

## Curriculum Vitae

**Profile:** Post Doc at CSML, IIT, Genoa, Italy. I like to study and design efficient and scalable machine learning methods. The main focus of my research has been on efficient gradient-based bilevel optimization, with applications to hyperparameter optimization and meta-learning. In particular, I studied the rate of convergence in deterministic and stochastic and non-smooth settings. More recently, I have been interested in in-context learning, adaptive, parameter-free optimization techniques and learning methods for dynamical systems.

### Work Experience

- 2023 - present **Post Doc**, *Computational Statistics and Machine Learning, IIT, Genova, Italy*
- 2018 - 2023 **PhD fellow**, *Computational Statistics and Machine Learning, IIT, Genova, Italy*
- 2020 **Research Intern**, *Amazon Web Services (AWS), Berlin, Germany*  
Project : “Meta-learning for time-series forecasting”. Manager : Matthias Seeger

### Education

- 2018 – 2023 **PhD in Computer Science**, *University College of London, UK*  
Thesis : “[Principled and Efficient Bilevel Optimization for Machine Learning](#)”  
Supervisor: Massimiliano Pontil. Mentor: Saverio Salzo.
- 2015 – 2017 **Master Degree in Computer Engineering**, *University of Florence, Italy*  
Thesis : “Truncated Hyper-gradient for Hyperparameter Optimization”, *Advisor : Paolo frasconi*.  
Final grade: 110/110 cum laude. GPA 30/30
- 2012 – 2015 **Bachelor Degree in Computer Engineering**, *University of Florence, Italy*  
Final grade: 110/110 cum laude. GPA 29.2/30

### Publications in International Conferences and Journals

1. R. Grazzi, M. Pontil, S. Salzo. [Nonsmooth Implicit Differentiation: Deterministic and Stochastic Convergence Rates](#). ICML 2024.
2. R. Grazzi\*, J. Siems\*, S. Schrodi, T. Brox, H Frank. [Is Mamba Capable of In-Context Learning?](#). AutoML 2024.
3. V. Kostic, P. Novelli, R. Grazzi, K. Lounici, M. Pontil [Learning invariant representations of time-homogeneous stochastic dynamical systems](#). ICLR 2024.
4. R. Grazzi, M. Pontil, S. Salzo. [Bilevel Optimization with a Lower-level Contraction: Optimal Sample Complexity without Warm-Start](#). JMLR 2023.
5. R. Grazzi, A. Akhavan, J. Falk, L. Cella, M. Pontil. [Group Meritocratic Fairness in Linear Contextual Bandits](#). NeurIPS 2022.
6. R. Grazzi, M. Pontil, S. Salzo. [Convergence Properties of Stochastic Hypergradients](#). AISTATS 2021.
7. R. Grazzi, L. Franceschi, M. Pontil and S. Salzo. [On the Iteration Complexity of Hypergradient Computation](#). ICML 2020.
8. G. Denevi, C. Ciliberto, R. Grazzi, M. Pontil. [Learning-to-Learn Stochastic Gradient Descent with Biased Regularization](#). ICML 2019.
9. L. Franceschi, P. Frasconi, S. Salzo, R. Grazzi and M. Pontil. [Bilevel programming for hyperparameter optimization and meta-learning](#). ICML 2018.

### Pre-prints and Workshops Publications

1. R. Grazzi, V. Flunkert, D. Salinas, T. Januschowski, M. Seeger, C. Archambeau. [Meta-Forecasting by combining Global Deep Representations with Local Adaptation](#). 2021.
2. L. Franceschi, R. Grazzi, M. Pontil, S. Salzo, P. Frasconi. [Far-HO: A Bilevel Programming Package for Hyperparameter Optimization and Meta-Learning](#). AutoML Workshop, ICML 2018.

### Programming Skills

Proficient Python, PyTorch, Git, Sci-kit learn Tensorflow, MxNet, AWS EC2 and Sagemaker.

Notions Jax, C/C++, Java, WebGL, javascript, CUDA, Matlab.

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## Selected Open Source Repos

1. [hypertorch](#) (★ 100+) Lightweight flexible research-oriented package to compute hypergradients in PyTorch.
2. [hyper-representation](#) Official repo for the experiments in the paper “Bilevel Programming for Hyperparameter Optimization and Meta-Learning”.
3. [LearningToCompareTF](#) Learning to Compare method implemented in Tensorflow.

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## Awards

2022 [NeurIPS Top Reviewer](#).

2021 [NeurIPS Outstanding Reviewer Award](#). Top 8% of reviewers according to AC/Authors.

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## Research Activities

### Teaching

2023/2024 **University College of London, London, UK**

TA for the convex optimization part of the Master course “Advanced Topics in Machine Learning”

August 2023 **Bilevel Summer School, Southampton, UK**

Lecture (3h): “Principled and Efficient Bilevel Optimization for Machine Learning”

### Talks and Presentations

April 2024 **AutoML Seminars, Online**

Talk: “Is Mamba Capable of In-Context Learning?”, [Youtube link](#)

December 2023 **NeurIPS Conference, New Orleans, USA**

Poster: “Bilevel Optimization with a Lower-level Contraction: Optimal Sample Complexity without Warm-start”

July 2023 **Mind Team at Inria-Saclay, Paris, France**

Talk: “Principled and Efficient Bilevel Optimization for Machine Learning”

March 2023 **ML Crash Course, Genoa, IT**

Talk: “Principled and Efficient Bilevel Optimization for Machine Learning”

November 2022 **NeurIPS Conference, New Orleans, USA**

Video and Poster Presentation: “Group Meritocratic Fairness in Stochastic Linear Bandits”

September 2021 **IFIP TC7, Online**

Talk: “On the Iteration Complexity of Hypergradient Computation”

April 2020 **AISTATS Conference, Online**

Video Presentation: “Convergence Properties of Stochastic Hypergradients”

July 2020 **ICML Conference, Online**

Video Presentation: “On the Iteration Complexity of Hypergradient Computation”

June 2019 **ICML Conference, Long Beach, USA**

Poster: “Learning-to-Learn Stochastic Gradient Descent with Biased Regularization”

September 2018 **RIKEN & IIT workshop, Genoa, Italy**

Talk: “Bilevel programming for hyperparameter optimization and meta-learning”

July 2018 **AutoML workshop, ICML, Stocholm, Sweden**

Poster and short talk: “Far-HO: A Bilevel Programming Package for Hyperparameter Optimization and Meta-Learning”

### Reviewer

Conferences **NeurIPS 2021, 2022. ICML 2022, 2024.**

Journals **JMLR 2021, TPAMI 2021**

Workshops **AutoML workshop, ICML 2019**