

## INFORMAZIONI PERSONALI

Mariagrazia Cairo

## POSIZIONE RICOPERTA

PhD student in methodological statistics  
University of Rome, Sapienza

ESPERIENZA  
PROFESSIONALE

From November 2023

PhD student in methodological statistics  
University of Rome, Sapienza  
(From November 2023)

## ISTRUZIONE E FORMAZIONE

October 2020 - January 2023

Master Degree in Statistical Sciences  
curriculum Data Analyst

University of Rome, Sapienza

Grade: 110/110 cum laude

Supervisor: Prof. Umberto Ferraro Petrillo

Title of the thesis: "A distributed approach to normalization of large-scale single-cell RNA-seq data."

The project of the thesis involved the conception, development and testing in Java using Apache Spark of a distributed normalisation algorithm based on the Psnorm normalisation method implemented by M. Borella, G. Martello et al., in PsiNorm: a scalable normalisation for single-cell RNA-seq data.

September 2017 - July 2020

Bachelor Degree in Mathematics

University of Salento

Grade: 110/110 cum laude

Supervisor: Prof. Anna Maria Cherubini

Title of the thesis: "The mathematics of contagion: mathematical models applied to an infection."

The project of the thesis involved a comparison of the best-known models in the literature for studying and predicting the development of infectious diseases. The study of models was accompanied by a graphical study with the aid of Matlab.

September 2012 - June 2017

Scientific Diploma

Liceo scientifico Cosimo De Giorgi (LE)

Grade: 100/100 e lode

## COMPETENZE PERSONALI

Lingua madre

Italiano

## Altre lingue

Inglese

COMPRESIONE		PARLATO		PRODUZIONE SCRITTA
Ascolto	Lettura	Interazione	Produzione orale	
B2	B2	B2	B2	B2
First (B2)				

Livelli: A1/A2: Utente base - B1/B2: Utente intermedio - C1/C2: Utente avanzato

[Quadro Comune Europeo di Riferimento delle Lingue](#)

## Competenze digitali

AUTOVALUTAZIONE				
Elaborazione delle informazioni	Comunicazione	Creazione di Contenuti	Sicurezza	Risoluzione di problemi
Avanzato	Avanzato	Avanzato	Avanzato	Avanzato

Livelli: Utente base - Utente intermedio - Utente avanzato

[Competenze digitali - Scheda per l'autovalutazione](#)

## COMPUTERSKILLS

- Microsoft Office Package.
- C.
- Java.
- Julia
- R.
- IBM ILOG CPLEX Optimization Studio.
- AMPL.
- Wolfram Mathematica.
- Matlab
- SQL.
- Apache Spark.
- .NET e C#.
- Latex.

## Patente di guida

B

## PARTICIPATION IN EXHIBITIONS

## Participation in exhibitions

- Recent Advances in Multi-Objective Optimization (RAMOO), Rome, September 14, 2023.
- StaTalk 2023, Rome, September 15, 2023.
- 8th AIRO Young workshop, "Emerging technologies for decision support systems and innovative" optimization paradigm, Rende, 14-16 February 2024.
- 33rd European Conference on Operational Research (EURO 33rd) Copenhagen, Denmark, June 30 – July 3, 2024.
- ODS2024, INTERNATIONAL CONFERENCE on OPTIMIZATION and DECISION SCIENCE, Badesi - Sardinia (Italy) September 8th - September 12th - 2024
- EURO PhD School on Multiple Criteria Decision Making: Methodologies and Applications to the Sustainable Development Goals 4 November - 15 November 2024. (Presentation of a poster)
- 3rd Workshop of UMI Group Mathematics for Artificial Intelligence and Machine Learning, Bari, 29-31 January 2025
- 9th AIRO Young workshop, "Emerging technologies for decision support systems and innovative" optimization paradigm, Pavia, 26-28 February 2025.

## Visiting research

- Visiting student at Koç University, Istanbul (Turkey) from 7th April to 10th May 2025 under the supervision of professor Serpil Sayin.

## Teaching activities

- Tutor for course exercises in Operational Research, University of Rome, Sapienza, February-June 2024.
- Tutor for course exercises in Operational Research, University of Rome, Sapienza, February-June 2025.

## Some academic responsibilities

- Collaborator in the organisation of the RAMOO Workshop 2023, Rome, September 14, 2023 organized by Lavinia Amorosi (University of Rome) and Marianna De Santis (University of Florence).
- Organiser of the XI PhD-Day, at University of Rome, Sapienza, Rome, 6 June 2024.
- Tutor of the master Data Intelligence and Decision Strategies, University of Rome, Sapienza February 2024-February 2025.
- Tutor of the master Data Intelligence and Decision Strategies, University of Rome, Sapienza from February 2025.
- Organiser of the XII PhD-Day, at University of Rome, Sapienza, Rome, 10 June 2025.

## Publications

Two-Phase Distributed Algorithm for Solving the Bi-Objective Minimum Spanning Tree Problem: A Preliminary Study, *Amorosi, Lavinia; Cairo, Mariagrazia; Dell'Olmo, Paolo; Di Rocco, Lorenzo; Ferraro Petrillo, Umberto*. - (2025). (Conference paper).

Parallelization Strategies for Bi-Objective Combinatorial Optimization Problems on Graphs, *Amorosi, Lavinia; Cairo, Mariagrazia; Dell'Olmo, Paolo; Ferraro Petrillo, Umberto* (Submitted)

A Branch & Bound Algorithm for Bi-objective Integer Linear Problems based on Lagrangian Relaxation, *Amorosi, Lavinia; Cairo, Mariagrazia; Dell'Olmo, Paolo; Serpil Sayin* (In preparation)

A mathematical optimization approach to clustering dissimilarity data  
*Amorosi, Lavinia; Cairo, Mariagrazia; Dell'Olmo, Paolo; Maurizio Vichi* (In preparation)

## Dati personali

Autorizzo il trattamento dei miei dati personali ai sensi del Decreto Legislativo 30 giugno 2003, n. 196 "Codice in materia di protezione dei dati personali".