

# Emanuele Mengoli

**Specialization:** Machine Learning and Wireless Networks

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in emanuele-mengoli

🌐 emanuelemengoli.github.io

## EDUCATION

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### INRIA - Télécom Paris

*Ph.D. in Applied Probability*

Dec 2024 - Jan 2027

Paris, France

- Subject: Stochastic Modeling for Non-Terrestrial Networks (NTN).
- Member of the MATHNET team, formerly DYOGENE, at INRIA and LINCOS group at Télécom Paris.
- Supervisor: Prof. François Baccelli (École Normale Supérieure (ENS) Paris).

### École Polytechnique Fédérale de Lausanne (EPFL)

*Master's Thesis Visiting Student - Computer Science*

Apr 2024 - Sept 2024

Lausanne, Switzerland

- Thesis: Dynamic Bayesian Optimization (DBO) for improving the performance of Cellular Networks.
- Key Results: Designed a novel probabilistic mobility model and implemented a cellular network simulator to evaluate a new DBO algorithm for downlink power optimization against naive approaches.
- Supervisors: Prof. P. Thiran (EPFL), Dr. A. Bardou (EPFL).

### École Polytechnique

*MSc in Computer Science - Track: Internet of Things*

Sept 2022 - Sept 2024

Paris, France

- Double Major: Machine Learning, Computer Networks; GPA: 3.88/4
- Key subjects: Machine, Reinforcement and Deep Learning, Federated Learning, Large scale optimization, Computer and Wireless Networks, Embedded Systems.

### Linköping University (LIU)

*Exchange Programme - Industrial Engineering*

Aug 2021 - Jan 2022

Linköping, Sweden

- GPA: 4.5/5

### Alma Mater Studiorum – Università di Bologna (UNIBO)

*BSc in Industrial Engineering - Minor: Information & Communication Technology*

Sept 2019 - Jul 2022

Bologna, Italy

- Final mark: 110/110 cum LAUDE; GPA: 28.94/30
- Thesis: Conception and Design of a Predictive Maintenance System for the Automotive Sector.
- Key subjects: Signal Processing, Operation Research, Electronics, Logistics, Stochastic Process Control.

## WORK EXPERIENCE

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### INRIA (MATHNET team)

*R&D Engineer - Predoctoral*

Sept 2024 - Dec 2024

Paris, France

- Research as part of the EU-funded INSTINCT project, focusing on applying stochastic geometry tools for modeling Joint Communication and Sensing (JCAS) scenarios in 6G networks.
- Pursued academic training on advanced probability theory and satellite communications.
- Supervisor: Prof. François Baccelli (ENS Paris).

### Cisco Meraki

*Software Engineer Intern - Data Science team*

Apr 2023 - Sept 2023

Paris, France

- Theorised and developed a novel time series prediction model and a causal inference algorithm. Both algorithms were used to build an anomaly detection product for L2 devices.
- Key Results: Paper publication [1]
- Supervisors: Prof. T. H. Clausen (École Polytechnique) and Dr. Z. Yao (Cisco Meraki).

### **National Inter-University Consortium for Telecommunications (CNIT)**

Nov 2022 - Apr 2023

*Scientific Research Partner*

*Bologna, Italy*

- Developed a low computational cost algorithm for RIS-aided UAV tracking using a Dual Function Base Station (DFBS) as a signal source, in a Non-Line-of-Sight (NLOS) scenario.
- Key Results: Contribution to publication [2]
- Supervisor: Prof. F. Guidi (UNIBO).

### **Cluster Reply**

Mar 2022 - May 2022

*Junior IT Consultant Intern*

*Turin, Italy*

- Designed a predictive maintenance product for vehicles failure prediction, combining statistical process control and regression-based techniques with a cloud infrastructure for edge deployment.
- Jointly led sales and product development.
- Key Results: Algorithm got acquired by third-part company (Movyon) for Tunnel Fault Monitoring.
- Supervisors: Prof. F. Guidi (UNIBO) and S. Agostini, Associate Partner (Cluster Reply).

### **Junior Enterprise Bologna (JEBO)**

Jul 2021 - Jul 2022

*Vice President*

*Bologna, Italy*

- Managed 90 human resources, 51K € on revenue (+60%).
- Partnership manager - 10 new collaborations.
- Creator of "Coffee with Entrepreneurs" career orientation program (moderator of 3 events) - 30 entrepreneurs involved, 1k podcast views, avg. 30 attendees per event.

## **PUBLICATIONS**

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- [1] E. Mengoli, Z. Yao, W. Wei, and T. Clausen, "Develop end-to-end anomaly detection system," in *2023 IEEE International Conference on Data Mining Workshops (ICDMW)*, IEEE, 2023, pp. 1370–1379.
- [2] F. Guidi, A. Guerra, E. Mengoli, and A. Zanella, "A statistical characterization of communication performance in ris-aided networks," in *ICASSP 2024-2024 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, IEEE, 2024, pp. 12 921–12 925.

## **SELECTED PROJECTS**

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### **signSGD is Byzantine Fault Tolerant**

2024

*Submitted to AISTATS 2025*

- Building on Bernstein et al. (2018), this side project aims to prove the Byzantine resilience of signSGD and introduces an algorithmic variant to accelerate its convergence; supervised by Prof. E. M. El Mhamdi (École Polytechnique). Joint work with fellow students from ETH and TUM.

## EXTRACURRICULAR ACTIVITY

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### Federazione Italiana Pallacanestro (FIP)

Dec 2014 - Sept 2022

*Basketball referee*

*Italy*

- "Trofeo delle regioni" (2019) - selected as one of the two best referees in Tuscany.
- "14th World Maxibasketball Fimba Championship" (2017).

## SKILLS SUMMARY

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- **Languages:** Italian: Native, English: Proficient, Spanish: Fluent, French: Intermediate.
- **Tools:** Python, SQL, Java, C, LaTeX, AWS, Azure, Docker, Git, GitLab, GitHub, MySQL, Arduino, Trello, Jira, Office suite, Google suite, Google Data Studio.