Luigi **Capogrosso**

Ph.D. in Artificial Intelligence

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Education

Ph.D. in Artificial Intelligence (*Cum Laude*)   *Verona, Italy*
Polytechnic of Turin, in collaboration with the University of Verona   *Nov. 2021 - Nov. 2024*
- Thesis title: "Learning-Based Methods for Enabling On-Edge, Accurate, Sustainable, and Human-Centered Intelligent Manufacturing".

M.Sc. in Computer Engineering for Robotics and Smart Industry   *Verona, Italy*
University of Verona   *2019 - 2021*
- 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 - Present*
- Grant title: "Sustainability: Tools and Models for Innovation Towards Carbon Neutrality". FSE Project Code: 1001-0001-231- 2024 (DGR No. 231 of 13/03/2024). Research and development 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 - 2025*
- Course "Topics on Computer Architecture and Operating Systems (2024/2025)" of the Bachelor's degree in Computer Science.
- Course "Hardware Components Design on FPGA (2023/2025)" of the Bachelor's degree in Computer Science.
- 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.

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

Committees

2025	**Area Chair**, 23rd International Conference on Image Analysis and Processing (ICIAP).	*Rome, Italy*
2025	**Publicity Chair**, 3rd International Conference on Frontiers of Artificial Intelligence (FAIEMA).	*Stavanger, Norway*
2025	**Program Committee**, International Conference on Omni-Layer Intelligent Systems (COINS).	*Madison, U.S.A.*
2024	**Program Committee**, Unifying Representations in Neural Models Workshop (UniReps) at NeurIPS.	*Vancouver, Canada*

Honors & Awards

2025	**Outstanding Reviewer**, IEEE/CVF Computer Vision and Pattern Recognition Conference (CVPR).	*Nashville, U.S.A*
2022	**Honorable Mention**, ACM/IEEE ICCAD 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, C, C++.
Languages	Italian, English.

Selected Publications

KairosAD: A SAM-Based Model for Industrial Anomaly Detection on Embedded Devices

U Khan, F Fummi, **L Capogrosso**   *2025*

- International Conference on Image Analysis and Processing (ICIAP).

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).

Disentangled Latent Spaces Facilitate Data-Driven Auxiliary Learning

G Skenderi, **L Capogrosso**, A Toaiari, M Denitto, F Fummi, S Melzi, M Cristani   *2025*

- Currently under review.

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.

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).

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).

Extracurricular Activities

Executive Committee of the Associazione Italiana Arbitri   *Trento*

Member   *Jan. 2021 - Present*