

Wallace S. Msagusa

CONTACT INFORMATION

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SUMMARY

I am a software and security engineer and researcher experienced in 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

Ruaha Catholic University

November 2015 - November 2018

Bachelor of Science in Computer Science

- Volunteer Digital Mapping Instructor – 1 Call Tanzania

PUBLICATIONS

O. Adewusi, A. Gueye, **W. S. Msagusa**, J. D. Ndibwile, D. Nkundineza, O. Obadofin, W. Rutaremara, B. Ur. "Security and Privacy Considerations for Confirming Payments in Rwandan Mobile Money Systems." In *2026 35th USENIX Security Symposium*, Baltimore, MD, USA, August 12-14, 2026.

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.

RESEARCH 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

- Assessment and improvement of functionality, structure and processes in designing, developing and deploying DPIs and DPGs 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

- Learning and analyzing users' perceptions on security, privacy and usability concerns for mobile money payment interfaces and practices in Rwanda.
- 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 assessing students' performance through quizzes, assignments and exams for Information Systems Audit & Standards course.
- 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 with more than 90% uptime.
- Led teams to implement, test and deploy enterprise applications for banks and telcos.
- Implemented backend and frontend systems and APIs using Spring Boot, React and Slim PHP.
- Oversaw the upgrading of client systems (payments & bulk SMS) resulting to 50% increase in reporting and reconciliation times for collection and disbursement transactions, and 45% increase in processing speed for large SMS traffic,
- 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)
- **Quality Assurance:** Selenium, Playwright, Locust, k6, SonarQube
- **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, Vega-Lite
- **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**)