

# FABRIZIO BONCORAGLIO

 GitHub |  LinkedIn |  [fabrizio.boncoraglio@gmail.com](mailto:fabrizio.boncoraglio@gmail.com)

## CURRENT POSITION

1<sup>st</sup> Year PhD Student in Computer Science

École Polytechnique Fédérale de Lausanne (EPFL)

Doctoral School in Computer and Communication Sciences (EDIC)

EDIC Fellowship Scholar - Merit Based

 September 2024 – Present  Lausanne, Switzerland

Supervised by Prof. Lenka Zdeborová  
Topics: Artificial intelligence and machine learning, statistical physics, algorithmic efficiencies and analytical approaches.

## EDUCATION

2<sup>nd</sup> Year Master Student in Physics of Complex Systems, International Track

Politecnico of Turin, SISSA and ICTP (Trieste)

Université Paris-Saclay, Sorbonne Université, Université Paris Cité

Final GPA in Italy: 30/30 (Highest in my track)

M2 S3 GPA in France : 18.5/20 (1/40 in the M2)

Degree and Grade in Italy: 26/07/2024 - 110 cum Laude

Degree and Grade in France: 03/07/2024 - Mention Très Bien

 September 2022 – July 2024  Turin, Trieste, Paris

Double-Degree programme between Italy (first semester at SISSA and ICTP, second semester at Politecnico of Turin) and France (M2 level between Université Paris-Saclay, Sorbonne Université, and Paris Cité).

Main topics and research interests: probability and information theory, machine learning, algorithms for optimization and learning, Bayesian inference, stochastic processes, random matrix theory, statistical physics and disordered systems.

Alumnus of Scuola Superiore di Catania

Scuola Superiore di Catania Mediterranean University Center

Final grade: 70/70 cum Laude

 October 2019 – December 2023  Catania

In consortium with Scuola Normale of Pisa and Ecole Normale Supérieure, it offers integrative training, specialistic courses and involves students into an early contact with research. It is the highest educational institution of the University of Catania.

Main Specialistic Courses attended:

-Complex Networks: 30/30 cum Laude

-Advanced Complex Networks : 30/30 cum Laude


Main topics and research interests: econophysics, opinion dynamics, network theory, synchronisation, community detection.

Bachelor's Degree in Physics

University of Catania, Department of Physics

Final grade: 110/110 cum Laude

Final GPA: 29.54/30

 October 2019 – 7th October 2022

Title of the Thesis - High-Order Interactions in Social Contagion:  
Competitive Epidemics Spreading on Simplicial Complexes  
Supervisor: Prof. Vito Latora (Queen Mary University of London)

## ACHIEVEMENTS


Bronze Medal in the National Mathematics Olympics

Awarding institution: **Unione Matematica Italiana**

 May 2019  Cesenatico (BO)

I was selected to the national phase after winning the analogous competition in my high school and then in my region in Italy.

International Master's Scholarship Program IDEX

 May 2023  Paris, France

Designed for highly-qualified and excellent international students of Université Paris-Saclay, to which I'm following a double-degree program in "Physics of complex systems".

Ermenegildo Zegna Founder's Scholarship

 May 2023  Milan, Italy

Designed for supporting excellent students who demonstrate leadership skills and are willing to pursue their studies outside of Italy.

Study Award for Merit

 2020-2021-2022  UNICT, Catania

Award given each year by University of Catania to the top 5 students of each faculty in terms of GPA. I was selected for all the three years of Bachelor for the Physics department.

## PUBLICATIONS

Jean-François de Kemmeter, Luca Gallo, Fabrizio Boncoraglio, Vito Latora and Timoteo Carletti (2023). Complex contagion in social systems with distrust. arXiv: [2305.03879 \[physics.soc-ph\]](https://arxiv.org/abs/2305.03879)

## LANGUAGES

 English   
IELTS Score: 8.0/9.0 (C1)

 French 

# RESEARCH EXPERIENCE

## Research Internship at Sony CSL Paris

**Supervisors:** Professor Vittorio Loreto (Sapienza and Sony CSL Rome)  
Dr. Pietro Gravino (Sony CSL Paris, Rome and CREF)  
Professor Luca Dall'Asta (Politecnico of Turin)

📅 January 2024 - July 2024      📍 Paris, France

Research internship finalized to my final dissertation for the Master in "Physics of Complex Systems".

My research aims to investigate and characterize the presence and impact of polarisation on social networks from a numerical and analytical point of view. Real quote and retweet networks are reconstructed from Italian twitter data. Text analysis and moral foundation theory are employed for detecting antagonist polarization.

Tools employed: network theory, machine learning, natural language processing, opinion dynamics, statistical physics.

## Research Internship at UNamur

**Supervisors:** Professor Timoteo Carletti (UNamur)  
Professor Vito Latora (Unict-QMUL)

📅 February 2022      📍 Namur, Belgium

Research upon dynamical processes on complex networks and their generalization to high-order structures, e.g. simplicial complexes and hypergraphs.

A particular emphasis has been given to social contagion and the problem of epidemic spreading on high-order networks with trust and distrust.

This research period has led to the article "Complex contagion in social systems with distrust".

# OTHER EXPERIENCE

## 2<sup>nd</sup> Year Student of Alta Scuola Politecnica

**Politecnico of Turin (PoliTO), Politecnico of Milan (PoliMI)**

📅 December 2022 – Today      📍 Turin, Milan

The Alta Scuola Politecnica (ASP) selects each year the top 150 talented and motivated master students among PoliMI and PoliTO. I'm following business-oriented courses and laboratories about dynamics of innovation, design theory, leadership and communication skills. I am involved in a startup-oriented project about designing and developing a blockchain-based music platform.

## Leadership Skills Course at TU Delft

📅 September 2023      📍 Delft, Netherlands

Learn-by-doing approach, leadership skills course. Intensive school in: Negotiating, Public Speaking, Politics Communication Strategies, Networking, Feedback, Pitching.

# ASSOCIATIONS

## Aspen University Fellow - The Aspen Institute

📅 December 2023 - Today

Program of Aspen Institute Italia designed for excellent students in the later stages of their university studies. Its main objectives are to emphasize leadership grounded in values and to cultivate a network that spans generations, fostering increased interaction between Aspen University Fellows and members of the Aspen Institute Italia.

## Scuola di Politiche - IMPACT Torino

📅 March – May 2023      📍 PoliTO (TO)

Founded by the former Italian Prime Minister Enrico Letta, I was selected with other 40 students to participate actively to a politics school about the effectiveness of public policies on innovation and sustainable technologies.

## Youth Group 104 - Amnesty International

📅 2017 – 2018      📍 Modica (RG)

I was founder of the A.I. Youth Group in my hometown in Sicily. I was the head of the Education Group, spreading public awareness on gender equality, respect of human rights and fighting against homophobia and racism. I organized laboratories in primary and secondary schools for Amnesty International campaigns.

## Educational Volunteering

📅 May 2023 – Today      📍 I.C. Pertini, Turin (TO)

Helping middle school children with learning difficulties in maths both in presence and online.