



# Ilaria Ciocci

Nationality: Italian ✉ Email address: [ilaria.ciocci@uniroma1.it](mailto:ilaria.ciocci@uniroma1.it)

## WORK EXPERIENCE

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🏢 *Sapienza University of Rome* – Rome, Italy

### PhD student in Operations Research

[ 01/11/2024 – Current ]

Research interests:

- Optimization methods for Machine Learning
- Mixed-Integer Programming
- Interpretable Machine Learning

## EDUCATION AND TRAINING

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### Master's Degree in Management Engineering

*Sapienza University of Rome* [ 10/2022 – 07/2024 ]

City: Rome | Country: Italy | Final grade: Cum Laude | Level in EQF: EQF level 7 | Thesis: Block Decomposition Methods for training Deep Neural Networks

**Thesis:** *Block Decomposition Methods for training Deep Neural Networks*

Developed a block-decomposed version of a watchdog-controlled minibatch algorithm using PyTorch, starting with layer-wise decomposition and evolving into a block-decomposition approach. The implementation included dynamic control mechanisms to select blocks of variables to update, leading to improvements in computational efficiency.

**Implementation projects** (python):

- *Optimization Methods for Machine Learning*: MLP and RBF Neural Networks to solve a regression problem; SVM to solve an image classification problem
- *Complex Systems Optimization*: Implementation and analysis of an Augmented Lagrangian Method for nonlinear constrained optimization problems
- *Continuous Optimization*: Newton's Method for local optimization; Sequential Penalty Algorithm for constrained optimization; Simulated Annealing for global optimization

**Relevant Courses:** Optimization Methods for Machine Learning, Continuous Optimization, Complex Systems Optimization, Combinatorial Optimization, Machine Learning for Industrial Engineering, Modeling and Identification

### Bachelor's Degree in Management Engineering

*Sapienza University of Rome* [ 10/2019 – 10/2022 ]

City: Rome | Country: Italy | Final grade: Cum Laude

## SKILLS

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### Programming languages and Optimization tools

Python (computer programming) / Gurobi Optimization / AMPL for Operational Research / SQL

### Python libraries

Gurobipy / Python DSci/ML Libraries (Numpy, Pandas, Sklearn, Scipy) / Pandas / Matplotlib / Numpy

## Software

Latex / Microsoft Office package: Microsoft Word, Excel, PowerPoint, Access

## Core competences

operational research / machine learning / Interpretable Machine Learning / deep learning / Mixed Integer Programming

## CONFERENCES AND SEMINARS

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[ 15/10/2025 – 17/10/2025 ] University of Naples Federico II, Italy

**5th EUROYoung Workshop** Delivered a talk *Margin Optimal Regression Trees*

[ 29/06/2025 – 02/07/2025 ] University of Southampton, UK

**22nd EUROPT Conference on Advances in Continuous Optimization** Delivered a talk *Margin Optimal Regression Trees*

[ 26/02/2025 – 28/02/2025 ] University of Pavia, Italy

**9th AIRO Young Workshop** Delivered a talk *Effects of Block Decomposition on Deep Neural Network Training Efficiency*

## HONOURS AND AWARDS

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[ 07/2024 ] Sapienza University of Rome

**Management Engineering Excellence Program** Ranked 1<sup>st</sup> among top-performing students in Management Engineering and awarded participation in the *Excellence Program* of my faculty (March-July 2024).

## LANGUAGE SKILLS

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**Mother tongue(s):** Italian

**Other language(s):**

### English

**LISTENING B2 READING C1 WRITING B2**

**SPOKEN PRODUCTION B2 SPOKEN INTERACTION B2**

### Spanish

**LISTENING B1 READING B1 WRITING A2**

**SPOKEN PRODUCTION A2 SPOKEN INTERACTION A2**

*Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user*

## PUBLICATIONS

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[2025]

### [Random Forest-driven Heuristic for Margin Optimal Regression Trees](#)

**Authors:** I. Ciocci, V. Marcelli, M. Monaci, L. Palagi | **Publisher:** Department of Computer, Control and Management Engineering (DIAG), Sapienza University of Rome

[2024]

### [Block Layer decomposition applied to a watchdog controlled minibatch algorithm](#)

**Authors:** I. Ciocci, C. Coppola, L. Palagi, L. Papa | **Publisher:** Department of Computer, Control and Management Engineering (DIAG), Sapienza University of Rome

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*La sottoscritta dichiara di essere consapevole che il presente curriculum vitae sarà pubblicato sul sito istituzionale dell'Ateneo, nella Sezione "Amministrazione trasparente", nelle modalità e per la durata prevista dal d.lgs. n. 33/2013, art. 15.*

06/01/2026