Scientific Seminars Series:
"Functional maps: A functional approach to the alignment of embeddings"

Prof Simone Melzi - University of Milano-Bicocca
Dr Filippo Maggioli - Pegaso University

May-June 2025

This series of seminars focuses on modern approaches to geometric data processing and shape analysis, with an emphasis on spectral methods and learning-based solutions. Beginning with an introduction to the fundamentals of geometric data and spectral geometry, the seminars will explore the challenges of shape matching and registration, particularly through the lens of the functional maps framework, a powerful paradigm that has transformed how correspondences between 3D shapes are estimated. Subsequent lectures will delve into deep functional maps and data-driven techniques that leverage modern machine learning architectures to enhance shape understanding and registration. Finally, broader applications of functional map-based methods in areas such as graph analysis and exploration of maps between embedding spaces highlight open problems and research directions in this evolving field.

Schedule:
- May 29: 14.00-18.00 (G0)
- May 30: 9.00-13.00 (G0)
- June 5: 9.00-13.00 (G0)
- June 6: 9.00-13.00 (online)
- June 27: 9.00-18.00 Hakaton (Colossus Lab)

Where: Room G0, building G, viale Regina Elena 295 and Colossus Lab, via Salaria 113

Simone Melzi is an Associate Professor at the University of Milano-Bicocca, in the Department of Informatics, Systems and Communication (DISCo).

He was a Post Doctoral researcher in Computer Science at the Sapienza University of Rome in the GLADIA group led by Emanuele Rodolà, at the École Polytechnique in the team of Prof. Maks Ovsjanikov and at the Università Degli Studi di Verona. He received his PhD in Computer Science at Università Degli Studi di Verona (2018) and graduated in math at the University of Milan "La Statale".

He received the Marie-Curie Individual Fellowships H2020-MSCA-IF-EF-ST-2019, the BE-FOR-ERC 2020 grant from the Sapienza University of Rome, the EG-Italy PhD thesis Award 2018 and the Eurographics Young Researcher Award 2023. He is a member of the Junior Fellows of Eurographics and a Scholar of the European Lab for Learning and Intelligent Systems (ELLIS). He works on geometry processing, 3D shape analysis and artificial intelligence.

Filippo Maggioli is a Tenured Assistant Professor at Pegaso University, in the Department of Information Science and Technology, and a member of the Research Center for Computer Vision and eXtended Reality.

Previously, he was a Postdoctoral Researcher at the University of Milano-Bicocca in the team of Prof. Simone Melzi, at Sapienza - University of Rome in the GLADIA group led by Prof. Emanuele Rodolà, and Research Intern at the King Abdullah University of Science and Technology under the supervision of Prof. Dominik L. Michels.

He obtained his M.Sc. degree in Computer Science in 2019 at Sapienza – University of Rome, where he also defended his Ph.D. thesis in 2023.

His research activity is in the fields of Computer Graphics and Computer Vision, with a particular focus on Geometry Processing, Computational Geometry, Shape Analysis, and Spectral Geometry. Other research interests also span the fields of Physical Simulations and Parallel Computing.