MARCO LORENZI

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MYSELF

I am a tenured research scientist (CR) at Université Côte d'Azur, Inria Sophia Antipolis. My research focus is in statistical learning, with application to the analysis of large-scale and complex biomedical data.

PROFESSIONAL EXPERIENCE

12/2016 - present. ***Tenure-track research scientist (Chargé de Recherche).*** Epione Research Group, Université Côte d'Azur, Inria Sophia Antipolis, France.

09/2018 - present. ***Data-Science Consultant.*** My Data Models startup, France.

12/2016 - present. ***Honorary Research Associate.*** University College London, UK.

09/2015 - 11/2015. ***Visiting Research Associate.*** Imaging Genetics Center, University of Southern California, USA.

09/2014 - 11/2016. ***Research Associate.*** Translational Imaging Group, University College London, UK.

01/2014 - 12/2015. ***Engineering Consultant.*** Inria Sophia Antipolis, France.

04/2014 - 07/2014. ***Visiting postdoctoral fellow.*** University College London, UK.

01/2012 - 04/2014. ***Research Engineer.*** Asclepios Research Group, Inria, France.

01/2011 - 05/2012. ***Statistical consultant.*** Clinical project Pharmacog, with GlaxoSmithKline.

11/2007 - 09/2009. ***Laboratory assistant.*** IRCCS Fatebenefratelli, Brescia, Italy.

EDUCATION

2012. **PhD** at University of Nice, France.
- Vote: Mention très honorable (highest degree).
- Field of study: Medical Imaging, Signal processing, Statistics, Computer Science.

2007. **Master's degree in Mathematics** at Università degli Studi di Torino*, Italy.*
- Vote: 110/110 cum laude (highest degree)
- Field of study: Algebra, Theory of Representations.

LANGUAGES

English (proficient in listening, speaking , reading and writing); **French** (proficient in listening, speaking , reading and writing); **Spanish** (beginner); **Italian** (native speaker).

COMPUTER SKILLS

Programming: C/C++, Python, Matlab and R.

Released Software (Covered by Inria App)

2013. LCC-logDemons non-linear image registration algorithm (C++, ITK and vnl libraries).
2017. GP-ProgressionModel (Python, PyTorch library)

Supervision and Teaching

- Co-Supervision of PhD students:
  INRIA (since 2017): Luigi Antelmi, Clement Abi Nader, Jaume Banus Cobo
  UCL (since 2017): Giorgos Lazaridis
- Supervision of post-doc personnel and engineers:
  INRIA: Sara Garbarino (since 04/2018), and Marco Milanesio (since 09/2017)
- Teaching: Data Science Master, Université Côte d'Azur (2nd semester 2018-19, 40 hours)

Editorial Activity

2014-now: Editorial board member of Nature Scientific Report (Neurology Panel).

Invited Talks in international Scientific Events

A selection of invited lectures includes:
2014. Martinos Center, MGH. Boston, USA.
2014. Department of Computing of Imperial College London. London, UK.
2014. Montreal Neurological Institute. Montreal, CA.
2016. Institut du Cerveau et de la Moelle Épinière. Paris, FR.
2018. Mathematical Models In Biomedical Imaging Summer School, Granada University, SP

Honors and Awards

2018. Inria Research and Doctoral Supervision Award (PEDR)
2018. Nominated top 30% highest-ranked reviewers of the conference NIPS 2018.
2015. Selected UCL representative for the Global Young Scientists Summit 2016, Singapore University of Technology and Design.
2015. Second position ex-aequo for the 2015 ERCIM Cor Baayen Award (most promising European young researcher in computer science and applied mathematics).
2012/13/16. 'Travel Fellowship', Alzheimer's Association International Conference.
2011. Honorable Mention for the Erbsmann Award, at Information Processing in Medical Imaging International Conference (IPMI).
2010. Best oral presentation award at Spatio-Temporal Image Analysis MICCAI workshop

