



Luigi Capogrosso

PH.D. CANDIDATE IN ARTIFICIAL INTELLIGENCE

Via Dolomiti 4, Pergine Valsugana, 38057, Trento, Italy,

☎ (+39) 338 941 3284 | ✉ luigi.capogrosso@univr.it | 🏠 www.capogrosso.eu | 🎓 Luigi Capogrosso

Education

Ph.D. in Artificial Intelligence

Verona, Italy

POLYTECHNIC OF TURIN, IN COLLABORATION WITH THE UNIVERSITY OF VERONA

Nov. 2021 - Nov. 2024

- My research interests cover the broad area of deep learning, and the main topics I am currently working on can be grouped into the classes of efficient deep learning and representation learning.

Ph.D. Visiting Scholar

Lisbon, Portugal

INSTITUTO SUPERIOR TÉCNICO

Mar. 2024 - Sep. 2024

- I had the privilege of being a visiting scholar at the Pattern Recognition and Automatic Learning lab, headed by Prof. Mário A. T. Figueiredo, where I worked on relative representation and grokking in deep neural networks.

M.Sc. in Computer Engineering for Robotics and Smart Industry

Verona, Italy

UNIVERSITY OF VERONA

2019 - 2021

- Grade: 110/110 Cum Laude.
- Thesis title: Embedded Deep Learning for Computer Vision: A Case Study on Object Tracking.

B.Sc. in Computer Science

Verona, Italy

UNIVERSITY OF VERONA

2016 - 2019

- Thesis title: Linux Kernel – Organization, Structures and Process Management.

Research Experiences

Research Fellow

Verona, Italy

UNIVERSITY OF VERONA - DEPARTMENT OF ENGINEERING FOR INNOVATION MEDICINE

Dec. 2024 - Jul. 2025

- Title: "Sustainability: Tools and Models for Innovation Towards Carbon Neutrality". FSE Project Code: 1001-0001-231- 2024 (DGR No. 231 of 13/03/2024). Contributed to the development and implementation of innovative strategies for achieving carbon neutrality.

Research Assistant

Verona, Italy

HUMATICS | SYS-DAT GROUP

Jan. 2021 - Aug. 2021

- Deep learning models are often computationally expensive, hindering their use in resource-constrained edge systems. During this period, my work was focused on implementing pruning and quantization optimization techniques on company confidential deep learning models.

Research Fellow

San Giovanni Lupatoto, Italy

EDALAB S.R.L.

Oct. 2019 - Dec. 2021

- Communication protocols are the foundation of Internet of Things (IoT) applications. During this period, my work was focused on implementing the Modbus, OPC-UA, and MQTT protocols inside the company's BOX-IO embedded system.

Teaching Experiences

Teaching Assistant

Verona, Italy

UNIVERSITY OF VERONA

2020 - 2024

- Course "Topics on Computer Architecture and Operating Systems" of the Bachelor's degree in Computer Science at the University of Verona.
- Course "Systems Design Laboratory (2023/2024)" of the Master's degree in Computer Engineering for Robotics and Smart Industry.
- Course "Machine Learning & Artificial Intelligence (2022/2023)" of the Master's degree in Computer Engineering for Robotics and Smart Industry.
- Course "Computer Vision & Deep Learning (2022/2023)" of the Master's degree in Artificial Intelligence.
- Course "Signal and Image Processing (2022/2023)" of the Bachelor's degree in Computer Science.
- Course "Topics of Operating Systems and Networks (2020/2021)" of the Bachelor's degree in Bioinformatics.
- Course "Network Programming and Security (2020/2021)" of the Bachelor's degree in Computer Science.
- Course "Programming I (2020/2021)" of the Bachelor's degree in Computer Science.

Professional Experiences

Marie Curie High School

HIGH SCHOOL PROFESSOR

- Teacher of Computer Science and Network Design courses.

Pergine Valsugana, Italy

Sept. 2021 - Oct. 2021

Digital Restaurant s.r.l.

JUNIOR SOFTWARE DEVELOPER

- Developed an AI-powered Android application for the restaurant industry.

Verona, Italy

Jun. 2019 - Sept. 2019

Eurogest s.r.l.

JUNIOR SOFTWARE DEVELOPER

- Worked as one of the developers and analysts of the Infojuice company's project.

Bolzano, Italy

Jun. 2016 - Dec. 2016

Reviewer Experiences

JOURNALS

- 2023 - Present International Journal of Computer Vision, Springer Netherlands.
- 2023 - Present IEEE Internet of Things Journal, IEEE Inc.
- 2023 - Present Future Generation Computer Systems, Elsevier B.V.
- 2022 - Present Pattern Recognition, Elsevier Ltd.

CONFERENCES

- 2024 - Present Computer Vision and Pattern Recognition Conference (CVPR), CVF/IEEE Inc.
- 2024 European Conference on Computer Vision (ECCV), Springer.
- 2023 - Present International Conference on Learning Representations (ICLR), OpenReview.
- 2023 - Present Design, Automation and Test in Europe Conference (DATE), IEEE Inc.

