

UNIVERSITÀ DEGLI STUDI DI MILANO

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## [SIMONE MELZI] CURRICULUM VITAE

INFORMAZIONI PERSONALI (NON INSERIRE INDIRIZZO PRIVATO E TELEFONO FISSO O CELLULARE)

COGNOME	MELZI
NOME	SIMONE
DATA DI NASCITA	[23, Marzo, 1989]

## Research Interests

- Geometry Processing, Computer Graphics, Spectral Shape Analysis, Machine Learning and Computer Vision.

## Research Profile

I am a Post Doctoral researcher at École Polytechnique, in the team of Maks Ovsjanikov at the Laboratoire d'Informatique (LIX) in Paris (France). Previously, I was a Post Doctoral researcher at Università degli studi di Verona (Italy) from November 2017 to October 2019. I received my Ph.D. in Computer Science at Università degli studi di Verona (2018), and graduated in math at University of Milan "La Statale" (2013). I received the EG-Italy PhD thesis award (2018).

I work on geometry processing and 3D shape analysis, extending, applying and formulating signal processing techniques for (possibly high-dimensional) signals on surfaces. I published about 15 papers on this topic in top-tier venues and journals in computer vision and graphics (TOG, CGF, CAG, SIGGRAPH, ICCV, CVPR, EUROGRAPHICS, SGP).

I was a member of the "Matteo Dellepiane" Thesis Award committee organized by the Italian Chapter of the Eurographics association. I served as Volunteer Chair at 3DV 2018 and at SGP 2019. I organized a benchmark for computer graphics 3D Shape Retrieval Contest (SHREC2019). I served as reviewer for top conferences and journals (EUROGRAPHICS, BMVC, 3DV, TVCG and TOG). I maintain fruitful collaborations with many world leaders in this area (Ecole polytechnique, USI Lugano, Sapienza U Rome, University of Glasgow, Tel Aviv University, University College London (UCL) Technical University of Munich (TUM), Politecnico di Milan and "La Statale" University of Milan).

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## Academic Appointments

- **École Polytechnique, Paris, France** – Laboratoire d'Informatique (LIX) 1/11/2019 – present  
Post Doctoral researcher.
- **Università degli studi di Verona, Italy** – Computer Science department 1/11/2017 – 31/10/2019  
Post Doctoral researcher.
- **Università degli studi di Verona, Italy** – Computer Science department 16/06/2014 – 15/09/2014  
Research Fellow.
- **University of Milan "La Statale", Italy** – Math department December 2012 – June 2013  
University Tutor for Geometry Course.

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## Education

- **Politecnico di Milano, DEIB, Italy** 05/02/2019 - 01/03/2019  
Learning Sparse Representations for Image and Signal Modeling,  
Doctoral School (Prof. Giacomo Boracchi).
- **Università degli studi di Verona, Italy** – Computer Science department 01/11/2014 - 19/06/2018  
Ph.D in Computer Science.  
Thesis: *Local Geometry Processing for Deformations of Non-Rigid 3D Shapes*.  
Advisor: Prof. Umberto Castellani (Università degli studi di Verona).  
Examiners: Prof. Niloy Mitra (UCL), Prof. Marco Tarini (University of Milan "La Statale").  
Reviewers: Prof. Niloy Mitra (UCL), Prof. Bruno Levy (INRIA, Nancy).
- **Università degli studi di Verona, Italy** 19/05/2015 - 21/05/2015  
11th VIPS school: Partially Supervised Learning,  
Doctoral School (Prof. Marco Loog).
- **University of Milan "La Statale", Italy** 12/10/2011 - 25/09/2013  
Laurea Specialistica Degree (2 years degree, M.S. equivalent) in Math.  
Grade: 110/110 cum laude
- **University of Milan "La Statale", Italy** 01/08/2008 - 26/07/2011  
Laurea Degree (3 years degree, B.S. equivalent) in Math.  
Grade: 110/110 cum laude

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## Professional Activities / Academic Service

- **Member of the Matteo Dellepiane Thesis Award Committee** November 2019  
STAG 2019, Smart Tools and Applications in Graphics, organized by the Italian Chapter of the Eurographics association, Cagliari, Italy.

