

FORMATO EUROPEO
PER IL CURRICULUM
VITAE



PERSONAL INFORMATION:

Full name	AFIF Oumaima
Address	
Nationality	
Email	

WORK EXPERIENCE

- 12/2024-Present

Machine Learning (ML) Algorithms for Optimizing Indoor Wellness with an IoT System

Università di Bologna-ARCES (Advanced Research Center on Electronic Systems)

- * Analysis of the state of the art on the quantitative analysis of wellness in indoor environments.
- * Applications of ML algorithms for optimizing wellness using data from IoT networks.
- * Writing specific papers on the topics mentioned above.

- 07/2023 – 08/2023

Spectra sensors predictive models for structures

Università di Bologna-ARCES (Advanced Research Center on Electronic Systems)

- * Machine Learning-Assisted Environmental Parameter Monitoring and Acquisitions through IoT Sensors.
- * MATLAB scripts to suit project needs, streamlining data handling and simulation processes.

Implemented algorithms on Raspberry Pi for continuous sensing and monitoring across applications.

- 08/2022 – 09/2022

CAD Engineer

Errebi Automazioni Srl

Nervesa della Battaglia TV, Italy

- * Drafting for 3D parts/Assembly.
- * Define and analysis of Tolerance.
- * Design 2D/3D, Autocad.

Training: ISO 16792, ISO 1101, ISO5458 standards, CETOL 6σ.

• 02/2022– 07/2022

Research Project on Routing in CubeSat Network based on architecture and topology design.

Ca' Foscari - University of Venice

- * Analysis and evaluation of the communication between CubeSats and ground stations on Matlab Simulink interference on virtual real-time.
- * 6 Degree-Of-Freedom simulation of CubeSat in Matlab.
- * Time optimization and Attenuation reduction for data transmission systems.
- * Routing analysis in two methods: Single and multi-layers communication.
- * Adjacency Matrix and Runge-Kutta Methods application for NanoSatellites.
- * Node Method importance in temporal satellite networks based on time slot correlation.

• 02/2022 – 07/2022

Industrial Training

Aerospace, Midparc Free Zone, Casablanca 20200, Morocco.

- * Reverse engineering for former Boeing aircraft.
- * Technical drawing of Tubes/Ducts for Boeing's aircraft.
- * Create and edit documentation on Python with Pandas.

Planning and customer support. Training: Python, Catia V5.

• 06/2021 – 8/2021

Industrial Training

CAPGEMINI ENGINEERING, 1100 bd Al Qods Sidi Maarouf, Casablanca, Morocco.

- * Developing the KPI Indicator on Excel VBA (OTD, FTR, FTQ...) for the Airbus team.
- * Evaluating the performance of Airbus (Capgemini customer) employees through the Skills Matrix for PMBP (Project management Business partner) and performing Radars.
- * Follow up on deliverables for Airbus's team in Capgemini on Excel and detect non-conformity.

EDUCATION

- 03/2023-02/2026

Ph.D. Student,

Università di Bologna. Department of Electrical, Electronic, and Information Engineering "Guglielmo Marconi"

Topic: Machine learning-assisted Spectral sensors for Environmental, structural, and Production Management.

Course attended and passed:

- * Advanced Cyber-Physical Systems - Elements of Machine Learning for Sensor and Edge Computing.
- * The Vector Network Analyzer: operating principles and applications.
- * IoT Data analytics.

Training: Eigenvector University Europe 2023: ADVANCED TOPICS

- * Machine Learning for Calibration & Classification
- * Introduction to Hyperspectral/Multivariate Image Analysis
- * Multivariate Curve Resolution (MCR)
- * Variable Selection
- * Intro to multi-way Analysis.

Published scientific paper:

