Luigi **Capogrosso**

Ph.D. Student in Artificial Intelligence

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Education

Ph.D. in Artificial Intelligence
Verona, Italy

POLYTECHNIC OF TURIN, IN COLLABORATION WITH THE UNIVERSITY OF VERONA
2021 - Present

- 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 Experience

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 Experience

Teaching Assistant
Verona, Italy

UNIVERSITY OF VERONA
2020 - 2024

- 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 "Elements 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

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.

2024	**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.

Committee

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

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

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.

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 Activity

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*