

# Pavan Massimo

Milano (MI) - Italy

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## Personal Profile

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I am a Ph.D. student in Information Technology at Politecnico di Milano. My current research activity addresses algorithms for Tiny Machine Learning and the development of on-device learning solutions for embedded and Internet of things devices. Other research interests comprise Learning in non-stationary environments and Robotics.

## Education

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### Politecnico di Milano

PhD in Information Technology

Milano, Italy

Nov 2021 - Current (est. Nov 2024)

- Thesis Title (prov.): **“On-device learning and inference for effective and efficient TinyML”**
- Advisor: Prof. M. Roveri, Politecnico di Milano, Milano, Italy
- Scholarship funded by Truesense s.r.l.

### Politecnico di Milano

MSc in Computer Science and Engineering

Milano, Italy

Oct 2019 - Oct 2021

- Thesis Title: **“Tiny Machine Learning for UWB-radar based subject recognition in cars”**
- Advisor: Prof. M. Roveri, Politecnico di Milano, Milano, Italy - Co-advisor Eng. A. Caltabiano, Truesense s.r.l.
- Grade: 108/110
- Merit scholarship from Politecnico di Milano, awarded to 16 students among all the ones in the 1st year of any M. degree

## Publications

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### TinyML for UWB-radar based presence detection

The International Joint Conference on Neural Networks (IJCNN) - 2022

M. Pavan, A. Caltabiano, M. Roveri

Padova, Italy

### On-device subject recognition in UWB-radar data with Tiny Machine Learning

The PhD Workshop on Cyber-Physical Systems (CPSW) - 2022

M. Pavan, A. Caltabiano, M. Roveri

Pula (CA), Italy

- Winner of the **Best Poster Award** at the workshop

### TyBox: an automatic design and code-generation toolbox for TinyML incremental ondevice learning

ACM Transactions on Embedded Computing Systems - 2023

M. Pavan, E. Ostrovan, A.

Caltabiano, M. Roveri

### Unveiling the Potential of Tiny Machine Learning for Enhanced People Counting in UWB Radar Data

European Conference on Machine Learning (ECML PKDD) - 2023

M. Pavan, L. González Navarro, A.

Caltabiano, M. Roveri

Turin, Italy

## Research

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### Participant to the “Become an Olympic in Sports Analytics” Summer School

University of Antwerp

Antwerp, Belgium

Sept 2022

- Winner of the Hackaton organized by the summer school with the project “SCANs: Speed Climbing Analysis Software”

### Participant to the “Cyber Physical System” Summer School

University of Sassari

Pula (CA), Italy

Sept 2022

### Co-advisor of 7 MSc Thesis, of which:

- 2 in collaboration with Truesense s.r.l.
- 1 in collaboration with Infineon Technologies
- 1 in collaboration with Fluid-o-Tech s.r.l. and STMicroelectronics

### Oral Presenter

- “Is privacy the next big thing in TinyML?” at The 20th International Conference of the Italian Association for Artificial Intelligence AIxIA - 2021
- “TinyML for UWB-radar based presence detection” at The International Joint Conference on Neural Networks (IJCNN) - 2022
- “On-device subject recognition in UWB-radar data with Tiny Machine Learnin” at The PhD Workshop on Cyber-Physical Systems (CPSW) - 2022
- “Privacy e personalizzazione: conciliare valori etici ed efficacia delle soluzioni IoT e ML in ambito medico” at Garante della privacy, Rome - 2023

### Chair Session Presenter

- Chair Presenter for the session on “Object-detection, Recognition and Tracking II” at The International Joint Conference on Neural Networks (IJCNN) 2022

## Reviewer for journals and conferences

- Reviewer for the IEEE Transactions on Artificial Intelligence
- Reviewer for the IEEE Transactions on Emerging Topics in Computational Intelligence
- Reviewer for Neural Networks, Elsevier
- Reviewer for the Second International Conference on AI-ML Systems (2022, 2023)
- Reviewer for the IEEE Transactions on Very Large Systems

## Teaching

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### Teaching Assistant for the course “Hardware Architectures for Embedded and Edge AI”

MSc in Computer Science and Engineering - Politecnico di Milano

- Responsible for the exercise and laboratory sessions

Milano, Italy

Feb 2023 - Jun 2023

### Teacher for the course “Microcontrollers 2”

Alta Formazione Professionale project - Digital Manufacturing Designer - CFP G. Veronesi

- Responsible for the lectures and for the laboratory sessions

Rovereto (TN), Italy

Nov 2022 - Dec 2022

### Teaching Assistant for the course “informatica ed elementi di informatica medica” (elements of computer science for biomedical engineers)

BSc in Biomedical Engineering - Politecnico di Milano

- Responsible for the laboratory sessions

Milano, Italy

Feb 2022 - Jun 2022

### Invited Speaker for the course “Embedded and Edge AI”

PhD in Information Technology - Politecnico di Milano

Milano, Italy

Jan 2022

### Teaching Assistant for the course “Microcontrollers 1”

Alta Formazione Professionale project - Digital Manufacturing Designer - CFP G. Veronesi

- Responsible for the laboratory sessions

Rovereto (TN), Italy

Nov 2021 - Dec 2021

## Other Experiences

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### Collaborator for the project “Cognitive activities development for human-robot interaction for elderly people”

I3Lab - Politecnico di Milano

- Responsible for the adaptation of the framework HARMONI developed by I3lab so that it could work on the robotic platform MISTY robot
- Responsible for the design of human-robot interaction activities for elderly people with Cognitive Disability

Milano, Italy

Feb 2021 - Sept 2021

### Voice actor for the animated short film “Coralli”

IULM university

- Voice actor of one of the main character of this animated short film about disability and integration, developed under the direction of CALD (Coordinamento Atenei Lombardi per la disabilità)
- Presented at Imaginaria 2023 - Festival Internazionale del Cinema d'Animazione d'Autore

Milano, Italy

Jan 2023

## Languages

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**English**    Fluent - TOEIC: 975/990

**Italian**    Native language

## Hobbies

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**Literature - Climbing - Cinema - Tabletop games**

Autorizzo il trattamento di questi dati ai sensi della normativa vigente (675/96 e succ. modificazioni e integrazioni).