Francesco **Paissan**

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Experience

Research Intern   *Montreal*

MONTREAL INSTITUTE OF LEARNING ALGORITHMS (MILA)   *Sept. 2022 - Present*

- Research and development on scaling neural architectures on tiny devices, in particular for speech processing applications;
- Research on novel techniques for self-supervised learning in the EEG domain;
- **Derivables**: contributions to open-source toolkit SpeechBrain, 1 pre-print, 2 conference papers (under review), 1 journal paper (under review).

Research Fellow   *Trento, Italy*

E3DA UNIT - BRUNO KESSLER FOUNDATION   *Oct. 2018 - Present*

- Research in the fields of machine and deep learning for computational and energy constraint devices;
- Development of Smart Vision Sensors for on-chip pixel processing;
- **Derivables:** 4 conference papers, 3 journal papers, 9 papers in international workshops, 1 pre-print.

Scientific collaborator / Member   *Rome, remotely*

LEGEND EXPERIMENT - NATIONAL INSTITUTE FOR NUCLEAR PHYSICS   *Jan. 2021 - Dec. 2023*

- Development firmware for amplifier card for SiPM read-out in the liquid argon veto;
- Design of ML-based trigger logic for real-time rejection of muon-induced scintillation in 40Ar;
- **Derivables:** 1 journal paper, 1 conference paper, internal notes for collaborators, experiment's slow control.

Software developer   *Partially remote*

ROMA TRE UNIVERSITY, CO-FUNDED BY ITALIAN SPACE AGENCY (ASI)   *Jan. 2022 - Apr. 2022*

- Development of data acquisition systems for a project of the Italian Space Agency (ASI).

Education

University of Trento   *Trento*

B.S. IN COMPUTER ENGINEERING   *Sept. 2023 - Current*

International Summer School for Young Physicists (ISSYP)   *Ontario, Canada*

PERIMETER INSTITUTE   *2018*

Representative publications

See scholar (link) for a complete list of accepted publications.

F. PAISSAN, M. RAVANELLI, C. SUBAKAN, "*Listenable Maps for Audio Classifiers*"   *2024*

F. PAISSAN, E. FARELLA, "*tinyCLAP: Distilling Constrastive Language-Audio Pretrained Models*" *2024*

A. ANCILOTTO*, F. PAISSAN* E. FARELLA, "*XiNet: Efficient Neural Networks for tinyML* "   *2023*

F. PAISSAN*, A. ANCILOTTO*, E. FARELLA, "*PhiNets: a scalable backbone for low-power AI at the edge*" *2021*

Academic activities

2024	**Workshop,** Co-organizer of the Explainable AI for Speech and Audio workshop		*ICASSP*
2024	**Lecture,** "Efficient neural network design and beyond" (part of the doctoral course)		*UniPD*
2023	**Seminar,** "tinyML: Designing Efficient Neural Archictures and Scaling Strategies for Edge Computing"		*tinyML Foundation*
2023	**Seminar,** "tinyML: neural networks design principles, scaling strategies and beyond"		*University of Padua*
2023	**Tutorial,** "Hands-on tinyML for IoT, bringing intelligence to the edge"		*IEEE WFIoT*
2022	**Seminar,** "Emerging opportunities of machine learning in physics"		*INFN Roma3*
2022	**Task coordinator,** DCASE "Low-Complexity Acoustic Scene Classification" task		
2018-	**Reviewer,** journals and conferences in ML, bio-signal processing and embedded systems		

Skills

Scientific computing	Python, Mathematica, MATLAB, R (beginner)
AI/ML frameworks	PyTorch, TensorFlow, Keras, Scikit-learn, Speechbrain
Programming	C/C++, (Embedded) C, MongoDB, Dart, Flutter, ROS, Git, GPIB protocol
Embedded platforms	ARM Cortex series, Beaglebone, Raspberry Pi, ASUS Tinkerboard, Arduino