



# Simone Disabato

PhD Student

✉ Italy

@ simone.disabato@polimi.it

## About me

I was born near Verbania, a city on the Italian lake Maggiore. My main passions are swimming (all styles, listlessly backstroke) and cycling up and down the mountains surrounding Verbania. I also enjoy making real projects with electronic components (e.g. starting with Arduino), programming almost everything, and cooking.

## Skills

Flask-based WebApp

Arduino and Embedded Systems

C and Java

PyTorch-Numpy-Pandas

Python

## Languages

English

Italian

## Research Interests

The main goal of the research is to match two apparently totally different worlds, the deep learning (and the machine learning in general) and the memory and energy constrained cyber-physical systems. The deep learning techniques are indeed characterized by huge requirements in terms of memory and computation, limiting their execution on (energy-hungry) high-performance units. On the other hand, the strict real-time constraints many cyber-physical systems impose do not allow to send the data acquired by their sensors to high-performance units and wait back a decision (that can be seen as a command to an actuator) since the available bandwidth might be limited or intermittent. Moreover, the environment in which the cyber-physical systems operate in cannot be assumed as stationary, an hypothesis often implicitly taken behind machine learning algorithms. Hence, the deep learning techniques have to be rethought in order to be executed on these non-stationary and constrained systems, allowing to equip them with intelligent mechanisms such as intelligent fault or environmental changes detections. Real application scenarios include target recognition in video-surveillance or industrial product quality evaluation, some of these developed in collaboration with Italian companies.

## Education

2015-2017	M.Sc. magna cum laude Computer Science and Engineering.	Politecnico di Milano
2012-2015	B.Sc. Ingegneria Informatica.	Politecnico di Milano
2007-2012	High school Scientifico-Tecnologico.	IIS L. Cobianchi

## Positions

since 2018	Ph.D. student in Information Technology. <i>Intelligent Cyber-Physical Systems/Adaptive Deep Learning Solutions.</i>	Politecnico di Milano
2017-2018	Research Assistant. Study and implementation of deep learning solutions for embedded systems and/or of adaptive deep learning solutions.	Politecnico di Milano

## Teaching

since 2019	Computer Science Teaching Assistant. Bachelor course in Biomedical Engineering.	Politecnico di Milano
since 2018	Computer Science Teaching Assistant. Bachelor course in Ingegneria della Produzione Industriale.	Politecnico di Milano

## Selected Publications

2020 Simone Disabato and Manuel Roveri. Incremental On-Device Tiny Machine Learning. In Proceedings of the 2nd International Workshop on Challenges in Artificial Intelligence and Machine Learning for Internet of Things. 2020, pp. 7-13. DOI: 10.1145/3417313.3429378

2020 J. J. Valdés, L. Nikolić, S. Disabato and M. Roveri. A Computational Intelligence Characterization of Solar Magnetograms. In 2020 International Joint Conference on Neural Networks (IJCNN), Glasgow, United Kingdom, 2020, DOI: 10.1109/IJCNN48605.2020.9206596.

2019 Simone Disabato and Manuel Roveri, Learning Convolutional Neural Networks in presence of Concept Drift. In 2019 International Joint Conference on Neural Networks (IJCNN), Budapest, Hungary, 2019, DOI: 10.1109/IJCNN.2019.8851731.

2018 Simone Disabato and Manuel Roveri. Reducing the Computation Load of Convolutional Neural Networks through Gate Classification. In 2018 International Joint Conference on Neural Networks (IJCNN), Rio de Janeiro, 2018, pp. 1-8. DOI: 10.1109/IJCNN.2018.8489276

2018 Cesare Alippi, Simone Disabato, and Manuel Roveri. Moving convolutional neural networks to embedded systems: the alexnet and VGG-16 case. In Proceedings of the 17th ACM/IEEE International Conference on Information Processing in Sensor Networks (IPSN '18), 212-223. DOI: 10.1109/IPSN.2018.00049