Grants and Funding

2017. Big Data for Brain Research - Principal Investigator. 37'514€
2017. Meta-ImaGen - Principal Investigator. 38'700€
2016. UCL Pump-priming award. Funding received for the organisation of the 1st International Workshop on Modeling the Progression Of Neurological Diseases - 12'000GBP

Publications - up to date information at my Google scholar profile

- 20 articles in scientific journals
- 1 book chapter
- 20 papers in peer-reviewed international conferences

PUBLICATION LIST (SINCE 2016)

International Journals

1. Sebastiano Ferraris , Hannes van der Merle, Lennart Van Der Veeken, Ferran Prados, Juan Eugenio Iglesias, Andrew Melbourne, **Marco Lorenzi**, Marc Modat, Willy Gsell, Jan Deprest, Tom Vercauteren. A magnetic resonance multi-atlas for the neonatal rabbit brain. *NeuroImage*, Accepted on May 2018.
2. Marzia A Scelsi, Raiyan R Khan, **Marco Lorenzi**, et al. Genetic study of multimodal imaging Alzheimer's disease progression score implicates novel loci. *Brain*, Volume 141, Issue 7, 1 July 2018, Pages 2167-218.
3. **Marco Lorenzi**, Andre Altmann, Boris Gutman, et al. Susceptibility of brain atrophy to TRIB3 in Alzheimer's disease: Evidence from functional prioritisation in imaging genetics. *Proceedings of the National Academy of Sciences of the United States of America* (PNAS). March 20, 2018. 115 (12) 3162-3167.
4. **Marco Lorenzi,** Maurizio Filippone, Giovanni B. Frisoni, Daniel C. Alexander, Sebastien Ourselin. Probabilistic disease progression modeling to characterise diagnostic uncertainty: application to staging and prediction in Alzheimer's disease. *NeuroImage*, S1053-8119(17)30706-1, 2017.
5. Alex F. Mendelson, Maria A. Zuluaga, **Marco Lorenzi**, Brian F. Hutton, Sebastien Ourselin, (2017). Selection bias in the reported performances of AD classification pipelines. *NeuroImage: Clinical*, 14, 400-416, 2017.
6. Bishesh Khanal, **Marco Lorenzi**, Nicholas Ayache, Xavier Pennec. A biophysical model of brain deformation to simulate and analyse longitudinal MRIs of patients with Alzheimer's disease. *NeuroImage*, 134, 35-52, 2017.
7. Mehdi Hadj-Hamou, **Marco Lorenzi**, Nicholas Ayache, Xavier Pennec. Longitudinal analysis of image time series with diffeomorphic deformations: a computational framework based on stationary velocity fields. *Frontiers in Neuroscience*, 10, 236, 2016.
8. **Marco Lorenzi**, Ivor J. Simpson, Alex F. Mendelson, et al. Multimodal Image Analysis in Alzheimer's Disease via Statistical Modelling of Non-local Intensity Correlations. *Scientific Reports*, 6, 2261, 2016.

International Journals (under review)

1. Claire Cury, Stanley Durrleman, David Cash, **Marco Lorenzi**, Jennifer Nicholas, et al. Spatiotemporal Analysis for Detection of Pre-symptomatic Shape Changes in Neurodegenerative diseases: applied to GENFI study. *2nd review, NeuroImage*. biorXiv: https://doi.org/10.1101/385427

Peer-reviewed International Conferences

1. **Marco Lorenzi**, Maurizio Filippone. Constraining the Dynamics of Deep Probabilistic Models. *Proceedings of the 35th International Conference on Machine Learning* (ICML), PMLR 80:3233-3242, 2018. Note: Oral podium presentation. Acceptance rate: 25%.
2. Juan Eugenio Iglesias, **Marco Lorenzi**, Sebastiano Ferraris, Loic Peter, Marc Modat, Allison Stevens, Bruce Fischl, Tom Vercauteren: Model-based refinement of nonlinear registrations in 3D histology reconstruction. *International Conference of Medical Image Computing and Computer Assisted Intervention* (MICCAI), 2018. Note: Oral podium presentation. Acceptance rate: 25%.
3. Razvan Valentin Marinescu, Arman Eshaghi, **Marco Lorenzi**, Alexandra L Young, Neil P Oxtoby, Sara Garbarino, Timothy J Shakespeare, Sebastian J Crutch, Daniel C Alexander. A Vertex Clustering Model for Disease Progression: Application to Cortical Thickness Images. *Information*

