



## Amira Henaïen

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**Date of birth**: 14/12/1985 **Nationality**: Tunisian

### ABOUT ME

Experienced researcher in AIoT, federated learning, and IoT security, specializing in scalable and energy-efficient AI models for distributed IoT-Edge-Cloud systems. Current work focuses on Zero Trust Architecture for smart homes, IOTA blockchain for vehicular networks, and sustainable AIoT solutions.

### WORK EXPERIENCE

[ 01/01/2017 – Current ]

#### Researcher Member - Engineering Research & Development

*SM@RT Lab (CNRS Digital Research Center)*

**City**: Sfax | **Country**: Tunisia

- **Designed and implemented Zero Trust Architecture for smart homes**, integrating blockchain-based authentication and secure communication protocols.
- **Developed and deployed federated learning models for distributed AI security frameworks**, optimizing privacy-preserving AI training and real-time threat detection.
- **Engineered an AIoT data processing pipeline**, enhancing cloud-edge computing performance, energy efficiency, and secure data transmission.
- **Built an IOTA blockchain-based system for vehicular networks**, enabling decentralized identity management and secure peer-to-peer communication.
- **Optimized cryptographic models for AI-driven IoT security**, ensuring resilient and scalable authentication mechanisms.
- Led cross-disciplinary R&D projects, collaborating with academic and industry partners to integrate formal methods, AI, and cryptographic security into IoT architectures.
- Actively engaged in lab R&D activities, contributing to technical seminars, innovation-driven workshops, and research discussions on secure AIoT systems.

[ 01/09/2019 – Current ]

#### Reviewer for Scientific Journals and Conferences

*Scientific Conferences and Journals*

**City**: worldwide | **Country**: Tunisia

- **Reviewed** AI, IoT, and ML research papers for reputable journals and conferences, ensuring rigorous scientific evaluation.
- Provided **constructive feedback** on IoT security, federated learning, AI-driven analytics, and digital transformation studies.
- **Engaged in research communities**, staying updated on emerging trends in AIoT and edge intelligence.

[ 01/09/2024 – Current ]

#### Independent Assistant Professor in IoT and Machine Learning

***Multiple institutes as Polytech Intel Tunis and the Higher Institute of Computer Science Mahdia***

**City:** Tunis | **Country:** Tunisia

- **Taught IoT Fundamentals, IoT Security, and Machine Learning for IoT**, emphasizing **hands-on labs and AI-integrated IoT solutions**.
- **Developed interdisciplinary coursework**, bridging **AIoT, cybersecurity, and cloud-based IoT deployments**.
- **Adapted teaching methodologies** to different institutions, ensuring **high engagement and strong student project outcomes**.

**Assistant Professor & Program Coordinator for Anglophone IT Studies & IEEE Student Branch**

***International Institute of Technologies, North American Private University***

**City:** Sfax | **Country:** Tunisia

- **Taught Algorithms, Data Structures, and Software Development**, focusing on modern technologies and real-world applications.
- **Directed the Anglophone IT Program**, integrating cutting-edge technologies and aligning with industry trends.
- **Collaborated with industry partners** to align coursework with market needs and software engineering best practices.
- **Organized student activities with industry partners**, including workshops, hackathons, and research competitions.
- **Facilitated company visits**, fostering networking, real-world learning, and internship opportunities.

**Assistant Professor in Digital Transformation and IoT**

***Higher Institute of Computer Science Mahdia***

**City:** Mahdia | **Country:** Tunisia

- **Led research projects on IoT & AI integration**, focusing on tiny learning, edge computing, and IoT-driven innovative environments.
- **Taught AI, IoT Architecture, Cryptography, and Machine Learning for IoT**, designing **hands-on, interdisciplinary coursework** aligned with industry needs.
- **Supervised graduate projects on smart cities, IoT security, and AI-driven digital transformation**, resulting in several **conference publications and prototypes**.

**Assistant Professor and Research Coordinator**

***King Khalid University***

**City:** Rijal Almaa Abha | **Country:** Saudi Arabia

- Developed and taught courses **on Data Science, Machine Learning, and Data Analysis**, integrating **real-world datasets and AI-driven IoT applications**.
- **Coordinated research projects in AI-driven IoT** and mentored faculty and students, leading to multiple **published research papers**.
- **Directed the Student Club**, organizing **workshops, hackathons, and AI, IoT, and cybersecurity research seminars**.

