

ABDULAI YAKUBU

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Education

Zhejiang Normal University

Sep. 2022 – June 2025

Master in Electronic Information (Software Engineering)

Relevant Coursework: Advanced Software Engineering, Software Project Management, Advanced Database, Network & Information Security, IoT

Zhejiang Normal University

Sep. 2018 – June 2022

Bachelor of Engineering in Computer Science and Technology

Relevant Coursework: Data Structures & Algorithms, Software Architecture, Java, Python, OS, Probability & Statistics

Research Experience**Security & Privacy in IoT/IoMT | AI for Security | Federated Learning**

Zhejiang Normal University

- Developed a secure, quantum-resilient mutual authentication protocol (QRMA-IoMT) for IoMT devices using RLWE encryption and Boneh-Boyen signatures.
- Investigated Federated Learning for privacy-preserving, decentralized AI in IoMT to enhance patient data confidentiality and model performance.
- Designed evasion-based adversarial attacks on ML models for IIoT intrusion detection. Proposed a robust evaluation framework using white-box (PGD) and black-box methods. Models: Logistic Regression, KNN, Random Forest, MLP.
- Built a ML-based DDoS detection framework for IoT using the TON_IoT dataset. Applied KNN, CNN, Naive Bayes, Logistic Regression, Decision Trees; used SMOTE and Information Gain Ratio for feature selection; achieved 94% accuracy.

Publications

1. Abdulai, Y., Ma, M. & Wang, H. QRMA-IoMT: Quantum-resilient mutual authentication for IoMT using RLWE and Boneh-Boyen signatures. Peer-to-Peer Netw. Appl. 18, 284 (2025). <https://doi.org/10.1007/s12083-025-01990-1>.
2. Y. Abdulai, M. Ma and H. Wang, "ESMA-IoMT: Efficient and Secure Mutual Authentication in IoMT with RLWE-Based Encryption and Boneh-Boyen Signatures," 2024 IEEE International Conference on E-health Networking, Application & Services (HealthCom), Nara, Japan, 2024, pp. 1-6, doi: 10.1109/HealthCom60970.2024.10880814.

Under Review

1. Abdulai, Y., Ma, M. and Wang, H. "HQADEC: A Hybrid Quantum-Resistant Authentication Protocol Using RLWE-KEM, Dynamic Edge Consensus, and Adaptive Security for Secure and Scalable IoMT Systems,". (*under review*)

Teaching Experience

Teaching Assistant (TA) - Linear Algebra (Fall 2024)

- Supported undergraduate instruction in Linear Algebra, led tutorials, graded assignments, and assisted students with problem-solving.

Awards & Honors

- Outstanding Presenter of Academic Reports for Graduate Students , ZJNU- 2024-2025
- Winner, CST Hackathon (Apr 2024): Developed a housing app for verified off-campus listings.
- Zhejiang Provincial Government Scholarship (Graduate) – 2023, 2024
- Excellent International Student, ZJNU – 2019, 2020, 2023
- Outstanding New International Students Scholarship (Type A) – 2022–2023
- Zhejiang Government Scholarship (Undergraduate) – 2019–2022
- Top 10 Learning Pacesetters, College of Math & CS – 2020
- Excellent Cadre, International Students in China – 2019

Technical Skills

- Research Areas:** Federated Learning, Security & Privacy in IoT/IoMT, AI for Security, Cyber-Physical Systems
- Languages & Tools:** Python, TensorFlow, PyTorch, Scikit-learn, OMNeT++, YOLO, MySQL/PostgreSQL, Arduino, MATLAB, C
- Security Tools:** Scyther, Wireshark, Burp Suite (basic)
- Languages:** English (Fluent), Dagbani (Native), Chinese (Fluent)

Service & Leadership

President, CST International Student Association | *Apr 2023 – May 2025*

- Strengthened cultural and academic support systems for diverse student body. Led initiatives for inclusion, academic mentoring, and community engagement.

International Student Assistant, ZJNU | *Oct 2019 – Jun 2024*

- Helped bridge communication between international students and school authorities. Supported logistics, integration, and campus life improvement.

Industry Experience

Intern, China Unicom Ltd., Jinhua | *Oct 2021 – Dec 2021*

- Assisted with backend system debugging and improved code quality in Python and Java-based services.

Invited Panels & Talks

Youth in AI Series - Redefining Healthcare with AI: An African Youth Perspective

October 2024