

# Luca Barsellotti

PHD STUDENT IN COMPUTER VISION AT AIMAGELAB

Department of Engineering "Enzo Ferrari", University of Modena and Reggio Emilia

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I am a PhD Student at AlmageLab (University of Modena and Reggio Emilia) under the supervision of Prof. Rita Cucchiara. My main research area is Multimodal Learning in Computer Vision, with a focus on Open-Vocabulary Semantic Segmentation and Vision-Language Robot Navigation.

## Education

### PhD in Information and Communication Technologies

AIMAGELAB • UNIVERSITY OF MODENA AND REGGIO EMILIA

Modena, Italy

Oct. 2022 - Ongoing

- Research interests: Open-Vocabulary Semantic Segmentation, Vision-Language Robot Navigation
- Supervised by Prof. Rita Cucchiara

### MSc in Artificial Intelligence and Data Engineering

UNIVERSITY OF PISA

Pisa, Italy

Oct. 2019 - Feb. 2022

- Avg. Grade: 29.47/30 • Final Mark: 110/110 cum laude • Equivalent GPA: 4.0/4.0
- Thesis Title: "Design and implementation of a system for passive data acquisition and automatic classification of financial instruments based on Machine Learning algorithms"

### BSc in Computer Science Engineering

UNIVERSITY OF PISA

Pisa, Italy

Sep. 2016 - Oct. 2019

- Avg. Grade: 26.92/30 • Final Mark: 110/110 • Equivalent GPA: 3.5/4.0
- Thesis Title: "Reconstruction of a spectrogram using Context-Encoder architectures based on Convolutional Neural Networks"

## Publications

- [L. Barsellotti](#), R. Bigazzi, M. Cornia, L. Baraldi, R. Cucchiara  
**Personalized Instance-based Navigation Toward User-Specific Objects in Realistic Environments**  
in *Advances in Neural Information Processing Systems Datasets and Benchmarks (NeurIPS)*, 2024 NeurIPS 2024  
Vancouver, Canada
- D. Caffagni\*, F. Cocchi\*, [L. Barsellotti\\*](#), N. Moratelli\*, S. Sarto\*, L. Baraldi\*, L. Baraldi, M. Cornia, R. Cucchiara  
**The Revolution of Multimodal Large Language Models: A Survey**  
in *Findings of the Association for Computational Linguistics (ACL Findings)*, 2024 ACL Findings 2024  
Bangkok, Thailand
- [L. Barsellotti\\*](#), R. Amoroso\*, M. Cornia, L. Baraldi, R. Cucchiara  
**Training-Free Open-Vocabulary Segmentation with Offline Diffusion-Augmented Prototype Generation**  
in *Conference on Computer Vision and Pattern Recognition (CVPR)*, 2024 CVPR 2024  
Seattle, Washington
- [L. Barsellotti\\*](#), R. Amoroso\*, L. Baraldi, R. Cucchiara  
**FOSSIL: Free Open-Vocabulary Semantic Segmentation through Synthetic References Retrieval**  
in *Winter Conference on Application of Computer Vision (WACV)*, 2024 WACV 2024  
Waikoloa, Hawaii
- [L. Barsellotti](#), R. Amoroso, L. Baraldi, R. Cucchiara  
**Enhancing Open-Vocabulary Semantic Segmentation through Prototype Retrieval**  
in *International Conference on Image Analysis and Processing (ICIAP)*, 2023 ICIAP 2023  
Udine, Italy
- [L. Barsellotti](#), L. De Marinis, F. Cugini, F. Paolucci  
**FTG-Net: Hierarchical Flow-To-Traffic Graph Neural Network for DDoS Attack Detection**  
in *International Conference on High-Performance Switching and Routing (IEEE HPSR)*, 2023 HPSR 2023  
Albuquerque, NM
- [L. Barsellotti](#), F. Alhamed, J. J. Vegas Olmos, F. Paolucci, P. Castoldi, F. Cugini  
**Introducing Data Processing Units (DPU) at the Edge**  
in *International Conference on Computer Communications and Networks (ICCCN)*, 2022 ICCCN 2023  
Virtual

## Experience

### Research Fellow

CNIT PNTLAB • SCUOLA SUPERIORE SANT'ANNA

CNR Area, Pisa, Italy

Jan. 2022 - Oct. 2022

- Research interests: Deep Learning for resource-constrained SmartNICs, Network Traffic Analysis, Autonomous Driving Drones

### Machine Learning Engineer Intern

ION TRADING

Pisa, Italy

Sep. 2021 - Dec. 2021

- Machine Learning and Data Engineering for the classification of financial instruments

Skills

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|             |  |
|-------------|--|
| Libraries   | PyTorch, NumPy, OpenCV, Pandas                                     |
| Tools       | PyCharm, VSCode, Slurm, Git  |
| Programming | Python (advanced), C++, Java (basic)                               |
| Languages   | English (fluent), Italian (mother tongue), German, Spanish (basic) |

Activities

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TEACHING

Feb. 2024

Lecturer, *Deep Neural Network Architectures for Segmentation*, Intensive Master: AI and ML for Smart Factory

Remote

CERTIFICATES

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|-----------|--|---------------|
| Jul. 2024 | <b>International Computer Vision Summer School (ICVSS)</b> , presenting the paper<br><i>Training-Free Open-Vocabulary Segmentation with Offline Diffusion-Augmented Prototype Generation</i> | Scicli, Italy |
| Sep. 2023 | <b>ELLIS Summer School on Large-Scale AI</b> ,<br>presenting the project <i>Per-Object Distance Estimation: A Quantitative Comparison</i>  | Modena, Italy |
| Sep. 2023 | <b>International Summer School on Machine Vision (VISMAC)</b> ,  | Padova, Italy |
| Jul. 2022 | <b>Italian Qualification to Practice as Engineer</b> , University of Pisa  | Pisa, Italy   |
| May 2022  | <b>First Principles of Computer Vision</b> , Specialization<br>Modules: <i>Camera and Imaging</i> , <i>Features and Boundaries</i> , <i>3D Reconstruction</i> , <i>Visual Perception</i>     | Coursera      |
| Mar. 2022 | <b>NVIDIA DOCA Hackathon</b> , Participant   | Remote        |

REVIEWING

|             |   |
|-------------|---|
| Conferences | BMVC (2024), ECCV (2024), IROS (2024), ICIAP (2023)               |
| Journals    | Pattern Recognition (2024), TOMM (2023), AI Communications (2023) |