

Daniele Ugo Leonzio

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Professional Summary

Passionate researcher with expertise in anomaly detection, deep learning, and multimedia signal processing. Extensive experience in developing cutting-edge algorithms for water leak detection and audio/image analysis. Skilled educator and collaborator, with a proven track record of impactful publications and successful partnerships with industry leaders.

Education

Ph.D in Information Technology, Politecnico di Milano Nov 2021 – Apr 2025

- *Research fields:* Anomaly detection, Deep Learning, Multimedia Signal Processing
- *Thesis title:* Data Driven Techniques for Leak Detection in Water Distribution Networks

M.Sc. Computer Science and Engineering, Politecnico di Milano Sept 2019 – Oct 2021

Track: Music and Acoustic Engineering

- GPA: 29/30; 110/110 cum laude
- *Coursework:* Multimedia Signal Processing, Machine Learning, Deep Learning, Sound Analysis Synthesis and Processing
- *Thesis title:* Audio splicing detection and localization based on recording device cues

B.Sc. Electronic Engineering, Politecnico di Milano Sept 2016 – July 2019

- *Coursework:* Circuit Theory, Analog and Digital Electronics.

Experience

Teaching Assistant, Feb 2024 – Now
Politecnico di Milano – Milan, Italy

Assistant lecturer at the “Lab Experience” course at Politecnico di Milano.

Scientific Investigator, May 2022 – Now
Politecnico di Milano – Milan, Italy

Scientific Investigator for projects between Politecnico di Milano and national and international companies.

- *Projects:*
 - LOW FREQUENCY EXTRAPOLATION, project funded by ENI.
Topic: Development of a Transformer based algorithm in order to extrapolate the missing low frequencies in the shot-gathers data.
 - HPMA, project funded by Netherlands Ministry of Defence, collaboration with TNO.
Topic: Development of a Machine Learning algorithm for detecting arrhythmic heartbeats in pilots operating under high G-force conditions.

Research Intern, Dec 2023 – Aug 2024
Onyax – Vigevano, Italy

- *Topic:* Development of Deep Learning algorithms for anomaly detection in water and gas pipelines.

Professor, Feb 2022 – Now
CPM Institute – Milan, Italy
Electronics classes for Pro Audio Engineer course.

Technical Skills

Programming Languages: Python, Matlab, C/C++, Javascript

Frameworks: Tensorflow, PyTorch, Scipy, Pandas

Cloud/Tech-Stack: Docker, AWS Services, Kubernetes

Additional Information

Languages: Italian (Native), English (Fluent)

Professional Memberships: IEEE Member

Publications

- **Audio Splicing Detection and Localization Based on Acquisition Device Traces**
D. U. Leonzio, L. Cuccovillo, P. Bestagini, M. Marcon, P. Aichroth, S. Tubaro,
IEEE Transactions on Information Forensics and Security, 2023.
- **Water Leak Detection and Localization using Convolutional Autoencoders,**
D. U. Leonzio, P. Bestagini, M. Marco, G.P. Quarta, and S. Tubaro,
IEEE International Conference on Acoustics, Speech and Signal Processing, 2023.
- **Robust Water Leak Detection and Localization with Graph Signal Processing,**
D. U. Leonzio, P. Bestagini, M. Marco, G.P. Quarta, and S. Tubaro,
IEEE Industrial Electronics, Control, and Instrumentation Conference, 2023.
- **Water Leak Detection and Classification Using Multiple Sensors,**
D. U. Leonzio, P. Bestagini, M. Marcon, G.P. Quarta and S. Tubaro,
IFIP Networking Conference, 2024.
- **Water Leak Detection via Domain Adaptation,**
D. U. Leonzio, P. Bestagini, M. Marco, G.P. Quarta, and S. Tubaro,
IEEE International Conference on Acoustics, Speech and Signal Processing, 2024.