Matteo **Farina**

PH.D. STUDENT · UNIVERSITY OF TRENTO

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*Currently a 2nd-year Ph.D. Student, I am interested in **Vision-Language Models** and, particularly, in the intersection between model **generalization** and other subfields. Examples are pruning Vision-Language Models for suites of unknown downstream tasks or online adaptation to unseen test data. I am seeking an internship in Vision-Language Models, Machine/Deep Learning, or Computer Vision.*

Education

Ph.D. in Artificial Intelligence   *Trento, Italy*
UNIVERSITY OF TRENTO   *Nov. 2022 - Ongoing*
- Supervisor: **Elisa Ricci**.

M.Sc. in Artificial Intelligence Systems   *Trento, Italy*
UNIVERSITY OF TRENTO   *Sep. 2020 - Jul. 2022*
- Final Grade: 110/110 with honors. GPA: 4.00.
- Relevant Courses: Fundamentals of Artificial Intelligence, Machine & Deep Learning, Advanced Computer Vision.

B.Sc. in Information Engineering   *Trento, Italy*
UNIVERSITY OF TRENTO   *Sep. 2017 - Jul. 2020*
- Final Grade: 110/110. GPA: 3.64.
- Relevant Courses: Calculus I, Linear Algebra, Programming I (taught in C++), Physics, Signal Processing.

Honors & Awards

2023	**1st Prize Winner**, CVPL's "Alfonso Petrosino Prize" for the best Master Thesis of the a.y. 2021/2022.	*Anywhere, Italy*
2022	**1st Graduate Ever**, M.Sc. in Artificial Intelligence Systems @ UniTN. A nice article here.	*Trento, Italy*
2017-2022	**Scholarship**, Awarded by the "Opera Universitaria" of the city of Trento.	*Trento, Italy*

Publications

Frustratingly Easy Test-Time Adaptation of Vision-Language Models   *Under Review*

MATTEO FARINA, GIANNI FRANCHI, GIOVANNI IACCA, MASSIMILIANO MANCINI, ELISA RICCI.

Paper on arxiv.

MULTIFLOW: Shifting Towards Task-Agnostic Vision-Language Pruning   *Seattle, U.S.A.*

MATTEO FARINA, MASSIMILIANO MANCINI, ELIA CUNEGATTI, GAOWEN LIU, GIOVANNI IACCA, ELISA RICCI   *June 2024*

Computer Vision and Pattern Recognition (CVPR)

Understanding Sparse Neural Networks from their topology via Multipartite Graph Representations   *Accepted*

ELIA CUNEGATTI, MATTEO FARINA, DOINA BUCUR, GIOVANNI IACCA   *April 2024*

Transactions on Machine Learning Research (TMLR)

Quantum Multi-Model Fitting   *Vancouver, Canada*

MATTEO FARINA, LUCA MAGRI, WILLI MENAPACE, ELISA RICCI, VLADISLAV GOLYANIK, FEDERICA ARRIGONI   *June 2023*

Computer Vision and Pattern Recognition (CVPR - **Highlight**)

Work Experience

Teaching Assistant - Introduction to Machine Learning   *Trento, Italy*
UNIVERSITY OF TRENTO   *Feb. 2023 - Feb. 2024*
- Theoretical & Hands-on frontal classes with 3rd year B.Sc. Students.
- Topics: Introduction to Python, Learning Methodology, Feature Ranking and Selection, Basics of Neural Networks, Unsupervised Learning.
- The lab material I prepared is publicly available here.

Teaching Assistant - Computer Architectures

UNIVERSITY OF TRENTO

Trento, Italy

Feb. 2023 - Feb. 2024

- Assistance with exam preparation and surveillance.

Research Intern

UNIVERSITY OF TRENTO

Trento, Italy

Dec. 2021 - Oct. 2022

- Partnership with the Politecnico di Milano and the Max Planck Institut for Informatics.
- The final product of the internship was "Quantum Multi-Model Fitting", accepted as a highlight at CVPR 2023.

Software Engineer

BlueTensor s.r.l.

Trento, Italy

Aug. 2020 - Jan. 2022

- Deployed models for COVID-19 classification and segmentation (ultrasound images) to assist hospitals in the Trento Area.
- Implemented a Multi-Camera Multi-Object tracking system.
- Deployed an object detection model (TensorFlow Object Detection APIs) for defect detection in tomographic data.

Reviewer Service

2024	**European Conference on Computer Vision (ECCV)**
2024	**Green FOMO (ECCV Workshop)**
2023	**Computer Vision and Pattern Recognition (CVPR)**
2023-2024	**Computer Vision and Image Understanding (CVIU)**

Skills

RESEARCH

Personal	After working on Quantum Computer Vision, my research in the past year and a half has been centered on Vision-Language Models (CLIP, BLIP, XVLM) and the intersection between generalization and other fields. While working to understand how to prune VLMs while preserving generalization, I acquired expertise in unstructured model pruning. In my last work, I focused on the test-time generalization of Vision-Language Models, acquiring expertise in prompt learning, test-time adaptation, and their intersection.
Misc	During academic year 2022/2023, I supervised an M.Sc. student in the development of his master's thesis on fine-grained classification. Currently, I am supervising an M.Sc. student working on the compositional structure of CLIP's visual embeddings.

CODING

AI & ML	I am proficient in Python and use the PyTorch framework for daily research activities. For distributed settings, I commonly choose between PyTorch Lightning (Fabric module) and native torchrun according to the use case. I am accustomed to matplotlib and seaborn for data visualization. During my M.Sc. I developed several projects with Machine Learning and Computer Vision libraries, such as scikit-learn and OpenCV.
DevOps	In the past, I have deployed several Deep Learning models using Docker (mostly NVIDIA-Docker) and Apache or Nginx. My Docker knowledge is intermediate, it is basic for Apache and Nginx.

LANGUAGES

Native	**Italian**
Proficient	**English, Spanish**
Good	**German**

Summer/Winter Schools

2023	**ICVSS,** International Computer Vision Summer School	*Scicli, Italy*

Extracurricular Activity

School Representative

LICEO LINGUISTICO "VIRGILIO"

Mantova, Italy

Sep. 2016 - Jun. 2017

- Monthly organization of school assemblies dedicated to sharing ideas and thoughts between students and experts on socially relevant topics.