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   *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 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 "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 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.

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.

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

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

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.

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*