Andrea Della Vecchia, PostDoc

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I have studied and worked in Italy, Germany, and now Switzerland, presenting my research worldwide at top conferences (NeurIPS – spotlight, AISTATS) and in leading journals (JMLR). This path taught me to drive long, complex projects independently and to collaborate effectively in diverse, international teams. I now focus on applying rigorous ML and stochastic methods to quantitative finance, with a particular interest in option pricing and control—bridging solid mathematical guarantees with efficient, scalable algorithm design and testing.

Profile

- ML researcher recently focused on **non i.i.d. data and time series forcasting**, **kernel methods for large scale applications**, **stochastic optimal control problems**, and **ML applications in finance (option pricing)**.
- 6+ years research experience in various labs and countries (MPI-IS, UniGe, UniMi, IIT, EPFL); publications in most renowned ML conferences and journals *NeurIPS (spotlight), JMLR, AISTATS, PRE*.
- Developed and built mathematically sound algorithms for large scale ML exploiting scalable and efficient random-projection methods (random features, Nyström, sketching)
- Mentoring master's and PhD students, teaching, reading groups organization, cross-industry collaboration.
- Seeking **quant researcher / ML researcher** roles.

Work Experience

- **PostDoc in ML & Quant Finance, Swiss Finance Institute @ EPFL** Lausanne, CH | Sept. 2024 – Present
  - ML for **kernel dynamic programming in stochastic control** and American **option pricing** (under review ICLR26).
  - Designed **error-propagation analysis** and implemented fast solver for high-dimensional pricing (random features).
  - Collaborated with Prof. Damir Filipović; co-supervised masters' students.
- **Scientific Cross-Industry Collaborator, Leonardo Labs (Leonardo S.p.A.)** Genoa, IT | 2023 – 2024
  - **Robust learning** & trustworthy AI for **non i.i.d. data**: mathematical guarantees under **covariate shift (NeurIPS25)**.
  - **Nyström–KRR implementation** with shift-aware efficiency; extensive simulations and real data testing.
- **PostDoc in ML & Statistics, IIT@MIT Lab, Italian Institute of Technology** Genoa, IT | 2023 – 2024
  - Generalization error of the **Nyström method for convex losses (JMLR)**, scalable kernel instrumental variables via random projection, kernel methods vs deep learning for **weather prediction**.
- **Visiting PhD, LAILA - Laboratory of Artificial Intelligence and Learning Algorithms, UniMi** Milan, IT | 2022
  - Regret bounds for **adaptive multitask online learning**. Implementation of the corresponding algorithm *Adatask*.
  - Collaborated with Prof. Nicolò Cesa-Bianchi (UniMi).
- **Insights Week – Quantitative Research, G-Research** London, UK | 2022
  - Selected from a competitive global pool to participate, focusing on **quantitative research**, alpha generation, data pipeline design, and performance evaluation.
  - Completed **hands-on** exercises in factor modeling, signal generation, and backtesting frameworks.
- **Lecturer, Microsoft AI Academy (MaIA)** Genoa, IT | 2021
  - Designed and taught *"ML for Classification (from Logistic to SVMs)"* with theory + hands-on labs.
- **Teaching (various)** 2019 – Present
  - Courses assisted: *Probability & Stochastic Calculus* (EPFL), *Convex Optimization* (EPFL), *Financial Applications of Blockchains* (EPFL), *Mathematical Analysis & Applied Mathematics* (UniGe).
- **Research Intern, Max Planck Institute for Intelligent Systems (MPI-IS)** Tübingen, DE | 2019
  - **Dynamic hierarchical ranking** (PRE), Bayesian models, variational inference; master thesis under Dr. C. De Bacco.

Education

PhD in Applied Maths, Dept. of Mathematics, University of Genoa — Genoa, IT
Research topics: statistical learning theory, multitask learning, online learning, optimization. — 2019 – 2022
Thesis: *"Optimal and Efficient Learning In Classification"*.
Advisors: Lorenzo Rosasco (UniGe, IIT, MIT), Ernesto De Vito (UniGe).

MSc in Data Science, Dept. of Mathematics, University of Padua — Padua, IT
First-cycle student of newly established MSc program in Data Science and Machine Learning. — 2017 – 2019
Final Grade: 110/110 with honours.
Relevant coursework: *Business, Economic and Financial Data; Stochastic Methods; Game Theory*.

First year MSc in Mathematics, Dept. of Mathematics, University of Padua — Padua, IT
Completion of the 1st year of the MSc in Maths before transitioning to the MSc program in Data Science. — 2016 – 2017
Relevant coursework: *Stochastic Methods for Finance; Stochastic Analysis*.

BSc in Physics, Dept. of Physics, University of Padua — Padua, IT
Thesis on statistical physics: *"Diffusion and Brownian Motion"*. — 2013 – 2016

Awards & Honors

- NeurIPS 2025 **Spotlight** (selected).
- Italian Mathematical Olympiad: **1 Silver & 1 Bronze Medal** (individual); finalist mention (team).
- National and corporate scholarships for academic merit (High School and University).
- Winner of the regional soccer championship.

Selected Publications

1. *"Error Propagation in Dynamic Programming: From Stochastic Control to Option Pricing"*, A. Della Vecchia, D. Filipović. **Under review at ICLR** 2026.
2. *"Computational Efficiency under Covariate Shift in Kernel Ridge Regression"*, A. Della Vecchia, A. Mavakala, E. De Vito, L. Rosasco. **NeurIPS** 2025, **selected for spotlight session**.
3. *"The Nyström method for convex loss functions"*, A. Della Vecchia, E. De Vito, J. Mourtada, L. Rosasco. **Journal of Machine Learning Research (JMLR)**, 2024.
4. *"A model for efficient dynamical ranking in networks"*, A. Della Vecchia, K. Neocosmos, D.B. Larremore, C. Moore, C. De Bacco. **Physical Review E**, 2024.
5. *"Regularized ERM on random subspaces"*, A. Della Vecchia, J. Mourtada, E. De Vito, L. Rosasco. **AISTATS**, 2021.

Full list available upon request.

Skills

- **Programming** | Python (7+ yrs), C/C++, R, Matlab; Git; LaTeX.
- **ML/Stats** | Kernel methods, KRR/Nyström, random features, convex optimization, time-series, IV methods.
- **Finance Apps** | Option pricing, dynamic programming for stochastic control, portfolio/risk modeling basics.
- **Libraries** | NumPy, SciPy, pandas, scikit-learn, Pytorch.

Languages

- **English**: full professional. **Italian**: native.

Certificates

- *AI for trading*, Udacity