**Assistant Professor in Digital Transformation**

***Higher Institute of Computer Science Mahdia***

**City:** Mahdia | **Country:** Tunisia

- **Taught core software development courses**, including **Web Development, Object-Oriented Programming, and Database Systems**, focusing on **modern frameworks and practical applications**.
- **Supervised software engineering projects**, mentoring students on **application design, system architecture, and deployment**.
- **Designed hands-on labs and projects for full-stack development**, incorporating **Java, PHP, JavaScript, and SQL** to enhance student engagement.

EDUCATION AND TRAINING

- [ 01/10/2010 – 11/03/2015 ]

Ph.D. in Computer Science

University of Lorraine

City: Metz | Country: France |
- [ 01/09/2009 – 31/07/2010 ]

Master's Degree in Computer Science

University of Paul Verlaine

City: Metz | Country: France |
- [ 15/09/2006 – 11/07/2009 ]

Engineering Degree in Computer Science

College of Science

City: Tunis | Country: Tunisia |
- [ 15/09/2004 – 30/06/2006 ]

Preparatory Studies in Engineering

Preparatory Institute for Engineering Studies

City: Mounastir | Country: Tunisia |

LANGUAGE SKILLS

Mother tongue(s): Arabic

Other language(s):

French

LISTENING C2 READING C2 WRITING C2

SPOKEN PRODUCTION C2 SPOKEN INTERACTION C2

English

LISTENING C2 READING C2 WRITING C2

SPOKEN PRODUCTION C1 SPOKEN INTERACTION C2

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

DIGITAL SKILLS

My Digital Skills

Python | Hardware: Arduino UNO, Arduino Mega, Raspberry Pi, AVR, PIC Microcontroller | Functional programming language: OCaml | Operating Systems: Microsoft Windows, Linux, Raspberry pi OS | Pytorch, Anaconda, TensorFlow | Python for data analysis and machine learning | The Coq Proof Assistant | Latex/Overleaf | LaTeX

PUBLICATIONS

- [ 2024 ]

[A sustainable smart IoT-based solid waste management system](#)

Reference: A sustainable smart IoT-based solid waste management system A Henaïen, HB Elhadj, LC Fourati - Future Generation Computer Systems, 2024
- [ 2021 ]

[Do-Care: A dynamic ontology reasoning based healthcare monitoring system](#)

Reference: Hadda Ben Elhadj, Farag Sallabi, Amira Henaïen, Lamia Chaari, Khaled Shuaib, Maryam Al Thawadi, Do-Care: A dynamic ontology reasoning based healthcare monitoring system, Future Generation Computer Systems, Volume 118, 2021, Pages 417-431.
- [ 2024 ]

[TinyML enabled smart parking dynamic slots computing and license plate recognition](#)

Reference: A. Henaïen, H. B. Elhadj and L. C. Fourati, "TinyML enabled smart parking dynamic slots computing and license plate recognition," 2024 International Wireless Communications and Mobile Computing (IWCMC), Ayia Napa, Cyprus, 2024, pp. 1583-1588.

[ 2024 ] [RFID IoT Architecture for Smart Inventory Management: Security Integration](#)

**Reference:** A. Henaïen, H. B. Elhadj and L. C. Fourati, "RFID IoT Architecture for Smart Inventory Management: Security Integration," 2024 International Wireless Communications and Mobile Computing (IWCMC), Ayia Napa, Cyprus, 2024, pp. 1010-1015

[ 2020 ] [An ontology based authentication framework for healthcare monitoring](#)

**Reference:** Henaïen, A., BelHadj, H. (2020). An Ontology Based Authentication Framework for Healthcare Monitoring. In: Chaari, L. (eds) Digital Health in Focus of Predictive, Preventive and Personalised Medicine. vol 12. Springer, Cham.

[ 2020 ] [Combined machine learning and semantic modelling for situation awareness and healthcare decision support](#)

**Reference:** Henaïen, A., Ben Elhadj, H., Chaari Fourati, L. (2020). The Impact of Digital Technologies on Public Health in Developed and Developing Countries. ICOST 2020.

[ 2013 ] [Performing implicit induction reasoning with certifying proof environments](#)

**Reference:** Henaïen, A., & Stratulat, S. (2012, December). Performing Implicit Induction Reasoning with Certifying Proof Environments. In SCSS'2012-4th International Symposium on Symbolic Computation in Software Science.

## DRIVING LICENCE

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**Cars:** B      09/08/2015 –  
                         23/07/2025