ensured public financial and supply chain metrics remained permanently verifiable and completely tamper-proof against retroactive data manipulation by malicious actors.