PHILIPPE *BICH*

+39 3487861092 ◇ Turin, IT
Mail: philippe.bich@polito.it ◇ Linkedin: philippebich ◇ My webpage: philippebich.github.io

EDUCATION

PhD in Artificial Intelligence, Politecnico di Torino — Expected 2024

- My research focuses on the **pruning/quantization of large Deep Neural Networks** (e.g., LLMs) to enable their deployment on resource-constrained platforms, as well as on low-power AI using event-based cameras.
- Published papers at top-tier conferences, including **CVPR** and **ICRA** and served as a reviewer for esteemed journals such as TPAMI, T-RO.
- **Invited speaker** at the EMEA 2024 Innovation Forum (now Edge AI Foundation), presenting on Vision Transformer compression to a distinguished audience of industry leaders.

Master's Degree in Mechatronics Engineering, Politecnico di Torino — 2018-2020

- Graduated with highest honors (110/110 cum laude), ranking among the top 5% of students.

Bachelor's Degree in Computer Engineering (109/110), Politecnico di Torino — 2015 - 2018

SKILLS

Programming Languages	Python, C, C++ (proven experience with CUDA kernels github.com/mamtorch)
Libraries	Pytorch, Tensorflow, TensorRT, CUDA
Languages	Italian (native), English (C1), French (C1)

EXPERIENCE

Machine Learning Research Internship — Oct 2022 - Mar 2023
European Space Agency (ESA) — *(Remote)*

- Designed low-latency deep neural networks for anomaly detection on radiation-resistant hardware, optimized for deployment on up to 560 active geostationary satellites.
- Achieved a 90% reduction in memory usage and a 40% improvement in inference speed over prior neural anomaly detection methods by using a novel pruning technique.

Visiting Researcher — Sep 2020 - Mar 2023
Boston University Robotics Lab — *Boston, MA*

- Developed a lightweight algorithm for *robotic visual navigation* in unknown environments that relies solely on the output of a monocular camera.
- This work has led to a publication at the Top-1 Robotics Conference (ICRA)

RELEVANT PUBLICATIONS

- *A Multiply-And-Max/min Neuron Paradigm for Aggressively Prunable Deep Neural Networks* (2024) Under minor revision: IEEE Transactions on Neural Networks and Learning Systems (IEEE TNNLS). Preprint here.
- *Optimizing Vision Transformers: Leveraging Max and Min Operations for Efficient Pruning* (2024) In: IEEE International Conference on Artificial Intelligence Circuits and Systems (AICAS)
- *PEDRo: an Event-based Dataset for Person Detection in Robotics* (2023) In: IEEE/CVF Computer Vision and Pattern Recognition Conference (CVPR) Workshop. Dataset on GitHub with more than 600 downloads.
- *Visual Navigation Using Sparse Optical Flow and Time-to-Transit* (2022) In: IEEE International Conference on Robotics and Automation (ICRA)
- Full list on my Google Scholar profile, including a CVPR paper as a finalist in the 2024 CVPR Event-Based Eye Tracking Challenge.