Marta Lazzaretti

Curriculum Vitæ

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Experience

11/2020– **Student teaching**, *Università degli Studi di Genova*, Genova.
04/2021 Tutoring for 1st Year students of Bachelor degrees in Mathematics, Physics and Statistics. Guided exercises classes for the courses Calculus 1, Algebra 1, Linear algebra and analytic geometry.

Education

11/2020– **PhD student in Applied Mathematics**, *Università degli Studi di Genova*, Genova, **Present** Supervisors: CNRS Chargé de Recherche Luca Calatroni and Associate Professor Claudio Estatico.

Duality and continuous relaxation of sparse optimisation problems in Banach spaces

03–07/2020 **Master 2 Internship Project**, *Université Côte d'Azur, I3S Laboratoire, Morphéme Team*, Sophia Antipolis, Supervisor: CNRS Chargé de Recherche Luca Calatroni.

Study of Super-Resolution techniques for biological images, development of a new variational model for images corrupted by Poisson noise and suited to enforce sparsity, study of some optimization algorithms and test of the model with simulated images on MatLab.

2018–2020 **Master degree in Applied Mathematics**, *Università degli Studi di Genova*, Genova, 110/110 cum Laude.

Title thesis: Continuous relaxation of sparse ℓ_0 optimisation problems in fluorescence microscopy with Poisson data, Supervisors: CNRS Chargé de Recherche Luca Calatroni and Associate Professor Claudio Estatico

09–12/2017 **Erasmus exchange semester**, *University College Cork*, Cork, Bachelor degree in Mathematics: 6 modules of 5 ECTS each, passed with First Class Honours.

2015–2018 **Bachelor degree in Mathematics**, *Università degli Studi di Genova*, Genova, 110/110 cum Laude.

Title thesis: RSA cryptosystem, Supervisor: Full Professor Maria Evelina Rossi

2010–2015 **High school diploma in scientific studies**, *Liceo Scientifico G. D. Cassini*, Genova.

Other education activities and projects

01/2021 **Research School: Mathematics, Signal Processing and Learning**, *Centre International Rencontres Mathématiques*, Marseille, Luminy.

Doctoral school on mathematics and learning with an emphasis on signal and image processing.

06/2020	**Teaching certificate for high and middle schools teachers**, *Università degli Studi di Genova*, Genova.
	4 modules of 6 ECTS each: Psychology, Pedagogy, Anthropology, Teaching techniques.
06/2020	**Regularization Methods for Machine Learning**, *Summer School*, Machine Learning Genoa Center, Genova.
	20 hours advanced machine learning course including theory classes and practical laboratory sessions. Emphasis on high dimensional data and regularization methods.
09/2019	**Applied Harmonic Analysis and Machine Learning**, *Summer School*, Machine Learning Genoa Center, Genova.
	Three minicourses on Signal Analysis and Big Data: Ill-posed problems: from linear to non-linear, Computational Optimal Transport, Time-frequency analysis.
12/2018	**Samsung Innovation Camp**, *Online course*.
	Aimed at introducing the applications of the newest innovations in industries and in everyday life. Digital marketing, communication, data analytics, cyber education.

Pubblications

[1] ***Weighted-CEL0 sparse regularisation for molecule localisation in super-resolution microscopy with Poisson data***, M. Lazzaretti, L. Calatroni, C. Estatico, arXiv preprint: `https://arxiv.org/abs/2010.13173`.

[2] ***A Scaled and Adaptive FISTA Algorithm for Signal-Dependent Sparse Image Super-Resolution Problems***, Lazzaretti M., Rebegoldi S., Calatroni L., Estatico C., Scale Space and Variational Methods in Computer Vision. SSVM 2021. Lecture Notes in Computer Science, vol 12679. Springer, Cham., `https://doi.org/10.1007/978-3-030-75549-2_20`.

[3] ***A continuous, non-convex and sparse super-resolution approach for fluorescence microscopy data with Poisson noise***, Lazzaretti M., Calatroni L., Estatico C., ICCSA 2021. IEEE CPS.

Other experiences

05/2018- 02/2020	**Work as secretary at the reception of university science building**, *Università degli Studi di Genova*, Genova.
	Secretary work, technical assistance to Professors, help to first year students. Position open to students only. 300 hours in total.
2014-2017	**Volunteer**, *Angsa Liguria Onlus*, Genova.

Computational skills

Basic	R, SAS, C++
Good	MatLab, LaTeX

Languages

Italian	Mothertongue	
English	Fluent	*Conversationally fluent*
French	Basic	*Basic words and phrases only*