Tomas Monopoli

Location: Aalborg, Denmark

Website | LinkedIn | GitHub | Email: tomas.monopoli@gmail.com | Mobile: +4528690692

Career Summary

PhD-level electrical engineer specializing in **physical modeling and optimization**. Strong foundation in AI and statistics; experienced in applying machine learning, deep learning, and computational electromagnetics to improve satellite testing and development. Strong background in **adaptive sampling, neural networks, and Bayesian methods** applied to complex physical models.

Experience

Postdoc in Artificial Intelligence and Power Electronics | AAU, Aalborg, DK 2025 - Now

Applying machine learning to tackle challenges in power electronics design and maintenance. Working with non-linear dynamical systems. **Main Topics**: system discovery, physically informed neural networks, symbolic regression, SiNDY, statistical machine learning and Bayesian approaches.

Visiting Researcher | Technical University of Hamburg (TUHH), Hamburg, DE 2023 - 2024

Worked with Theoretical Electromagnetics (TET) group; optimizing electromagnetic models, adaptive sampling.

Visiting Research Fellow | European Space Agency (ESA) / ESTEC, Noordwijk, NL 2021

Working onsite to improve testing methods for small satellites (CubeSats).

R&D Intern | Edison, Milan, IT 2019

Managed projects on Technological Innovation and Development, collaborating with Divisions and Business Units.

Entrepreneur in Residence (Summer Intern) **| CERN** , Geneva, CH 2019

CESP program, 14 master students from all over the world for 5 weeks of high-tech venture creation

Education

PhD cum Laude|Politecnico di Milano, European Space Agency (ESA) [**Publications**] : 2020 – 2025

Utilizing AI and ML-based methods for optimization and modelling of satellite electromagnetic environment. The results aid data-driven testing of electronics boards for space missions.

Alta Scuola Politecnica | Politecnico di Milano, Politecnico di Torino: 2018 - 2020

merit-based honor program focused on technological innovation

Msc. Electrical Engineering | Politecnico di Milano, Politecnico di Torino: 2017 - 2020

Double Degree, 110 cum Laude (*with honors*)

Bsc. Electrical Engineering | Politecnico di Milano, 110/110 2014 - 2017

Technical Skills

Coding | Python, MATLAB | pytorch, tensorflow | docker | git | vscode | linux

Languages

Italian, English: mother tongue

Projects

Advanced Optical Character Recognition System for Academic Papers [**portfolio**] [**github**]

Based on the swing transformer NOUGAT model; integrated with LLMs for **Retrieval Augmented Generation** (RAG). Integration with **Notion API**.

CNN-based SmartBin for waste classification | Entrepreneurship Program 2018 - 2019

Presented the prototype at a technology and innovation fair held in Turin (Italian Tech Week).

Other Activities

- **Technical Reviewer** for scientific journals (TEMC, LECPA, IEEE Access) and AEES 2023 conference
- **Presenter** at conferences (ESA workshop on Aerospace EMC 2025, COMPO 2024, GEMCCON 2020) and **Session Chair** for PTSET 2023