

Mohammad Omki

Professional Summary

PhD student in Science and Technology for Electronic and Telecommunication Engineering with research experience in Electromagnetic Imaging and Microwave Diagnostics. Master's degree in biomedical engineering, with a diverse background in research and technical field engineering. Over three years of professional experience specializing in Cardiac Rhythm Management products.

Work History

03/2025 – 11/2025

Research Fellow

Titled: "Development of data inversion methods for microwave imaging"

University of Genoa, Genoa, Italy

- Development of data inversion methods for microwave imaging.
- Perform electromagnetic simulations in ANSYS HFSS of microwave imaging systems and antennas.
- Integrated simulation tools and machine learning techniques to enhance the accuracy and efficiency of electromagnetic diagnostics.
- Integrated simulation tools and machine learning techniques to enhance the accuracy and efficiency of electromagnetic diagnostics, applying electromagnetic modeling to nondestructive testing and biomedical imaging.

05/2023 - 09/2023

Internship Student

Marche Polytechnic University, Ancona, Italy

- Conduct experimental research and develop optimized MATLAB code for extracting F waves from complex ECG signals using advanced signal processing techniques.
- Demonstrated effectiveness in collaboration and teamwork skills while working alongside Czech Technical University in Prague.

08/2018 - 11/2021

Cardiac Rhythm Management Specialist

Droubi Medical Company (Medtronic Agent), Damascus, Syria

- Provide implant and follow-up support of CRM products.
- Perform interrogations of CRM medical device systems.
- Provide technical support to physicians and customers.
- Market Coronary Interventions Products.
- Responsible for technical offers and presentations.

Education

11/2025 - Present **PhD in Science and Technology for Electronic and Telecommunication Engineering, University of Genoa**
Genoa, Italy.

12/2023 **Master of Science, Biomedical Engineering, Marche Polytechnic University**
Ancona, Italy.

11/2018 **Bachelor of Science, Biomedical Engineering, Damascus University**
Damascus, Syria.

Skills

Advanced use of electromagnetic simulation software: 3D FEM-based (ANSYS Electronics Desktop - HFSS) and custom 2D Method of Moments codes | Working experience with MATLAB, python, and R | Basic programming C, C++ | Communication skills: teamwork, initiative, thrives under pressure, multitasks effectively | Writing tools: MS Office, LaTeX.

Research Projects

Member of the Research Unit of the University of Genoa of the PRIN 2022 project "NEar-FiEld micRowave imaging for unconvenTionAl scenaRIos - NEFERTARI" (2025-2027) since 2025. Project approved: 08/10/2024.

Publications

- A. Fedeli, G. D'Agostino, A. A. Casazza, M. Omki, and A. Randazzo, "Electromagnetic modelling for non-destructive diagnostics of olive trees", in *International Conference on Electromagnetics in Advanced Applications*, Palermo, Italy, 8-12 September 2025.
- M. Omki, A. Fedeli, and A. Randazzo, "Health assessment of plants through nonlinear learning-assisted electromagnetic imaging", in *GPR Italy Conference*, Roma, Italy, 10-12 September 2025.
- M. Omki, A. Fedeli, and A. Randazzo, "Joint neural network preprocessing and mild data-driven inversion for stroke microwave imaging, " in *2025 IEEE Conference on Antenna Measurements & Applications*, Antibes Juan-les-Pins, France, November 18-20, 2025.
- A. Cuccaro, A. Fedeli, R. Marcelli, M. Omki, C. Ponti, E. Proietti, A. Randazzo, G. Schettini, and R. Solimene, "A microwave imaging system for structural diagnostics, " in *IEEE Conference on Antenna Measurements & Applications*, Antibes Juan-les-Pins, France, November 18-20, 2025.
- M. Omki, A. Fedeli, and A. Randazzo, "A three-phase quantitative data-assisted microwave imaging method, " in *International Conference on Antennas and Electromagnetic Systems*, Catania, Italy, June 3-6, 2026.
- M. Omki, A. Fedeli, and A. Randazzo, "A hybrid neural network and mild data-driven inversion approach for microwave stroke imaging, " in *XXXVIth URSI General Assembly and Scientific Symposium*, Krakow, Poland, August 15-22, 2026. Accepted.
- A. Cuccaro, A. Fedeli, R. Marcelli, M. Omki, C. Ponti, E. Proietti, A. Randazzo, G. Schettini, and R. Solimene, "Clutter-mitigated microwave detection of inclusions in pillar structures, " in *XXXVIth URSI General Assembly and Scientific Symposium*, Krakow, Poland, August 15-22, 2026. Accepted.
- A. Cuccaro, A. Fedeli, R. Marcelli, M. Omki, C. Ponti, E. Proietti, A. Randazzo, G. Schettini, and R. Solimene, "Efficient cylindrical-wave based forward approach for accurate field prediction of targets in a dielectric slab, " in *XXXVIth URSI General Assembly and Scientific Symposium*, Krakow, Poland, August 15-22, 2026. Accepted.
- M. Omki, A. Fedeli, A. Randazzo, "A Mild Data-Driven Inversion Approach With Neural Network Preprocessing For Microwave Imaging", in *Riunione Nazionale di Elettromagnetismo Conference*, L'Aquila 6- 9 September 2026. Accepted.
- M. Omki, A. Fedeli, C. Estatico, A. Randazzo, "A mild data-driven approach with neural-network pre-processing for brain stroke microwave imaging, " in *IEEE Open Journal of Antenna and Propagation*. Submitted.
- R. Dima, G. D'Agostino, M. Omki, M. Maisto, A. Casazza, R. Solimene, A. Randazzo, A. Fedeli, "Microwave Spectroscopy of Olive Pomace Extracts" in *IEEE Transactions on AgriFood Electronics*. Submitted.

Languages

- Mother tongue: Arabic
- English - B2 (self-assessment)
- Italian - B1 (certificate obtained from the University of Genoa)