

## PROFESSIONAL SUMMARY

Extremely determined and highly ambitious recent **PhD graduate** with strong mathematical background. Eager to learn and dive deep into problems to have a crystal-clear understanding of how things work. Highly organized hard worker who is keen on collaboratively working within a team of international researchers and engineers. Standing out for dedication, meticulousness and critical thinking. Exceedingly interested in **wireless communication systems** and **machine learning**, in addition to **information theory**, **coding theory** and **combinatorics**. Currently looking for a **research engineer** position in wireless systems with strong focus on practical implementation of PoCs.

## WORK EXPERIENCE

### RESEARCH ASSISTANT

July 2019 – December 2022

*EURECOM, Sophia Antipolis, France*

- Research conducted under the supervision of Prof. Petros Elia and supported by the European Research Council (ERC) through the EU Horizon 2020 Research and Innovation Program under Grant 725939 (Project DUALITY).
- Teaching assistant for the course **Information Theory** (2021), for the semester project **6G Communications for Virtual Reality Networks** (2022).

### MATLAB STUDENT AMBASSADOR

October 2017 – July 2018

*The MathWorks srl, Torino, Italy*

- Managed a community of students at the Politecnico di Torino through a Facebook group.
- Organized seminars about the MATLAB software and its toolboxes with focus on image processing applications and linear algebra.

### SOFTWARE DEVELOPER

March 2017 – June 2017

*VEM Solutions S.r.l., Venaria Reale, Italy*

- Analyzed and interpreted data from accelerometers. Data processing software developed in C#.
- Exploited digital filters to make statistical analysis on the data extracted with the developed software.

## EDUCATION

### PHD IN COMPUTER SCIENCE, TELECOMMUNICATIONS AND ELECTRONICS

December 2022

*Sorbonne Université, France*

**Thesis title** Unearthing the Impact of Structure in Data and in Topology for Caching and Computing Networks

**Advisor** Petros Elia

**Description** Improved and deepened the understanding of the key role that structure plays either in data or in topology for caching and computing networks. First, explored the fundamental limits of caching under some information-theoretic models that impose structure in data; then, investigated the impressive ramifications of having structure in network topology. Results extended in the context of distributed computing.

### MASTER OF SCIENCE IN DATA SCIENCE AND ENGINEERING

January 2021

*Institut Mines-Télécom and EURECOM, France*

*GPA: 4.0/4.0*

### MASTER OF SCIENCE IN ELECTRICAL AND COMPUTER ENGINEERING

August 2019

*University of Illinois Chicago, US*

*GPA: 4.0/4.0*

**Thesis title** Low-Density Parity-Check Code Design for the AWGN Channel with Additive Radar Interference

**Advisor** Natasha Devroye (co-advisor in Italy) **Co-advisors** Daniela Tuninetti, Roberto Garello (advisor in Italy)

**Description** Performance analysis of convolutional codes in the AWGN channel with Additive Radar Interference and in-depth study of LDPC codes applied to the same channel model, with final LDPC code design and comparison to LDPC codes optimized for the AWGN channel.

### MASTER'S DEGREE IN COMMUNICATIONS AND COMPUTER NETWORKS ENGINEERING

July 2019

*Politecnico di Torino, Italy*

*Grade: 110/110 Summa Cum Laude (highest grade)*

The thesis work was the same as the one conducted in the US since it was related to the joint project TOP-UIC between the Politecnico di Torino and the University of Illinois Chicago.

### BACHELOR'S DEGREE IN TELECOMMUNICATIONS ENGINEERING

July 2017

*Politecnico di Torino, Italy*

*Grade: 110/110*

## SKILLS

**Software/frameworks** ANSYS HFSS, AWS, Code::Blocks, GNU Emacs, JupyterLab, MS Office, Visual Studio, Wireshark  
**Programming and markup languages** Bash, C, C#, JavaScript, ~~LaTeX~~ LaTeX, Markdown, MATLAB, Python  
**Languages** fluent in English, native Italian

## PUBLICATIONS

### Submitted

- [S1] **F. Brunero** and P. Elia, “Multi-access distributed computing,” *IEEE Transactions on Information Theory*, Jun. 2022, arXiv: 2206.12851 [cs.IT], submitted.

### Journals

- [J1] **F. Brunero** and P. Elia, “Fundamental limits of combinatorial multi-access caching,” *IEEE Transactions on Information Theory*, Jul. 2022, early access. doi: 10/jbgr, pre-published.  
[J2] **F. Brunero** and P. Elia, “Unselfish coded caching can yield unbounded gains over selfish caching,” *IEEE Transactions on Information Theory*, vol. 68, no. 12, pp. 7871–7891, Dec. 2022.

### Conferences

- [C1] **F. Brunero** and P. Elia, “Coded caching does not generally benefit from selfish caching,” in *2022 IEEE International Symposium on Information Theory (ISIT)*, Jun. 2022, pp. 1139–1144.  
[C2] **F. Brunero** and P. Elia, “On the optimality of coded caching with heterogeneous user profiles,” in *2022 IEEE Information Theory Workshop (ITW)*, Nov. 2022, pp. 166–171.  
[C3] **F. Brunero** and P. Elia, “The exact load-memory tradeoff of multi-access coded caching with combinatorial topology,” in *2022 IEEE International Symposium on Information Theory (ISIT)*, Jun. 2022, pp. 1701–1706.  
[C4] **F. Brunero**, D. Tuninetti, and N. Devroye, “On code design for wireless channels with additive radar interference,” in *2019 IEEE Information Theory Workshop (ITW)*, Aug. 2019, pp. 1–5.