

UNIVERSITÀ DEGLI STUDI DI NAPOLI FEDERICO II

**DOTTORATO DI RICERCA / PhD PROGRAM IN**

**INFORMATION TECHNOLOGY AND ELECTRICAL ENGINEERING**

## **Seminar announcement**

**Thursday 16<sup>th</sup> October 2025, Time: 14:30 - 15:30**  
**Historic Library - Piazzale Tecchio, 80 - 80125 – Napoli**



### **Prof./Dr. Dolores Romero Morales**

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## **Local Explainability in Machine Learning: A collective framework**

**Abstract** State-of-the-art Artificial Intelligence (AI) and Machine Learning (ML) algorithms are ubiquitous. While they can achieve high accuracies, they are also criticized for not being transparent about how they arrive at their decisions, preventing their adoption in Data-Driven Decision-Making. Even when in place, they can be unfair to the citizen, and there are well-documented examples of discriminatory outcomes in high-stakes algorithmic decision-making.

In this tutorial, we aim to train ML models that are more transparent and less unfair, by striking a balance between accuracy, explainability, and unfairness. We will first navigate through Multi-Objective Optimization (MOO) models that train ML models with enhanced explainability and fairness. Then, we will move to models MOO models that derive local and global explanations to the predictions of an opaque model.

**Lecturer short bio:** *Dolores Romero Morales is a professor of operations research at Copenhagen Business School, Denmark. Her areas of expertise include explainability and fairness in data science as well as sustainable supply chain management. Dolores currently serves as the Editor-in-Chief of TOP and as an associate editor of the Journal of the Operational Research Society as well as the INFORMS Journal on Data Science. Moreover, she is an Honorary SAS Fellow and a member of the SAS Academic Advisory Board. Among her recent achievements, Dolores (together with her co-authors) was awarded the 2024 Spanish Society of Statistics and Operations Research – BBVA Foundation Award for the best contribution in statistics and operations research applied to data science and big data published in the European Journal of Operational Research. Beyond research, Dolores actively supports early-career researchers through initiatives such as YoungWomen4OR, a program within the EURO WISDOM Forum that aims at increasing the visibility of young female researchers in operations research across EURO.*

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