- **Volunteers Chair** July 2019  
SGP 2019, Symposium on Geometry Processing, *Milan, Italy*.
- **Lectures: Introduction to Spectral Graph Theory: from Fourier to 3D Meshes** December 2018  
Università degli studi di Verona, *Verona, Italy*.
- **Volunteers Chair** September 2018  
3DV 2018, International Conference on 3D Vision, *Verona, Italy*.
- **Trainee at ST Microelectronics** October 2013 – March 2014  
Advanced System Technology, STMicroelectronics, *Via Olivetti2 Agrate, Monza-Brianza, Italy*.
- **High School Remedial Course Teacher** June 2013 – July 2013  
IIS Niccolò Machiavelli, *Via Rivoltana, 93/B - 20096 Pioltello, Milan, Italy*.
- **Reviewer**  
- EUROGRAPHICS 2019.  
- BMVC 2018.  
- 3DV 2018.
- **Reviewer for International Journals**  
- Transactions on Visualization and Computer Graphics (TVCG).  
- Transactions on Graphics (TOG).  
- Pattern Recognition.

## Awards

- **MSCA Seal of Excellence.** 2019  
Seal of Excellence for the H2020-MSCA-IF-EF-ST-2019 proposal NON-LINFMAPS, score 92.20.  
(to be assigned)
- **EG-Italy Best PhD thesis award.** 2018  
The EG-Italy thesis award hosted by STAG 2018.

## International Collaborations and Research Visits

- **Politecnico di Milano (IT)** 2019 – present  
Research visit (July - October 2019); collaborator *Prof. Giacomo Boracchi*.
- **"La Statale" University of Milan (IT)** 2019 – present  
Research visit (July 2019); collaborator *Prof. Marco Tarini*.
- **"La Sapienza" University of Rome (IT)** 2018 – present  
Research visit (August 2018, June and August 2019); collaborator *Prof. Emanuele Rodolá*.
- **University College London (UK)** 2018 – 2019  
Research visit (June 2018); collaborator *Prof. Niloy Mitra*.
- **TUM, Technische Universität München (D)** 2017 – 2019  
Research visit (July 2017); collaborator *Prof. Federico Tombari*.
- **LIX, École Polytechnique (FR)** 2015 – present  
Research visit (September 2017, September 2018, April 2019, September 2019); collaborator *Prof. Maks Ovsjanikov*.
- **USI, University of Lugano (CH)** 2014 – 2019  
Research visit (January, September 2015; August 2016; January, February, September 2017, September 2018); collaborator *Prof. Michael Bronstein*.

## Invited Talks and Seminars

- **High frequencies in functional representation of 3D shapes** November 2019  
Politecnico di Milano; hosted by *G. Boracchi*.
- **CMH: Coordinates Manifold Harmonics for Functional Remeshing** June 2019  
"La Sapienza" University of Rome; hosted by *E. Rodolá*.

- *Matching Humans with Different Connectivity* May 2019  
SHREC 2019 at Eurographics Workshop 3D Object Retrieval 2019 (3DOR2019). Genova (Italy).
- *CMH: Coordinates Manifold Harmonics for Functional Remeshing* May 2019  
SHREC 2019 at Eurographics Workshop 3D Object Retrieval 2019 (3DOR2019). Genova (Italy).
- *CMH: Coordinates Manifold Harmonics for Functional Remeshing* April 2019  
LIX, École Polytechnique; hosted by M. Ovsjanikov.
- *Local Spectral Geometry Processing for Deformations of Non-Rigid 3D Shapes* October 2018  
STAG 2018, Smart Tools and Apps for Graphics - Eurographics Italian Chapter Conference. Brescia (Italy).
- *Indicators Basis for Functional Shape Analysis* October 2018  
STAG 2018, Smart Tools and Apps for Graphics - Eurographics Italian Chapter Conference. Brescia (Italy).
- *Localized Manifold Harmonics for Spectral Shape Analysis* April 2018  
Eurographics 2018, Delft (Netherlands).
- *Localized Manifold Harmonics for Spectral Shape Analysis* July 2017  
TUM Informatik-Kolloquium; hosted by Prof. D. Cremers.
- *Local Spectral Geometry Processing for Deformations of Non-Rigid 3D Shapes, part 3/3* June 2017  
AST STMICROELECTRONICS; hosted by P. Fragneto.
- *Shape Analysis with Anisotropic Windowed Fourier Transform* October 2016  
Fourth International Conference on 3D Vision, (3DV) 2016. Stanford, California (USA).
- *Features Selection via Eigenvector Centrality* September 2016  
NFMCP Workshops, PKDD/ECML 2016. Riva del Garda (Italy).
- *Local Spectral Geometry Processing for Deformations of Non-Rigid 3D Shapes, part 2/3* June 2016  
AST STMICROELECTRONICS; hosted by P. Fragneto.
- *Local Spectral Geometry Processing for Deformations of Non-Rigid 3D Shapes, part 1/3* June 2015  
AST STMICROELECTRONICS; hosted by P. Fragneto.

