

OLUWOLE ADETIFA

Systems Security Researcher | Distributed Systems | Confidential Computing

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RESEARCH INTERESTS

Confidential Computing • Distributed Systems • Zero-Trust Architecture • Trusted Execution Environments (TEEs) • Systems Security • Applied Cryptography

EDUCATION

PhD, Advanced Computing (In Progress) — Morgan State University

MSc, Advanced Computing — Morgan State University (2024)

BEng, Electrical & Electronics Engineering — Covenant University

PUBLICATIONS

Developing Quantum Trusted Platform Module (QTPM) to Advance IoT Security

Future Internet, vol. 17, no. 5, 193, 2025

Authors: Xu, Adetifa, Mao, Sakk, Wang

DOI / Paper: <https://doi.org/10.3390/fi17050193>

- Proposed and implemented a QRNG-integrated software TPM (QTPM)
- Demonstrated improved cryptographic robustness for IoT systems

Representative CPS Application Domains

Edge Intelligence in Cyber-Physical Systems, Academic Press, 2025

Authors: Xu, Hussaini, Adetifa, Yu

Publisher Link: <https://doi.org/10.1016/B978-0-44-326572-3.00009-7>

- Surveyed CPS domains across smart infrastructure and distributed systems

Comparative Analysis and Applications of Quantum Random Number Generators

Master's Thesis, Morgan State University, 2024

PDF: <https://www.proquest.com/openview/0e228ff803da898521302a83a2d3b7d4/1?pq-origsite=gscholar&cbl=18750&diss=y>

- Evaluated QRNG vs PRNG performance, statistical properties, and cryptographic robustness
- Provided system-level insights motivating QEaaS design

RESEARCH EXPERIENCE

Research Engineer (Systems & Security)

Morgan State University — Mar 2023 – Present

Quantum Entropy-as-a-Service (QEaaS)

GitHub: <https://github.com/oluwoleadetifa/qeaas-auth-server>

Docs / Demo: <https://yourname.github.io/qeaas> (*we'll build this*)

- Designed distributed entropy service integrating hardware QRNG into secure systems
- Built high-concurrency backend in Rust (Axum, Tokio)
- Implemented signed-request authentication and nonce-based replay protection
- Benchmarked system throughput, latency, and entropy freshness under load
- Identified QRNG post-processing degradation effects, informing system redesign

- Integrated post-quantum cryptography (Kyber, Dilithium) into system workflows
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TEACHING EXPERIENCE

Adjunct Instructor — Python Programming & Computer Architecture

Morgan State University — Dec 2024 – Present

- Teach Python, OOP, and systems-level reasoning
 - Cover computer architecture: pipelines, memory hierarchy, RISC-V
 - Design labs focused on debugging, performance, and system behavior
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INDUSTRY EXPERIENCE

Backend / Systems Software Engineer

Morgan State University — Mar 2023 – Present

- Built secure, high-performance backend systems in Rust and Python
 - Implemented rate limiting, buffering, and DoS mitigation strategies
 - Developed APIs integrating hardware-backed services into Linux systems
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PROJECTS

Trust-Oriented Distributed Systems (Ongoing)

- Designing systems where trust artifacts (keys, attestation, entropy) are schedulable resources
 - Focus on zero-trust orchestration in TEE-based environments
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TECHNICAL SKILLS

Languages: Rust, Python, SQL, Bash, TypeScript

Systems: Distributed systems, concurrency, Linux

Security: Cryptography, authentication systems, secure protocols

Infrastructure: Docker, Git, profiling, benchmarking

Hardware: Computer architecture, RISC-V, FPGA (exposure)

HONORS & AWARDS

IBM Scholarship