

ROBERTO BRUNO

Curriculum Vitae - 16th February 2026

PERSONAL INFORMATION



Name: Roberto Bruno
Date of Birth: 25th March 1998
Address: Via Contrada Valloni, 5,
83043 Bagnoli Irpino (AV), Italy
Phone: +39 345 85 67 214
E-Mail: roberto250398@gmail.com

Istitutional E-Mail:
rbruno@unisa.it
GitHub Profile: [@Rob11001](#)
LinkedIn Profile: [robertobruno11001](#)
ORCID: 0000-0001-6039-2075

EDUCATION

University of Salerno

PhD student in Computer Science

Supervisor: *Prof. Ugo Vaccaro*

Research Area: Information Theory and its application

Thesis: From Search to Coding (and Back): Two Sides of the Same Coin

Fisciano, SA

2022 - currently

University of Salerno

Master's degree in Computer Science

Thesis: Application of Information Theory functionals to dimension reduction of probability distributions

Grade 110/110 cum laude

Academic advisor: *Prof. Ugo Vaccaro*

Fisciano, SA

2020 - 2022

University of Salerno

Bachelor's degree in Computer Science

Thesis: Exact Exponential Algorithms

Grade 110/110 cum laude

Academic advisor: *Prof. Ugo Vaccaro*

Fisciano, SA

2017 - 2020

RESEARCH ACTIVITY AND WORK EXPERIENCE

PhD student at University of Salerno

November 2022 - currently

Main research topics: Information Theory, Data Structures and Algorithms.

Academic advisor: Prof. Ugo Vaccaro

Visiting Research Student at Okinawa Institute of Science and Technology (OIST)

May 2025 - Nov. 2025

Main research topics: Information measures application to Hypothesis Testing

Supervisor: Prof. Amedeo Roberto Esposito

PUBLICATIONS

Title: *Bounds and Algorithms for Alphabetic Codes and Binary Search Trees*

Authors: Roberto Bruno, Roberto De Prisco, Alfredo De Santis, Ugo Vaccaro;

Journal: IEEE Transactions on Information Theory;

DOI: [10.1109/TIT.2024.3428699](https://doi.org/10.1109/TIT.2024.3428699)

Title: *NP-Hardness and Approximation Algorithms for Constrained Entropy Maximization*

Authors: Roberto Bruno, Ugo Vaccaro;

Journal: IEEE Transactions on Information Theory;

DOI: [10.1109/TIT.2025.3644150](https://doi.org/10.1109/TIT.2025.3644150)

Title: *A Note on Equivalent Conditions for Majorization*

Authors: Roberto Bruno, Ugo Vaccaro;

Journal: AIMS Mathematics;

DOI: [10.3934/math.2024419](https://doi.org/10.3934/math.2024419)

Title: *Hardness and Approximability of Dimension Reduction on the Probability Simplex*

Authors: Roberto Bruno;

Journal: Algorithms MDPI;

DOI: [10.3390/a17070296](https://doi.org/10.3390/a17070296)

Recognition: Editor's Choice Award

Title: *Entropic Bounds on the Average Length of Codes with a Space*

Authors: Roberto Bruno, Ugo Vaccaro;

Journal: Entropy MDPI;

DOI: [10.3390/e26040283](https://doi.org/10.3390/e26040283)

Title: *Old and New Results on Alphabetic Codes*

Authors: Roberto Bruno, Roberto De Prisco, Ugo Vaccaro;

Journal: Proceedings of the Workshop on Information Theory and Related Fields, Lecture Notes in Computer

Science; DOI: [10.1007/978-3-031-82014-4_7](https://doi.org/10.1007/978-3-031-82014-4_7)

Title: *Optimal Binary Variable-Length Codes with a Bounded Number of 1's per Codeword: Design, Analysis, and Applications*

Authors: Roberto Bruno, Roberto De Prisco, Ugo Vaccaro;

Conference: IEEE International Symposium on Information Theory, ISIT 2025, Ann Arbor, Michigan, USA.

Title: *A Note on Yager's Negation*

Authors: Roberto Bruno, Ugo Vaccaro;

Current Status: to be submitted.

Title: *Shift-Invariant Superimposed Codes and their Applications*

Authors: Roberto Bruno, Adele Rescigno, Ugo Vaccaro;

Current Status: to be submitted.

PERSONAL SKILLS

Organisational / Managerial Skills

Management and Scheduling Thanks to the PhD work activities and the exams carried out, I could improve my ability to organize work to meet deadlines. Both in preparation for exams and in work, I have shown good ability organization, always accomplishing the assigned tasks as well as possible. Especially during PhD research activity.

Communication Skills

Communication During my studies and research activity, I've had the opportunity to develop good communication and interpersonal skills. Participating in international summer schools also allowed me to work on my interpersonal skills enhancing my ability to interact with others and to work as part of a team.

Job related Skills



Programming Models: SYCL, CUDA, OpenMP, MPI.

Technologies: Relational Databases, NoSQL Databases (MongoDB), Docker, Git.

Interests: Information Theory, Algorithms and Data structures, Game Theory, Artificial Intelligence.

Master's degree courses:

Information Theory: Basic concepts of Information Theory; Data compression; Data security.

Optimization methods: Linear and integer programming techniques.

Advanced algorithms: Exact algorithms; Approximated algorithms; Randomised algorithms; Online and distributed algorithms.

Distributed architectures: P2P protocols; Distributed networks; Leader election and consensus problem on distributed systems.

OTHER INFORMATION

Languages

Italian

Mother tongue

English

Listening – B2

Università degli Studi di Salerno

Reading – C1

Centro Linguistico di Ateneo

June 2021

Spoken interaction – B2

Spoken production – B2

Writing – C1

ACADEMIC PROJECTS

SYCL Performance Portability

Project realized for High-Performance Computing Master course, based on a performance portability study on AMD CPU and NVIDIA GPU of different types of matrix multiplication implementations using SYCL.

Auction Mechanism

Project realized for a Master course. It is based on the design and development in Java of an auction mechanism based on a P2P Network using TomP2P library.

Toy compiler

My colleagues and I developed a source-to-source toy compiler addressing the stages of compiler development from lexical analysis to intermediate code generation.

MyTutor

MyTutor was developed for the Software Engineering course to digitalize and speed up the procedure for requesting the Help Teaching activities at the Computer Science Department of the University of Salerno.

PRIVACY TREATMENT & SIGNATURE

I give consent to process my data with the purpose of the recruitment process, in accordance to the Regulation of the European Parliament 679/2016, regarding the protection of natural persons and free movement of such data.

Fisciano, 16/02/2026
Signature

