ANTONIO SOGGIA

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Profile

PhD researcher in machine learning focused on real-time perception systems under noisy and constrained environments. Experience in simulation-driven data generation, signal-based perception, and deployment-oriented ML pipelines. Strong in PyTorch/TensorFlow, distributed data processing (Spark/SQL), and containerized environments. Interested in multimodal perception for robotics and real-world AI systems.

Technical Skills

- **Machine Learning:** CNNs, LLMs, Transformers
- **MLOps:** Reproducible pipelines, Docker
- **Tools:** PyTorch, TensorFlow, Spark, SQL, Linux

Professional Experience

PhD CIFRE Researcher - Thales DMS *Sophia Antipolis (FR) - 2022-2025*

- Designed and implemented simulation-driven data pipelines generating physically realistic signals for training and evaluation in data-scarce scenarios.
- Developed lightweight CNN-based models for real-time signal-based perception (denoising and tracking) under noisy and uncertain conditions, achieving near-optimal performance (within 1 dB of theoretical limits).
- Extended models to 3D and optimized inference for low-latency execution on consumer-grade GPUs under hardware constraints.

R&D Apprentice - Thales DMS *Sophia Antipolis (FR) - 2021-2022*

- Prototyped end-to-end ML pipelines, including data preprocessing, feature extraction, and experimental evaluation in collaboration with engineering teams.

Education

PhD CIFRE, Université Côte d'Azur & Thales DMS *2022-2026*

- Gradient-flow analysis of lightweight CNNs; links between simulator physics and ROC/interpretability.

Master in Mathematical Engineering, Université Côte d'Azur *2022, with honors*

BSc in Applied Mathematics (MASS), Université Côte d'Azur *2020, with honors*

Publications, Patents & Projects

Publications & Patents

Patent - 3D Denoising and Tracking *Oct 2025*

AntoNet: A Small Linear Contrast-Enhancing CNN for Pixel-Wise Detection
Signal Processing: Image Communication(under review) - Submitted Feb 2025
Invited after Top-5 ranking at IPTA 2024.

Selected Projects

Speech Impairment Detection App (2023)
Apple SEP-28k; spectrogram preprocessing; CNN/RNN;
Built reproducible data pipeline and on-device inference package.

Self-Hosted LLM Infrastructure (ongoing)
Ollama, llama.cpp, Docker, Tailscale
Designed and deployed a self-hosted LLM serving infrastructure.

Teaching, Languages & Interests

Teaching Polytech (UCA) - Labs

- **Data Valorization**
  Supervised learning, ROC/AUC
- **Big Data Technologies**
  SQL/Spark, Scala.

Interests

- Urbanism, History, Economics, Philosophy
- Piano, Swimming, Climbing
- Recreational Sailing (licensed skipper), Driving

Languages

French	Native
Italian	Native
English	Fluent