Committees

- 2024 Program Committee Member, Unifying Representations in Neural Models Workshop at NeurIPS. Vancouver
- 2024 Program Committee Member, International Workshop on Fashion AI at ECCV. Milan

Honors & Awards

- 2023 Young Entrepreneur Prize, Premio Nazionale per l'Innovazione. Milan, Italy
- 2022 Honorable Mention, ICCAD 2022 ACM/IEEE TinyML Design Contest. San Diego, U.S.A
- 2016 - 2021 Academic Student Excellence Grant, University of Verona. Verona, Italy

Personal Qualities & Interests

- Scientific interests Efficient Deep Learning, Representation Learning, Multi-Task Learning, Industry 4.0, IoT, Embedded Systems.
- Personal traits Ambitious, hard-working, practical, eager to learn new skills, and highly focused on goals.
- Programming Python, PyTorch, TensorFlow, C, C++.
- Languages Italian, English.

Selected Publications

Human-Centered Digital Twin for Industry 5.0

- F BIONDANI, L CAPOGROSSO, N DALL'ORA, E FRACCAROLI, M CRISTANI, F FUMMI 2025
- Design, Automation and Test in Europe Conference (DATE).

LO-SC: Local-only Split Computing for Accurate Deep Learning on Edge Devices

- L CAPOGROSSO, E FRACCAROLI, M CRISTANI, F FUMMI, S CHAKRABORTY 2025
- International Conference on VLSI Design (VLSID).

SITUATE: Indoor Human Trajectory Prediction through Geometric Features and Self-Supervised Vision Representation

- L CAPOGROSSO, A TOIARI, A AVOGARO, U KHAN, A JIVOJI, F FUMMI, M CRISTANI 2024
- International Conference on Pattern Recognition (ICPR).

Learning-Enabled CPS for Edge-Cloud Computing

L CAPOGROSSO, S XU, E FRACCAROLI, M CRISTANI, F FUMMI, S CHAKRABORTY

2024

- International Symposium on Industrial Embedded Systems (SIES).

Leveraging Latent Diffusion Models for Training-Free In-Distribution Data Augmentation for Surface Defect Detection

F GIRELLA, Z LIU, F FUMMI, F SETTI, M CRISTANI, L CAPOGROSSO

2024

- International Conference on Content-based Multimedia Indexing (CBMI).

MTL-Split: Multi-Task Learning for Edge Devices using Split Computing

L CAPOGROSSO, E FRACCAROLI, S CHAKRABORTY, F FUMMI, M CRISTANI

2024

- Design Automation Conference (DAC).

A Machine Learning-oriented Survey on Tiny Machine Learning

L CAPOGROSSO, F CUNICO, DS CHENG, F FUMMI, M CRISTANI

2024

- IEEE Access.

Diffusion-based Image Generation for In-distribution Data Augmentation in Surface Defect Detection

L CAPOGROSSO, F GIRELLA, F TAIOLI, M DALLA CHIARA, M AQEEL, F FUMMI, F SETTI, M CRISTANI

2024

- International Conference on Computer Vision Theory and Applications (VISAPP).

Disentangled Latent Spaces Facilitate Data-Driven Auxiliary Learning

G SKENDERI, L CAPOGROSSO, A TOIARI, M DENITTO, F FUMMI, S MELZI, M CRISTANI

2023

- Currently under review.

Split-Et-Impera: A Framework for the Design of Distributed Deep Learning Applications

L CAPOGROSSO, F CUNICO, M LORA, M CRISTANI, F FUMMI, D QUAGLIA

2023

- Design and Diagnostics of Electronic Circuits and Systems (DDECS).

HermesBDD: A Multi-Core and Multi-Platform Binary Decision Diagram Package

L CAPOGROSSO, L GERETTI, M CRISTANI, F FUMMI, T VILLA

2023

- Design and Diagnostics of Electronic Circuits and Systems (DDECS).

I-SPLIT: Deep Network Interpretability for Split Computing

F CUNICO, L CAPOGROSSO, F SETTI, D CARRA, F FUMMI, M CRISTANI

2022

- International Conference on Pattern Recognition (ICPR).

Presentations

Presenter for the International Centre for Theoretical Physics (ICTP)

[Trieste, Italy](#)

WORKSHOP ON MACHINE LEARNING ON LOW-POWER DEVICES: APPLICATIONS AND ADVANCED TOPICS

2024

- Presentation title: "A Machine Learning-oriented overview on Tiny Machine Learning: Theory, Methods and Applications".

Presenter for the Department of Computer Science of the University of Verona

[Verona, Italy](#)

HOW TO LEVERAGE ARTIFICIAL INTELLIGENCE TO GROW YOUR BUSINESS: THE HUMATICS SYS-DAT GROUP WORKSHOP

2023

- Presentation title: "Enabling Machine Learning Systems in Industry 4.0".

Presenter for the Department of Engineering for Innovation Medicine of the University of Verona

[Verona, Italy](#)

A HOLISTIC APPROACH TO COMPUTER ENGINEERING FOR INDUSTRY 4.0 WORKSHOP

2023

- Presentation title: "TinyML: how to fit heavy networks almost everywhere".

Extracurricular Activities

Executive Committee of the Associazione Italiana Arbitri

[Trento](#)

MEMBER

[Jan. 2021 - Present](#)

Youth Commission of the Municipality of Pergine Valsugana

[Pergine Valsugana](#)

MEMBER

[Jan. 2021 - Present](#)

Culture Commission of the Municipality of Pergine Valsugana

[Pergine Valsugana](#)

MEMBER

[Nov. 2020 - Present](#)