

# Marco Pegoraro

Ph.D. Student

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WebSite

Google Scholar

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## Research Profile

As a Ph.D. student at Sapienza University of Rome, I am part of the GLADIA research group led by Emanuele Rodolà. With a background in Computer Science and Engineering from the University of Verona (2021), I specialize in Geometric Deep Learning, Geometry Processing, and 3D spectral shape analysis. My research interest lies in exploring the intersection of geometry processing and graph learning, particularly emphasising utilizing spectral techniques in graph analysis. I am proud to have received recognition for my Master's thesis with the Best Italian Master Thesis in Computer Graphics (Matteo Dellepiane award) at the Italian Chapter of EuroGraphics (STAG). In March, I joined the research group of Alex Bronstein at Technion (Israel) to start a collaboration on geometry processing applied to vector quantile regression and geometric deep learning applied to aromatic compounds.

## Research Interests

- Geometry Processing, Spectral shape Analysis, Geometric Deep Learning.

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## List of Publications

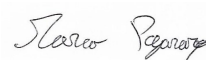
- **Marco Pegoraro**, Sanketh Vedula, Aviv A. Rosenberg, Irene Tallini, Emanuele Rodolà, Alex M. Bronstein, *Vector Quantile Regression on Manifolds*, ICML 2023 Workshop on New Frontiers in Learning, Control, and Dynamical Systems
- Sanketh Vedula, Irene Tallini, Aviv A. Rosenberg, **Marco Pegoraro**, Emanuele Rodolà, Yaniv Romano, Alex M. Bronstein, *Continuous Vector Quantile Regression*, ICML 2023 Workshop on New Frontiers in Learning, Control, and Dynamical Systems
- **Marco Pegoraro**, Clémentine Dominé, Emanuele Rodolà, Petar Veličković, Andreea Deac, *Geometric Epitope and Paratope Prediction*, Under Review
- **Marco Pegoraro**, Riccardo Marin, Arianna Rampini, Simone Melzi, Luca Cosmo, Emanuele Rodolà, *Spectral Maps for Learning on Subgraphs*, Under review
- **Marco Pegoraro**, Simone Melzi, Umberto Castellani, Riccardo Marin, Emanuele Rodolà, *Localized Shape Modelling with Global Coherence: An Inverse Spectral Approach*, Symposium of Geometry Processing - published in Computer Graphics Forum [impact factor: 2.363], 2022
- Ariel Caputo, Andrea Giachetti, Franca Giannini, Katia Lupinetti, Marina Monti, **Marco Pegoraro**, Andrea Ranieri, *SFINGE 3D: A novel benchmark for online detection and recognition of heterogeneous hand gestures from 3D fingers' trajectories*, Computers & Graphics [impact factor: 1.821], 2020

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## Education

- **Ph.D. in Computer Science** 1/10/2021 – present  
Advisor: Emanuele Rodolà  
Sapienza University of Rome, Italy – Computer Science department  
As a Ph.D. student, my research focuses on exploring the relationship between geometry processing and graph learning. My current research directions encompass:
  - Developing spectral representations for graphs and subgraphs to address alignment problems.
  - Analyzing biomolecular interactions from a geometric perspective.
  - Investigating the use of spectral structures to represent graphs.
- **Master's Degree in Computer Science and Engineering** 2019 – 2021  
Thesis: *Data-driven inverse spectral geometry: learning to generate shapes from multi spectra*  
Grade: 110/110 with honour  
University of Verona, Italy

Rome, July 3, 2023,



- **Bachelor Degree in Computer Science** 2016 – 2019  
Thesis: *Gesture recognition in augmented reality applications using neural networks*  
Grade: 110/110 with honour  
University of Verona, Italy
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## International Research Visits

- **Technion - Israel Institute of Technology** 03/2023 - 09/2023  
Research visit; supervisor: *Prof. Alex Bronstein.*
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## Teaching & Mentoring

- **Teaching assistant in Introduction to Algorithm** 03/2022 – 06/2022  
Sapienza University of Rome, Italy - Computer Science department
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## Professional Activities / Academic Service

- **Reviewer - Conferences**
    - ICML 2022
    - IJCAI 2022
    - NEURIPS NeuReps Workshop 2023
  - **Reviewer - Journals**
    - ACM computing surveys
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## Invited Talks and Seminars

- **HARNESSING SPECTRAL REPRESENTATIONS FOR SUBGRAPH ALIGNMENT** 3/11/2022  
scientific seminar at the Ca' Foscari University of Venice hosted by *Prof. Luca Cosmo*
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## Honors, Awards and Scholarships

- **"MOBILITÀ INTERNAZIONALE PHD 2022" grant for visiting period at Technion - Israel** 2022  
Sapienza University of Rome
  - **"Avvio alla Ricerca" grant for young researchers** 2022  
Sapienza University of Rome
  - **Matteo Dellepiane Award for best thesis in Computer Graphics** 2021  
at the Italian Chapter of Eurographics (STAG 2021)
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## Skills

**Technical specialties:** Software design and implementation, with(in) a team.  
Expert programming in MATLAB, Python, and libraries for Deep Learning and Data Science, such as PyTorch, PyTorch Geometric, Deep Graph Library, Tensorflow (1 and 2), Keras, Pandas, Scipy, and Scikit-learn.  
Good programming in C/C++ and Java. Knowledge of graphic tools such as Blender, Unity.  
Experience using Virtual Reality tools such as Oculus Rift, HoloLens, and ZedMini.

**Natural languages:** Italian (*mother tongue*), English (*professional proficiency*), French (*elementary proficiency*)

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