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## Participation in Research projects

- *SPECGEO - Spectral geometric methods in practice.* 2019 - present  
Funding: ERC Starting Grant (Horizon2020).  
Role: researcher; Coordinator: Prof. E. Rodolá ("La Sapienza" University of Rome).
- *EXPROTEA - Exploring Relations in Structured Data with Functional Maps.* 2018 - present  
Funding: ERC Starting Grant (Horizon2020).  
Role: researcher; Coordinator: Prof. M. Ovsjanikov (École Polytechnique).

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## Supervising and mentoring activities

- *Andrea Schillaci, Ph.D.* 2019  
Politecnico di Milano, Dipartimento di Elettronica, Informazione e Bioingegneria (DEIB) and Dipartimento di Scienze e Tecnologie Aerospaziali (DAER).  
In the role of external supervisor (not as formal advisor).
- *Riccardo Marin, Ph.D.* 2017-2020  
Università degli studi di Verona, Computer Science department.  
In the role of internal supervisor (not as formal advisor).
- *Edoardo Gazzaniga, M. Sc. Thesis* 2019  
Politecnico di Milano, Dipartimento di Elettronica, Informazione e Bioingegneria (DEIB) and Dipartimento di Scienze e Tecnologie Aerospaziali (DAER).  
In the role of co-advisor for the thesis.
- *Andrea Filippozzi, M. Sc. Thesis* 2019  
Politecnico di Milano, Dipartimento di Elettronica, Informazione e Bioingegneria (DEIB).  
In the role of co-advisor for the thesis.

- **Filippo Bardon, M. Sc. Thesis**  
Università degli studi di Verona, Computer Science department.  
In the role of co-advisor for the thesis.

2018-2019

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## Participation in industrial innovation

- **Automatic extraction of anthropometric measurements from digital 3D scan of human bodies, (phase 1).**  
Role: Researcher. Supported by: Igoodi S.r.l. 27/11/2018 - 15/02/2019
  - **Automatic extraction of anthropometric measurements from digital 3D scan of human bodies, (phase 2).**  
Role: Researcher. Supported by: Igoodi S.r.l. 01/08/2019 - 31/01/2020
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## Skills

**Technical specialties:** Software design and implementation, with(in) a team. Expert programming in MATLAB. Knowledge of Python/C++/C. Elementary knowledge of rendering tools as Blender or Povray.

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

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## List of Publications

*Bibliometric indices*

- *h-index*: 11 (Google Scholar), 8 (Scopus).
- *i10-index*: 12 (Google Scholar).
- Number of citations: 1840 (Google Scholar), 821 (Scopus).

## Journals

1. **Simone Melzi**, Riccardo Marin, Pietro Musoni, Filippo Bardon, Marco Tarini and Umberto Castellani. *Intrinsic/extrinsic embedding representation for functional remeshing of 3D shapes*. Computer & Graphics, vol. 88; pages 1 – 12. Pergamon, 2020.
2. **Simone Melzi**, Jing Ren, Emanuele Rodolà, Abhishek Sharma, Peter Wonka, Maks Ovsjanikov. *ZoomOut: Spectral Upsampling for Efficient Shape Correspondence*. Presented at SIGGRAPH ASIA 2019. ACM Transaction on Graphics, vol. 38,(6); pages 1 – 14. ACM, 2019.
3. **Simone Melzi**, Riccardo Marin, Emanuele Rodolà, Umberto Castellani. *FARM: Functional Automatic Registration Method for 3D Human Bodies*. Computer Graphics Forum (CGF), 2019.
4. **Simone Melzi**. *Sparse representation of step functions on manifolds*. Computer & Graphics, vol. 82; pages 117 – 128. Pergamon, 2019.
5. **Simone Melzi**, Dorian Nogneng, Emanuele Rodolà, Umberto Castellani, Micheal Bronstein, Maks Ovsjanikov. *Improved Functional Mappings via Product Preservation*. Computer Graphics Forum, vol. 37,2; pages 179 – 190. The Eurographics Association and John Wiley Sons Ltd, 2018.
6. **Simone Melzi**, Maks Ovsjanikov, Giorgio Roffo, Marco Cristani, and. Umberto Castellani. *Discrete time Evolution Process Descriptor for shape analysis and matching*. Presented at SIGGRAPH 2018. ACM Transaction on Graphics, vol. 37,1(4); pages 1 – 18. ACM, 2018.
7. **Simone Melzi**, Emanuele Rodola, Umberto Castellani, and Michael Bronstein. *Localized Manifold Harmonics for Spectral Shape Analysis*. Computer Graphics Forum, vol. 37,6 pages 20 – 34. The Eurographics Association and John Wiley Sons Ltd, 2018.
8. Davide Boscaini, Jonathan Masci, **Simone Melzi**, Michael M Bronstein, Umberto Castellani, and Pierre Vanderghyest. *Learning class-specific descriptors for deformable shapes using localized spectral convolutional networks*. Computer Graphics Forum, vol. 34,5 pages 13 – 23. The Eurographics Association and John Wiley Sons Ltd, 2015.