- * O. Afif, G. Ingenito, M. Bellomo, A. Romagnoli, M. Tartagni and A. Romani, "IoT-Based Indoor Thermal Comfort Prediction Using Multivariate Statistical Analysis," in *IEEE Sensors Journal*, vol. 25, no. 8, pp. 14358-14369, 15 April 15, 2025, doi: 10.1109/JSEN.2025.3545360.
- * A. D. F. D. Renzo, S. Trovarello, O. Afif, M. Tartagni, D. Masotti and A. Costanzo, "A Predictive-Model-Assisted Moisture Content Sensor by Monitoring the DC-Unstable States of a Microwave Self-Oscillating Antenna," in *IEEE Transactions on Microwave Theory and Techniques*, doi: 10.1109/TMTT.2025.3541970.
- * O. Afif, A. Di Florio Di Renzo, S. Trovarello, A. Costanzo and M. Tartagni, "Boosting Microwave Hydration Sensors Performance with Machine Learning Techniques," *2024 International Microwave and Antenna Symposium (IMAS)*, Marrakech, Morocco, 2024, pp. 1-4.
- * Afif, O., Franceschelli, L., Iaccheri, E., Trovarello, S., Di Florio Di Renzo, A., Ragni, L., Costanzo, A., & Tartagni, M. (2024). A Versatile, Machine-Learning-Enhanced RF Spectral Sensor for Developing a Trunk Hydration Monitoring System in Smart Agriculture. *Sensors*, 24(19), 6199.
- * S. Trovarello, O. Afif, A. Di Florio Di Renzo, D. Masotti, M. Tartagni and A. Costanzo, "A Non-Invasive, Machine Learning Assisted Skin-Hydration Microwave Sensor," *2024 54th European Microwave Conference (EuMC)*, Paris, France, 2024, pp. 932-935.
- * A. Di Florio Di Renzo *et al.*, "A Stand-Alone Moisture Content Sensor Based on a Loaded Self-Oscillating Antenna," *2024 IEEE/MTT-S International Microwave Symposium - IMS 2024*, Washington, DC, USA, 2024, pp. 284-287.

Accepted paper:

- * O. Afif, G. Ingenito, M. Tartagni, and A. Romani, "Towards IoT-Driven Indoor Wellbeing Optimization and Control Using Multivariate Analysis," in *Proc. 10th IEEE Int. Workshop. Sensors Interfaces (IWASI)*, Manfredonia, Italy, Jun. 3–4, 2025.
- * **O. Afif, G. Ingenito, M. Bellomo, M. Tartagni, and A. Romani**, "IoT-Driven Indoor Wellness Optimization Using a Multivariate Analysis Algorithm," in *Proc. 11th IEEE World Forum on Internet of Things (WF-IoT)*, Chengdu, China, 27–30 Oct. 2025.

• 02/2022 – 07/2022

Erasmus+Exchange,

Ca' Foscari University of Venice, Venice, Italy.

• 09/2017 – 07/2022

Master in Aerospace Engineering, State Engineer with honor (GPA4.0)

Université Internationale de Rabat, Rabat, Morocco.

Aerospace, Aeronautics, Satellite, Mechanics,

• 09/2014 – 07/2017

Baccalaureate in physical science,

Lycée Ialla Amina, Meknes, Morocco.

Physics, Mathematics, Mechanics, life, and earth sciences.

Passed National exam with 19/20.

PERSONAL SKILLS AND COMPETENCIES

MOTHER
TONGUE

ARABIC

OTHER LANGUAGE

	FRENCH /ENGLISH	German/Italian
• Reading	Excellent	Elementary
• Writing	Excellent	Elementary
• Speaking	Excellent	Elementary

**ORGANIZATIONAL
SKILLS AND
COMPETENCIES**

ABILITY TO BALANCE MULTIPLE DEADLINES AND TASKS

- * Organizational skills that allow for efficient multitasking without compromising quality.
- Ability to deliver high-quality work under tight deadlines.

**INTERPERSONAL
SKILLS AND
COMPETENCIES**

- * ABILITY TO WORK IN A TEAM, adapt to diverse team dynamics, and commit to achieving common goals.
- Able to foster collaborative relationships across diverse teams.

**TECHNICAL SKILLS
AND COMPETENCIES**

- * Machine learning, Multivariate Statistical analysis-based monitoring application
- * Matlab, Flight Control System and Control Design Engineering, Mechanics engineering, Aeroacoustics, Materials for Mechanical Engineering Design, Non-Destructive Testing, Energy System Design, and Quality Management for Engineering.
- * Matlab/Simulink, C/C++, Python, Catia V5(2D/3D), AutoCAD, Ansys (2D/3D, CFD Fluent, Acoustics,Simulation) BUS and Communication systems (I2C, CAN), Embedded Systems (Arduino, Raspberry Pi platforms), Controllers (PID,PI, PD...), Microsoft Office(Word, PowerPoint, Excel/ Excel VBA), G-Suite.

OTHER SKILLS

My career and passion for addressing remote sensing and environmental monitoring challenges have driven my specialization in my Ph.D. education. A focus on research and monitoring contributes significantly to product management and environmental resilience. I possess strong communication skills, thrive in teamwork environments, and excel in technology relevant to industrial engineering.

Data

Firma

24/06/2025