

Wallace S. Msagusa

CONTACT INFORMATION

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SUMMARY

I am a software and security engineer and researcher experienced in research methodologies, technical leadership, and software development for enterprise applications. Driven to explore and deliver robust, usable and secure solutions.

RESEARCH INTERESTS

Usable Privacy & Security, System Reliability, Responsible AI, Human-Computer Interaction (HCI)

EDUCATION

Carnegie Mellon University

August 2023 – May 2025

Master of Science in Information Technology

- Mastercard Foundation Full Scholarship
- Vice President: Software Engineering & Cybersecurity Club
- Redwoods Leadership Trainee

Ruaha Catholic University

November 2015 - November 2018

Bachelor of Science in Computer Science

- Volunteer Digital Mapping Instructor – 1 Call Tanzania

PUBLICATIONS

O. Adewusi, **W. S. Msagusa**, J. P. Imanirumva, O. Obadofin, J. D. Ndibwile. "Beyond SSO: Mobile Money Authentication for Inclusive e-Government in Sub-Saharan Africa." In *2025 22nd Annual International Conference on Privacy, Security, and Trust (PST)*, Fredericton, NB, Canada, August 26-28, 2025, pp 1-11, doi: 10.1109/PST65910.2025.11268840.

POSTERS

O. Adewusi, **W. S. Msagusa**, J. P. Imanirumva, O. Obadofin, J. D. Ndibwile. "Leveraging Mobile Money for Inclusive e-Government Services in Sub-Saharan Africa." In *46th IEEE Symposium on Security and Privacy (S&P)*, San Francisco, CA, USA, May 12-15, 2025.

WORK EXPERIENCE

Research Associate

August 2025 – Present

CyLab-Africa / Upanzi Network – Rwanda

- Successful integration of QA into SDLC from initiation, design, development and deployment.
- Assessment and improvement of functionality, structure and processes for DPI and DPG projects with 85% reduction in bugs, improved documentation and 35% improvements in performance.
- Communications, organizing and support for capacity building and pilot DPG programs.
- System development, documentation and deployment.

Research Associate

May 2025 – Present

The University of Chicago

- Conducting qualitative user studies and analysis to understand perceptions on security and privacy concerns for mobile money payment interfaces in Rwanda.
- Performing literature reviews on usability, privacy and security of mobile money and payment processes.
- Designing Proof-of-Concept attacks to demonstrate and report possible exploits based on observed user behavior and suggest usable improvements.

Graduate Teaching Assistant

January 2025 – May 2025

Carnegie Mellon University

- Supporting in-class activities and discussions for Information Systems Audit & Standards course.
- Assessing and grading students through quizzes, assignments and exams.
- Providing academic and professional guidance.

Graduate Research Assistant – Intern

June 2024 – August 2024

CyLab-Africa / Upanzi Network – Rwanda

- Developed simulation systems using Spring Boot, React and MongoDB for research work to devise and empirically test a proposed web authentication protocol through mobile money.
- Creating and validating the Quality Assurance framework for CyLab-Africa DPG projects.

Technical Project Lead

September 2021 – July 2023

E- Wallet Africa Limited – Tanzania

Projects: E-Wallet Payment Gateway (EPG), E-Wallet SMS (ESMS), Vodacom Bulk Messaging Gateway (BMG), CRDB Bank SMS Helpdesk System, Stanbic Bank UTT Payment Gateway, Stanbic Bank SMS Gateway.

- Designed and built 3-tier & microservice architecture and artifacts for high-availability systems.
- Led teams to implement, test and deploy enterprise applications for banks and telcos.
- Configured servers and load balancers with Nginx, HAProxy and ActiveMQ to achieve above 90% uptime.
- Implemented backend and frontend systems and APIs using Spring Boot, React and Slim PHP.
- Oversaw ESMS upgrading to increase reporting and processing speed for large SMS traffics by 45%.
- Supervised EPG upgrading with 50% improvement in reporting and reconciliation times for collection and disbursement transactions across M-Pesa, Airtel Money, Halopesa and Tigopesa.
- Championed for PCI DSS compliant environment in efforts to integrate with banking systems to facilitate international transfers and virtual payment cards.

Systems Support Engineer

March 2021 – July 2023

E- Wallet Africa Limited - Tanzania

- Monitored resource utilization and provided system support, administration and fault resolution.
- Designed, configured, administered and optimized queries for SQL and NoSQL databases.
- Accomplished SLA objectives and documented RCA for client systems within 24 to 72 hours of incidents.

OPEN-SOURCE PROJECTS

PushWP: A WordPress plugin to enable mobile money payments for e-commerce services in Tanzania via Selcom API, reducing development time by 17%, driving cashless transactions and improving revenue collection for SMEs.

Link: <https://github.com/wallace-stev/selcom-push-wp>

SKILLS

- **Backend:** C++, Java, PHP, Spring Boot, Python, FastAPI,
- **Databases:** MySQL, MongoDB, PostgreSQL, Firebase (Cloud Firestore)
- **Cloud DevOps:** Docker, Kubernetes, SonarCloud, Azure, Git, Nginx, HAProxy, Grafana, Prometheus,
- **Spoken Languages:** Swahili (native), English
- **Data Analysis, ML & Visualization:** Jupyter, Tableau, D3, Power BI
- **Web:** React, Svelte, Bootstrap, Tailwind.

MEMBERSHIPS

- The Information Systems Audit and Control Association (**ISACA**)

CERTIFICATIONS

- IOP Peer Review Excellence Certification – IOP Publishing (2023)
- Social and Behavioral Conduct of Research – CITI Program (2025)
- **Currently pursuing:** Certified Information Systems Auditor (**CISA**) – May 2026