Lorenzo Dall'Amico

11 Rue des Mathématiques, 38400 Saint-Martin-d'Hères (France)
lorenzo.dallamico@outlook.it
24 March 1994
Italian mother-tongue, fluent in English and French
Italian nationality
Website
Github
Scholar

CURRENT POSITION

September 2018 – present

PhD student

GIPSA lab, Institut polytechnique de Grenoble
Supervisors: Romain Couillet and Nicolas Tremblay
Title: Spectral methods for graph clustering

During my PhD we studied the problem of spectral clustering on sparse graphs using techniques at the crossroads between statistical physics, random matrix theory and graph signal processing. We proposed and analyzed novel algorithms and showed that the state-of-the-art methods are particular, sub-optimal cases of our proposed algorithms.

EDUCATION

September 2017 – July 2018

Master M2 in Physics of complex systems

Université Paris Sud (XI)
Supervisor: Michael Benzaquen
Thesis title: A mechanism for the latent liquidity revealing into the limit order book

September 2016 – July 2018

Master degree in Physics of complex systems

Politecnico di Torino
Final grade: 110/110 *cum laude*
Average exams evaluation: 29.7/30

International program held between Politecnico di Torino, SISSA and ICTP in Trieste and Université Paris VI, VII, XI

September 2013 – July 2016

Bachelor degree in Physics engineering

Politecnico di Torino
Final grade: 109/110
Average exams evaluation: 28/30

September 2008 – July 2013

High school diploma

Liceo scientifico Giuseppe Peano, Cuneo
Final grade: 100/100

ADVANCED COURSES

August 2020

Summer Workshop on Statistical Physics and Machine Learning

École de Physique des Houches

October 2019

PRAIRE artificial intelligence summer school

INRIA, Paris

April 2019

Random Matrices and Random Graphs

CIRM, Luminy, Marseille

June 2018

The Oxford summer school in economic networks

Oxford University

February 2018 – March 2018 **Spring college on the Physics of complex systems**
ICTP, Trieste

INVITED TALKS

May 2021 **Seminar**
SIAM Conference on Applied Linear Algebra, New Orleans (videoconference)

February 2021 **Seminar**
INRIA, Paris (videoconference)

February 2021 **Seminar**
École Normale Supérieure, Lyon (videoconference)

December 2020 **Conference**
Neural Information Processing Systems 2020 (NeurIPS), Vancouver (videoconference)

May 2020 **Conference**
IEEE International Conference on Acoustics, Speech and Signal Processing 2020 (ICASSP), Bercelona (videoconference)

February 2020 **Seminar**
LiPhy, Grenoble

December 2019 **Conference**
Neural Information Processing Systems 2019 (NeurIPS), Vancouver

November 2019 **Seminar**
First French-German Meeting in Physics, Mathematics and Artificial Intelligence Theory, CEA, Paris

August 2019 **Conference**
XXVII Colloque GRETSI, Lille

May 2019 **Seminar**
École Normale Supérieure, Paris

May 2019 **Conference**
IEEE International Conference on Acoustics, Speech and Signal Processing 2019 (ICASSP), Brighton

December 2018 **Conference**
Market microstructure: confronting many viewpoints, Paris

AWARDS

December 2019 **NeurIPS travel award**
1 400 $ award delivered on a competitive basis to the conference student partecipants

June 2018 **Paris Saclay scholarship**
10.000 € scholarship assigned on competitive merit basis to promising master students enrolled in Paris Saclay universities

July 2013 **Master dei talenti neodiplomati**
Summer work project in Ireland awarded to 8 students out of approximately 1 000, sponsored by Cassa di risparmio di Torino (CRT)

REVIEWING ACTIVITY

I served as a reviewer for *IEEE Transactions on Systems, Man and Cybernetics*, *IEEE Transactions on Information Theory*, *NeurIPS*, *Applied Network Science*, *Random Matrices: Theory and Applications*.

PUBLICATIONS

Journal articles

1. **LD**, R. Couillet, N. Tremblay: *Nishimori meets Bethe: a spectral method for node classification in sparse weighted graphs*, accepted to Journal of statistical mechanics
2. **LD**, R. Couillet, N. Tremblay: *A unified framework for spectral clustering in sparse graphs*, submitted to Journal of Machine Learning Research
3. **LD**, A. Fosset, J. Bouchaud, M. Benzaquen: *How does latent liquidity get revealed in the limit order book*, in Journal of statistical mechanics

Conference proceedings

1. **LD**, R. Couillet, N. Tremblay: *Community detection in sparse time-evolving graphs with a dynamical Bethe-Hessian*, in NeurIPS 2020
2. **LD**, R. Couillet, N. Tremblay: *Optimal Laplacian Regularization for Sparse Spectral Community Detection*, in ICASSP 2020
3. **LD**, R. Couillet, N. Tremblay: *Revisiting the Bethe-Hessian: Improved Community Detection in Sparse Heterogeneous Graphs*, in NeurIPS 2019
4. **LD**, R. Couillet, N. Tremblay: *Community Detection in Sparse Realistic Graphs: Improving the Bethe Hessian*, in ICASSP 2019

SOFTWARE

The algorithms on community detection developed during my PhD are gathered in a package coded in Julia language called *CoDeBetHe.jl* (**Co**mmunity **De**tection with the **Bet**he **He**ssian) available at github.com/lorenzodallamico/CoDeBetHe.jl