Federico Brunero
PhD Student in Communication Systems

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Professional Summary

Extremely determined and highly ambitious **PhD student** with strong analytical and time management skills. I love working on projects identifying milestones to achieve the final goal, structuring my work with well-defined deadlines and being always ready to redefine the path if it is required. Standing out for dedication, meticulousness and critical thinking. Current interests include **information theory**, **coding theory** and **machine learning**.

Work Experience

Research Assistant
July 2019 – Present

EURECOM, Sophia Antipolis, France

Research conducted under the supervision of Prof. Petros Elia. Work supported by the European Research Council (ERC) through the EU Horizon 2020 Research and Innovation Program under Grant 725939 (Project DUALITY).

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/events about the MATLAB software and its toolboxes.
- Organized special events about the MATLAB role in image processing applications and in linear algebra field.

Software Developer
March 2017 – June 2017

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

- Analyzed and interpreted data from accelerometers.
- Implemented an instrument of data extraction and processing of binary files in `C#` with the Visual Studio environment.
- Exploited digital filters to make statistical analysis on the extracted data with the developed application.

Education

PhD in Computer Science, Telecommunications and Electronics
Expected 2022

Sorbonne Université, France

Master of Science in Data Science and Engineering
January 2021

Institute Mines-Télécom and EURECOM, France
GPA: 4.0/4.0

Master of Science in Electrical and Computer Engineering
August 2019

University of Illinois at 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 at 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, Linux, MS Office, Visual Studio, Wireshark
Programming and markup languages `Bash`, `C`, `C#`, `JavaScript`, LaTeX, `Markdown`, `MATLAB`, `Python`
Languages fluent in English, native Italian

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Publications

Submitted/Preprints

[S1] **F. Brunero** and P. Elia, "Unselfish coded caching can yield unbounded gains over symmetrically selfish caching," *IEEE Transactions on Information Theory*, 2021. arXiv: 2109.04807 [cs.IT], submitted.

[S2] **F. Brunero** and P. Elia, "Fundamental limits of combinatorial multi-access caching," *IEEE Transactions on Information Theory*, 2021. arXiv: 2110.07426 [cs.IT], submitted.

Conferences

[C1] **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. DOI: 10.1109/ITW44776.2019.8989014.