## International Conferences

The top-tier conferences in Computer Vision are CVPR, ICCV and ECCV. Being very selective the proceedings of these should be considered as important as the top international journals in the Computer Vision community.

1. Riccardo Marin, **Simone Melzi**, Emanuele Rodola, and Umberto Castellani. *High-Resolution Augmentation for Automatic Template-Based Matching of Human Models*. Seventh International Conference on 3D Vision, 3DV 2019. IEEE Computer Society, 2019.
2. **Simone Melzi**, Riccardo Spezialetti, Federico Tombari, Michael Bronstein, Luigi Di Stefano, and Emanuele Rodolá. *GFrames: Gradient-based local reference frame for 3D shape matching*. IEEE Conference on Computer Vision and Pattern Recognition (CVPR 2019).
3. Matteo Denitto, **Simone Melzi**, Manuele Bicego, Umberto Castellani, Alessandro Farinelli, Mario Figueiredo, Yanir Kleiman, Maks Ovsjanikov. *Region-based Correspondence Between 3D Shapes via Spatially Smooth Biclustering*. ICCV 2017, pages 4270 – 4279. IEEE Computer Society, 2017.
4. Giorgio Roffo, **Simone Melzi**, Umberto Castellani, Alessandro Vinciarelli. *Infinite Latent Feature Selection: A Probabilistic Latent Graph-Based Ranking Approach*. ICCV 2017, pages 1407 – 1415. IEEE Computer Society, 2017.
5. **Simone Melzi**, Emanuele Rodola, Umberto Castellani, and Michael Bronstein. *Shape Analysis with Anisotropic Windowed Fourier Transform*. Fourth International Conference on 3D Vision, 3DV 2016, pages 470 – 478. IEEE Computer Society, 2016.
6. Giorgio Roffo, **Simone Melzi**. *Online feature selection for visual tracking*. BMVC 2016, pages 1 – 12. BMVA Press, 2016.
7. Giorgio Roffo, **Simone Melzi**, and Marco Cristani. *Infinite Feature Selection*. ICCV 2015, pages 4202 – 4210. IEEE Computer Society, 2015.

## Research monographs, chapters in collective volumes:

- **Simone Melzi** et al. *The Visual Object Tracking VOT2016 Challenge Results*. VOT2016 Workshops, ECCV 2016, vol. 9914, pages 777 – 823. Lecture Notes in Computer Science, 2016.
- Giorgio Roffo, **Simone Melzi**. *Ranking to learn: Feature ranking and selection via eigenvector centrality*. NFMCP Workshops, PKDD/ECML 2016. Lecture Notes in Computer Science, vol. 10312, pages 19 – 35. Springer, 2016.
- **Simone Melzi**, Alessandro Mella, Umberto Castellani et al. *Functional maps for brain classification on spectral domain*. SESAMI (Spectral and Shape Analysis in Medical Imaging) workshop at MICCAI 2016, pages 25 – 36. Lecture Notes in Computer Science, 2016.
- Manuele Bicego, Stefano Danese, **Simone Melzi**, and Umberto Castellani. *A bioinformatics approach to 3d shape matching*. In Computer Vision-ECCV 2014, NORDIA Workshops, pages 313 – 325. Springer, 2014.

## Workshops and national conferences

- Riccardo Marin, **Simone Melzi**, Niloy Mitra and Umberto Castellani. *POP: full Parametric modelling estimation for Occluded People*. Eurographics Workshop 3D Object Retrieval 2019 (3DOR2019).
  - **Simone Melzi**, Riccardo Marin, Pietro Musoni, Filippo Bardon, Marco Tarini and Umberto Castellani. *CMH: Coordinates Manifold Harmonics for Functional Remeshing*. Eurographics Workshop 3D Object Retrieval 2019 (3DOR2019).
  - **Simone Melzi**, Riccardo Marin, Emanuele Rodolá and Umberto Castellani et al.. *Matching Humans with Different Connectivity*. SHREC2019 at Eurographics Workshop 3D Object Retrieval 2019 (3DOR2019).
  - **Simone Melzi**. *Indicators Basis for Functional Shape Analysis*. STAG 2018, Smart Tools and Apps for Graphics - Eurographics Italian Chapter Conference, pages 75 – 85. The Eurographics Association, 2018.
  - Giorgio Roffo, **Simone Melzi**. *Features Selection via Eigenvector Centrality*. NFMCP Workshops, PKDD/ECML 2016.
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Data

23 Marzo 2020

Luogo

Cernusco sul Naviglio