

Priscilla Kyei Danso



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RESEARCH INTEREST

Privacy Compliance, Natural Language Processing, Formal Methods, Machine Learning

- *Neural-symbolic reasoning, trustworthy AI, and translation between natural language and formal logic*

EDUCATION

Stony Brook University

Stony Brook, NY, USA

- *Ph.D. in Computer Science, Department of Computer Science*

Aug. 2023 – Present

- **Advisor:** Dr. Omar Chowdhury

- **Research Area:** Formal verification, Privacy compliance, and LLM-based specification synthesis

University of New Brunswick

Fredericton, Canada

- *M.Sc. in Computer Science, Faculty of Computer Science*

May 2021 – May. 2023

- **Advisor:** Dr. Ali Ghorbani

- **Thesis:** Transferability of Machine Learning Algorithms for IoT Device Profiling and Identification

Kwame Nkrumah University of Science and Technology

Kumasi, Ghana

- *B.Sc. in Computer Engineering, College of Engineering*

Sep. 2012 – Jun. 2016

- **Project:** An Integrated Messaging Platform for an Enterprise Environment

RESEARCH AND INDUSTRY EXPERIENCE

Formal Verification and Security Group, Stony Brook University

New York, USA

- *Graduate Research Assistant*

Aug. 2023 – Present

- **Advisor:** Dr. Omar Chowdhury

- Lead researcher on neuro-symbolic natural language-to-Linear Temporal Logic (LTL) formalization: LLM candidate synthesis with solver-backed selection (ICLR 2027, under review) and an evaluation of LLM semantic accuracy (SecDev '26).

- Designed multi-dimensional benchmarks for semantic equivalence, satisfiability, and trace-based verification; audited the `n121t1` benchmark's 306 references, correcting 55.

- Designing a typed intermediate representation for translating natural language into FOL for theorem proving

- Built ATHENA, a verifier-controlled HIPAA compliance checker: a machine-checked Datalog encoding of the Privacy Rule (Soufflé) selects which fact an LLM evidence oracle is queried about, and missing evidence stays UNRESOLVED (PoPETs 2027, Round 2).

Canadian Institute for Cybersecurity, University of New Brunswick

Fredericton, Canada

- *Graduate Research Assistant*

May. 2021 – Dec. 2022

- **Advisor:** Dr. Ali Ghorbani

- Conducted applied machine learning research on IoT device profiling and intrusion detection.

- Built and released realistic IoT profiling datasets and ensemble-based detection pipelines.

PEER-REVIEWED CONFERENCE PUBLICATIONS

(* denotes equal contribution)

- [C9] **Danso, P.K.**, et al., “Generation Is Not Selection: Neuro-Symbolic Natural Language Formalization of Temporal Logic”. In *International Conference on Learning Representations (ICLR)* (2027) Under review
- [C8] **Danso, P.K.**, et al., “ATHENA: Answering Regulatory Permissibility Questions through Iterative Fact Finding”. In *Proceedings on Privacy Enhancing Technologies (PoPETs)* (2027) Under review, Round 2
- [C7] **Danso, P.K.**, et al., “Syntax Is Easy, Semantics Is Hard: Evaluating LLMs for LTL Translation”. In *Proceedings of the 2026 ACM Secure Development Conference (SecDev '26)* Montreal, QC, Canada
- [C6] Dadkhah, S., Mahdikhani, H., **Danso, P.K.***, et al., “Towards the Development of a Realistic Multidimensional IoT Profiling Dataset”. In *IEEE Privacy, Security and Trust (PST 2022)* (With over 220+ citations)
- [C5] **Danso, P.K.**, Dadkhah, S., Neto, E.C.P., et al., “Transferability of Machine Learning Algorithms for IoT Device Profiling and Identification”. In *IEEE Internet of Things Journal (IoT-J 2023)*

- [C4] **Danso, P.K.**, Neto, E.C.P., Dadkhah, S., et al., “Ensemble-based Intrusion Detection for Internet of Things Devices”. In *IEEE Smart Communities (HONET 2022)* 
- [C3] **Danso, P.K.**, et al., “LLM-based Anomaly Detection for Digital Substation Cybersecurity”. In *IEEE Smart Communities (HONET 2025)* 
- [C2] **Danso, P.K.**, et al., “Human-centric Machine Learning for IoT Device Identification and Vulnerability Assessment”. *HCI International 2023* 
- [C1] Zohourian, A., Dadkhah, S., Neto, E.C.P., Mahdikhani, H., **Danso, P.K.**, et al., “IoT Zigbee Device Security: A Comprehensive Review”. *Elsevier Internet of Things Journal 2023* 

TEACHING EXPERIENCE

- **CSE/ISE312 Social, Legal, and Ethical Issues in Computing, *Stony Brook University*** **New York**
Attend class and monitor discussions, grading, and office hours *Aug. 2026 – Dec. 2026*
- **ISE331 Fundamentals of Computer Security, *Stony Brook University*** **New York**
Assisted in lab instruction, grading, and office hours *Jan. 2024 – Apr. 2024*
- **CSE331 Computer Security Fundamentals, *Stony Brook University*** **New York**
Collaborated on assignments, held office hours, proctored and graded *Aug. 2023 – Dec. 2023*

HONORS AND AWARDS

- **SREB Institute on Teaching and Mentoring** *2024, 2025*
Selected Participant
- **Thirteenth Summer School on Formal Techniques + FMITF Bootcamp** **Sponsored by NSF**
Student travel / participation award *May 2024*
- **CPS-IoT Week 2024 Student Travel Award** **Hong Kong (NSF-sponsored)**
Student travel award to attend CPS-IoT Week *April 2024*
- **iMentor Scholarship for ACM CCS** **Copenhagen, Denmark (NSF-sponsored)**
Student travel scholarship to attend ACM CCS *November 2023*
- **Academic Scholarship, University of New Brunswick** **Fredericton, Canada**
Faculty of Computer Science Funding *May 2021*
- **Institute for Analytics and Data Science Summer School Scholarship** **University of Essex**
Student scholarship to attend summer school *July 2020*
- **Academic Scholarship, Newmont Ahafo Development Foundation (NADeF)** **Ghana**
Merit-based undergraduate scholarship *September 2016*

PROFESSIONAL SERVICE

- **Paper Reviewer**
IEEE Internet of Things Journal *2023–Present*
- **Artifact Evaluation Committee**
Committee Member
 - ACM CCS *2024*
 - USENIX Security *2025*
 - IEEE Symposium on Security and Privacy (S&P) *2027*
- **Positions Held**
Stony Brook University
 - **Secretary:** Women in Ph.D. in Computer Science (WPhD) *2024–Present*
 - **Mentor:** Center for Inclusive Education *2025–Present*
- **Mentor**
Stony Brook University
 - Women in Computer Science *2024–Present*
 - AI3 Summer Mentorship Program
 - AI Innovation & Diffusion REU 2026, Trustworthy AI & NLP Research Lab *Summer 2026*