

# Federico D'Onofrio

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## ● EDUCATION AND TRAINING

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01/11/2020 – CURRENT Rome, Italy

### **PHD PROGRAM IN AUTOMATIC CONTROL, BIOENGINEERING AND OPERATIONS RESEARCH**

Sapienza University of Rome

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Nonlinear Mixed Integer Programming, Interpretable Machine Learning, Feature Selection for Support Vector Machines, Submodular Optimization

**Website** [https://phd.uniroma1.it/web/FEDERICO-D'ONOFRIO\\_nP1696999\\_EN.aspx](https://phd.uniroma1.it/web/FEDERICO-D'ONOFRIO_nP1696999_EN.aspx) |

**Field of study** Operations Research |

**Thesis** Learning Interpretable SVMs: Novel Selection Models and Algorithms

10/2023 New York City, United States

### **VISITING PHD SCHOLAR** Columbia University

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Hosted by: Yuri Faenza

Research Project: *Submodular Optimization and the Feature Selection problem for Nonlinear Support Vector Machines*

01/2022 – 07/2022 New York City, United States

### **VISITING PHD SCHOLAR** Columbia University

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Hosted by Prof. Yuri Faenza

Research Project: *Incremental Knapsack Problems with Submodular Profits*

09/2018 – 10/2020 Rome, Italy

### **MSC IN MANAGEMENT ENGINEERING** Sapienza University of Rome

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Optimization Methods for Machine Learning, Statistics, Combinatorial Optimization, Games and Equilibria, Business Process Management, Project Management

**Field of study** Business Intelligence and Analytics | **Final grade** 110/110 cum laude |

**Thesis** Polyhedral Methods for Stable Set Congestion Games - Advisors: Prof. Antonio Sassano, Prof. Carla Michini (University of Wisconsin - Madison)

09/2015 – 10/2018 Rome, Italy

### **BSC IN MANAGEMENT ENGINEERING** Sapienza University of Rome

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**Final grade** 110/110 cum laude

02/2020 – 04/2020 Madison, United States

### **VISITING MASTER'S SCHOLAR** University of Wisconsin-Madison

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Hosted by: Carla Michini

Research Project: *Polyhedral Methods for Combinatorial Congestion Games*

## ● LANGUAGE SKILLS

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Mother tongue(s): **ITALIAN**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
<b>ENGLISH</b>	C2	C2	C1	C1	C1
<b>FRENCH</b>	A2	A2	A2	A2	A2

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

## ● **DIGITAL SKILLS**

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### Core Competences

Data Analytics | 📊 Machine Learning | Operations Research

### Computer Skills

AMPL | BARON | Bizagi | GUROBI | IBM CPLEX | Knitro | LaTeX | Microsoft Office | Python | SQL

### Python Libraries

Numpy | Matplotlib | Pandas | Scikit-Learn | Seaborn

## ● **ADDITIONAL INFORMATION**

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### **PUBLICATIONS**

[Margin Optimal Classification Trees](#) – 2023

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F D'Onofrio, G Grani, M Monaci, L Palagi - Computers & Operations Research

[Optimization-based approaches for learning Optimal Classification Trees](#) – 2023

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F D'Onofrio, M Monaci, L Palagi IFORS News 18, 5-7

[The Incremental Knapsack Problem with Monotone Submodular All-or-Nothing Profits](#) – 2023

Paper under review

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F D'Onofrio, Y Faenza, L Zhang

**Fixed-parameter tractability of Stable Set Congestion Games on Perfect Graphs** – 2023

Working paper

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F D'Onofrio, C Michini

### **CONFERENCES AND SEMINARS**

07/2023 – University of Aveiro, Aveiro, Portugal

**Optimization 2023** Delivered a talk titled: *The Challenge of Embedding Feature Selection in Nonlinear SVMs*

09/2022 – University of Florence, Florence, Italy

**ODS 2022 - International Conference on Optimization and Decision Science** Delivered a talk titled: *Margin Optimal Classification Trees*

05/2022 – Rutgers University, New Brunswick (NJ), USA

**MIP 2022 - Mixed Integer Programming Workshop** Poster session presentation: *Margin Optimal Classification Trees*

05/2021 – online

**IPCO 2021 - Conference on Integer Programming and Combinatorial Optimization** Poster session presentation: *Stable Set Congestion Games on Chordal Graphs*

05/2021 – online

**MIP 2021 - Mixed Integer Programming Workshop** Poster session presentation: *Stable Set Congestion Games on Chordal Graphs*

## **HONOURS AND AWARDS**

2022

**Funding for Research Initiation Projects – Sapienza University of Rome** Awarded a funding to initiate research on the project: *Fixed Parameter Tractability of computing Pure Nash Equilibria in Combinatorial Congestion Games*

2022

**Tutoring Scholarship – Sapienza University of Rome** Awarded a working scholarship position at the I3S Department of Engineering as tutor assistant for the *Analisi Matematica I* course

2021

**PhD Mobility Scholarship – Sapienza University of Rome** Awarded a PhD mobility scholarship to conduct a research period at Columbia University of New York under the supervision of prof. Yuri Faenza on *Knapsack Problems with Submodular Profits*

2021

**Tutoring Scholarship – Sapienza University of Rome** Awarded a working scholarship position at the I3S Department of Engineering as tutor assistant for the *Analisi Matematica I* course

2020

**Three-year PhD Scholarship – Sapienza University of Rome**

04/2019

**International Thesis Scholarship – Sapienza University of Rome** Awarded a research scholarship to conduct master's thesis research abroad

## **TEACHING ACTIVITIES**

09/2022 – 02/2023

**Teaching Assistant**

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Official tutor of the **Analisi Matematica I** course held for the Bachelor's Degree in Management Engineering

09/2021 – 02/2022

**Teaching Assistant**

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Official tutor of the **Analisi Matematica I** course held for the Bachelor's Degree in Management Engineering

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