Processing in Medical Imaging (IPMI), 10265: 134-145, Springer, LNCS, 2017. Note: Oral podium presentation. Acceptance rate: 25%.

4. Eliza Orasanu, Pierre-Louis Bazin, Andrew Melbourne, **Marco Lorenzi**, Herve Lombaert, Nicola J Robertson, Giles Kendall, Nikolaus Weiskopf, Neil Marlow, Sebastien Ourselin. Longitudinal analysis of the preterm cortex using multimodal spectral matching. *Medical Image Computing and Computer Aided Intervention* (MICCAI), 2016. Note: Acceptance rate: 25%.
5. **Marco Lorenzi**, Boris A. Gutman, Derrek P. Hibar, Andre Altmann, Neda Jahanshad, Paul M. Thompson and Sebastien Ourselin. Partial Least Squares Modelling for Imaging genetics in Alzheimer's Disease: Plausibility and Generalization. *IEEE International Symposium on Biomedical Imaging* (ISBI), 2016.

Peer-reviewed International Conferences (submitted)

1. Santiago Silva, Boris Gutman, Barbara Bardoni, Paul M Thompson, Andre Altmann, **Marco Lorenzi**. Multivariate Learning in Distributed Biomedical Databases: Meta-analysis of Large-scale Brain Imaging Data. *IEEE International Symposium on Biomedical Imaging* (ISBI), Venice, 2019.

Peer-reviewed International Workshops

1. Clement Abi Nader, Nicholas Ayache, Philippe Robert, **Marco Lorenzi**. Alzheimer's Disease Modelling and Staging through Independent Gaussian Process Analysis of Spatio-Temporal Brain Changes. *1st International Workshop on Machine Learning in Clinical Neuroimaging*, 2018.
2. Luigi Antelmi, Nicholas Ayache, Philippe Robert, **Marco Lorenzi**. Multi-Channel Stochastic Variational Inference for the Joint Analysis of Heterogeneous Biomedical Data in Alzheimer's Disease. *1st International Workshop on Machine Learning in Clinical Neuroimaging*, 2018.
3. **Marco Lorenzi**, Boris Gutman, Paul M Thompson, Daniel C Alexander, Sebastien Ourselin, Andre Altmann. Secure multivariate large-scale multi-centric analysis through on-line learning: an imaging genetics case study. *12th International Symposium on Medical Information Processing and Analysis*, 1016016, International Society for Optics and Photonics, 2017.
4. Sebastiano Ferraris, **Marco Lorenzi**, Pankaj Daga, Marc Modat, Tom Vercauteren. Accurate small deformation exponential approximant to integrate large velocity fields: Application to image registration. *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition Workshops*, 17-24, 2016.

Oral Communications in Clinical Conferences

1. **Marco Lorenzi** and Helene Barelli. Blood Level of Omega 3 and 6 Across the Progression of Alzheimer's Disease. *Alzheimer's Association International Conference*, Chicago, 2018.
2. **Marco Lorenzi**, Maurizio Filippone, Daniel C. Alexander, Sebastien Ourselin. Modeling and Prediction of the Natural History of Neurodegeneration from Longitudinal Trial Data. *Alzheimer's Association International Conference*, London, 2017.
3. **Marco Lorenzi**, Boris A. Gutman, Andre Altmann, Derrek P. Hibar, Neda Jahanshad, Daniel C. Alexander, Paul M. Thompson, Sebastien Ourselin. *Alzheimer's Association International Conference*, Toronto, 2016.