Ahmad B. Usman

Cybersecurity Researcher · PhD Candidate

Trusted Computing · Remote Attestation · Secure Software Updates · Vulnerability Analysis

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SUMMARY

Cybersecurity researcher specializing in trustworthy computing, secure software updates, and vulnerability analysis for embedded and IoT systems, with peer-reviewed publications at IEEE, ACM, and Springer venues. Currently completing a PhD in Computer Science at Linköping University under Mikael Asplund, combining deep research expertise with hands-on industry security experience (CEH, Security+, CCNA Security) and a proven record in teaching, student supervision, and applied security.

EXPERIENCE

Linköping University - PhD Researcher, Cybersecurity
Dec 2021 - Present
Linköping, Sweden

- Conducted research on trustworthy computing, remote attestation, and secure software updates, resulting in 7 peer-reviewed publications at IEEE, ACM, and Springer venues.
- Designed and implemented security research prototypes for embedded and IoT systems, spanning attestation protocols, firmware update mechanisms, and vulnerability analysis.
- Worked across the embedded-security stack — ARM TrustZone, TPM, and QEMU-based emulation — to prototype and evaluate trusted-computing and secure-update techniques.

HWG s.r.l - Cyber Security Specialist
Sep 2021 - Nov 2021
Verona, Italy

- Performed security monitoring and threat analysis for enterprise IT environments.
- Supported security management operations, including standards implementation and risk identification.

SPRITZ Security and Privacy Research Group - Research Assistant
Sep 2020 - Jul 2021
Padua, Italy

- Investigated security vulnerabilities in Industrial Control Systems (ICS/SCADA), focusing on IT/OT convergence risks and network-level attack surfaces.
- Applied machine learning techniques for anomaly detection and intrusion monitoring in operational technology environments, and contributed to experimental design and evaluation.

EDUCATION

PhD in Computer Science - Linköping University (Sweden)
Dec 2021 - Expected 2026

- Thesis (working title): *A Trustworthy Approach to Securing System States through Remote Attestation, Secure Updates, and Vulnerability Analysis*

Licentiate in Computer Science - Linköping University (Sweden)
Dec 2021 - Oct 2025

- Thesis: *Trustworthy Software States through Attestation and Secure Updates* DiVA

MSc in ICT for Internet and Multimedia - University of Padua (Italy)
Oct 2019 - Jul 2021

- Track of CyberSystems, Dept. of Information Engineering; GPA: 110/110
- Thesis: Industrial Control Systems: Security and Privacy analysis in Industry 4.0 UNIPD

BSc in Information Technology - University of Science and Technology (Sudan)
Oct 2013 - Sep 2017

- Faculty of Computer Science & Information Technology; GPA: 3.78/4

CERTIFICATIONS

Certified Ethical Hacker (CEH) - EC-Council	Dec 2017
CompTIA Security+ - CompTIA	Sep 2017
CCNA Security - Cisco	Aug 2017
CCNA Routing and Switching - Cisco	Sep 2015

PUBLICATIONS

[7] **A. B. Usman**, E. Süren, M. Asplund, SUIT: Security of Update-related IoT Traffic, under review, 2026

[6] **A. B. Usman**, M. Asplund, Understanding Security Risks in Update Mechanisms of Computing Systems, Computers & Security (Elsevier), June 2026

[5] **A. B. Usman**, Z. Afzal, M. Asplund, Bridging Remote Attestation and Secure Software Updates in Embedded Systems, International Journal of Information Security (Springer), Feb 2026

[4] **A. B. Usman**, On the Inconsistency of Update-Related Vulnerabilities, in Human Aspects of Information Security & Assurance (HAISA), Springer, Jul 2025

[3] **A. B. Usman**, M. Asplund, Update at Your Own Risk: Analysis and Recommendations for Update-related Vulnerabilities, in IFIP Intl. Conference on ICT Systems Security and Privacy Protection (IFIP SEC), Springer, May 2025

[2] **A. B. Usman**, M. Asplund, Remote Attestation with Software Updates in Embedded Systems, in IEEE Conference on Communications and Network Security (CNS) — Cyber Resilience Workshop, Oct 2024

[1] **A. B. Usman**, N. Cole, M. Asplund, F. Boeira, C. Vestlund, Remote Attestation Assurance Arguments for Trusted Execution Environments, in ACM Workshop on Secure and Trustworthy Cyber-physical Systems (Sat-CPS@CODASPY), Apr 2023

TEACHING & SUPERVISION

Linköping University - Teaching Assistant / Lab Assistant — 2021 - 2026, Linköping, Sweden

- Concurrent Programming and Operating Systems (TDDE68) — 2021-2024
- Computer Engineering - Bachelor Project (TDDD83) — 2022-2026
- Text Mining (732A81) — 2025-2026

Linköping University - Master's & Bachelor's Thesis Supervision — 2021-2026

- Master's theses (5) - view all on DiVA
- Bachelor's theses (6) - view all on DiVA

ADDITIONAL INFORMATION

Programming: C, C++, Python, Java, JavaScript, SQL
Tools & Platforms: Linux, Git, Docker, QEMU, ARM TrustZone, TPM, Wireshark, LaTeX
Languages: English (Fluent), Arabic (Fluent), Swedish (Intermediate)
Driving License: Category B (Swedish, Nov 2023)