Saif Eddine Nouma

Last update: June 8, 2025

(Citizenship: Tunisia)

CONTACT INFORMATION

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RESEARCH INTERESTS

Applied Cryptography
Network Security
Machine Learning

EDUCATION

University of South Florida, Tampa, FL, USA — Fall 2021 – Present
Ph.D. Candidate, Computer Science
• Advisor: Dr. Attila Altay Yavuz

École Polytechnique de Tunisie, Tunis, Tunisia — 2017 – 2020
Bachelor of Engineering, Computer Science and Multi-Disciplinary Sciences
• Thesis: *Applications of Machine Learning in Networking and IoT*

Institut Préparatoire aux Études d'Ingénieurs de Monastir, Monastir, Tunisia — 2015 – 2017
Associate Degree, Mathematics and Physics

WORK EXPERIENCE

Research Assistant, University of South Florida, Tampa, FL, USA — Dec 2021 – Present
- ✓ Lightweight, Resilient, and Post-Quantum Authentication for Internet of Things
- ✓ Parallelized Secure Logging for constrained IoT and Cold Storage Servers

System Administrator, University of South Florida, Tampa, FL, USA — Aug 2023 – May 2024
- ✓ Create monitoring dashboards using Grafana and Prometheus
- ✓ Administrate a high-performance computing cluster

Teaching Assistant, University of South Florida, Tampa, FL, USA — Aug 2021 – Dec 2021
- ✓ Course: COP4538 - IT Data Structures
- ✓ Instructor: Dr. Attila A. Yavuz

Software Engineer, Kopileft Services Inc., Tunis, Tunisia — Jan 2021 – Aug 2021
- ✓ Migrate Java-based web services to Kotlin with Gradle
- ✓ Improve BI reporting infrastructure with PostgreSQL and Java

Research Intern, LAAS-CNRS, Toulouse, France — Feb 2020 – Aug 2020
• Hosts: Dr. Khalil Drira, Dr. Hassan Hassan
- ✓ Benchmark RNN models for network traffic prediction
- ✓ Early-Exit distributed CNN models for Internet of Things

Intern, Wevioo Consulting, Tunis, Tunisia Jun 2019 – Aug 2019

- ✓ ML solution for handwritten signature (Siamese CNN network, Biometric)
- ✓ Business context: Verifying the authenticity of bank checks

SOFTWARE

Parallel Optimal Signatures for Secure Logging (POSLO)	2025
Post-Quantum Forward-Secure Signatures	2023
Network Traffic Prediction using Recurrent Neural Networks (RNNs)	2020
Distributed Deep Learning Inference	2020
Task Offloading using Deep Reinforcement Learning	2020

PUBLICATIONS

Journals

[1] **Saif E. Nouma**, Attila A. Yavuz, "Post-Quantum Hybrid Digital Signatures with Hardware-Support for Digital Twins", *ACM Transactions on Multimedia Computing, Communications, and Applications (ACM TOMM)*, Volume 20, Issue 6, pp 1-30, March 2024.

Conferences

[2] Attila A. Yavuz, Kiarash Sedghighadikolaei, Saleh Darzi, **Saif E. Nouma**, "Beyond Basic Trust: Envisioning the Future of NextGen Networked Systems and Digital Signatures", *5th IEEE Conference on Trust, Privacy and Security in Intelligent Systems, and Applications (IEEE TPS)*, May 2023, Atlanta, Georgia, USA.

[3] **Saif E. Nouma**, Attila A. Yavuz, "Lightweight Digital Signatures for Internet of Things: Current and Post-Quantum Trends and Visions", *6th IEEE Conference on IEEE Conference on Dependable and Secure Computing (IEEE DSC)*, May 2023, Tampa, Florida, USA.

[4] **Saif E. Nouma**, Attila A. Yavuz, "Practical Cryptographic Forensic Tools for Lightweight Internet of Things and Cold Storage Systems", *8th ACM/IEEE Conference on Internet of Things Design and Implementation (ACM/IEEE IoTDI)*, May 2023, San Antonio, Texas, USA.

[5] **Saif E. Nouma**, Attila A. Yavuz, "Post-Quantum Forward-Secure Signatures with Hardware-Support for Internet of Things", *IEEE International Conference on Communications (IEEE ICC)*, May 2023, Rome, Italy.

[6] Attila A. Yavuz, **Saif E. Nouma**, Thang Hoang, Duncan Earl, Scott Packard, "Distributed Cyber-infrastructures and Artificial Intelligence in Hybrid Post-Quantum Era", *4th IEEE International Conference on Trust, Privacy and Security in Intelligent Systems, and Applications (IEEE TPS)*, December 2022 (virtual).

[7] Attila A. Yavuz, Duncan Earl, Scott Packard and **Saif E. Nouma**, "Hybrid Low-Cost Quantum-Safe Key Distribution", *Quantum 2.0 - Optica*, May 2022, MA, USA.

E-Prints

[1] Attila A. Yavuz, Saleh Darzi, **Saif E. Nouma**, "LiteQSign: Lightweight and Quantum-Safe Signatures for Heterogeneous IoT Applications", *arXiv preprint arXiv:2311.18674*, May 2025. (Submitted to ACM Transactions on Internet of Things (ACM TIoT))

[2] Kiarash Sedghighadikolaei, Attila A. Yavuz, **Saif E. Nouma**, "Signer-Optimal Multiple-Time Post-Quantum Hash-Based Signature for Heterogeneous IoT Systems", *arXiv preprint arXiv.2411.01380*, November 2024. (to appear in Elsevier Internet of Things)

[3] **Saif E. Nouma**, Attila A. Yavuz, "Lightweight and Resilient Signatures for Cloud-Assisted Embedded IoT Systems", *arXiv preprint arXiv:2409.13937*, March 2024, (Submitted to IEEE Transactions on Dependable and Secure Computing.

[4] **Saif E. Nouma**, "Applications of Machine Learning (ML) in Networking and IoT", HAL preprint hal-02932494), July 2020.

PATENTS

[1] Attila A. Yavuz and **Saif E. Nouma**, "System and Method for Cryptographic Forensic Audits on Lightweight IoT and Digital Archives", US Patent US20240007300A1, Filed: June 2023.

[2] Attila A. Yavuz and **Saif E. Nouma**, "Hardware Supported Authentication and Signatures for Wireless, Distributed and Blockchain Systems", US Patent US20230308289A1, Filed: Mar 2023.

GRANTS

Travel: USF International Travel Grant 2023
Total: $1,500

Travel: NSF Student Travel Grant 2023
Total: $1,500

SERVICES

Journal reviewer
- IEEE Transactions on Information Forensics and Security (IEEE TIFS) 2024

CERTIFICATES

Blockchain Developer, IBM Explorer Award 2019

Big Data Engineer, IBM Mastery Award 2019

Fundamentals of Reinforcement Learning, Coursera 2019

Practical Reinforcement Learning, Coursera 2019

Deep Learning Specialization, Coursera 2019

Machine Leanring, Coursera 2019

Algorithmic Toolbox, Coursera 2019