



UNIVERSITY
OF BRESCIA

DEPARTMENT OF ECONOMICS AND MANAGEMENT

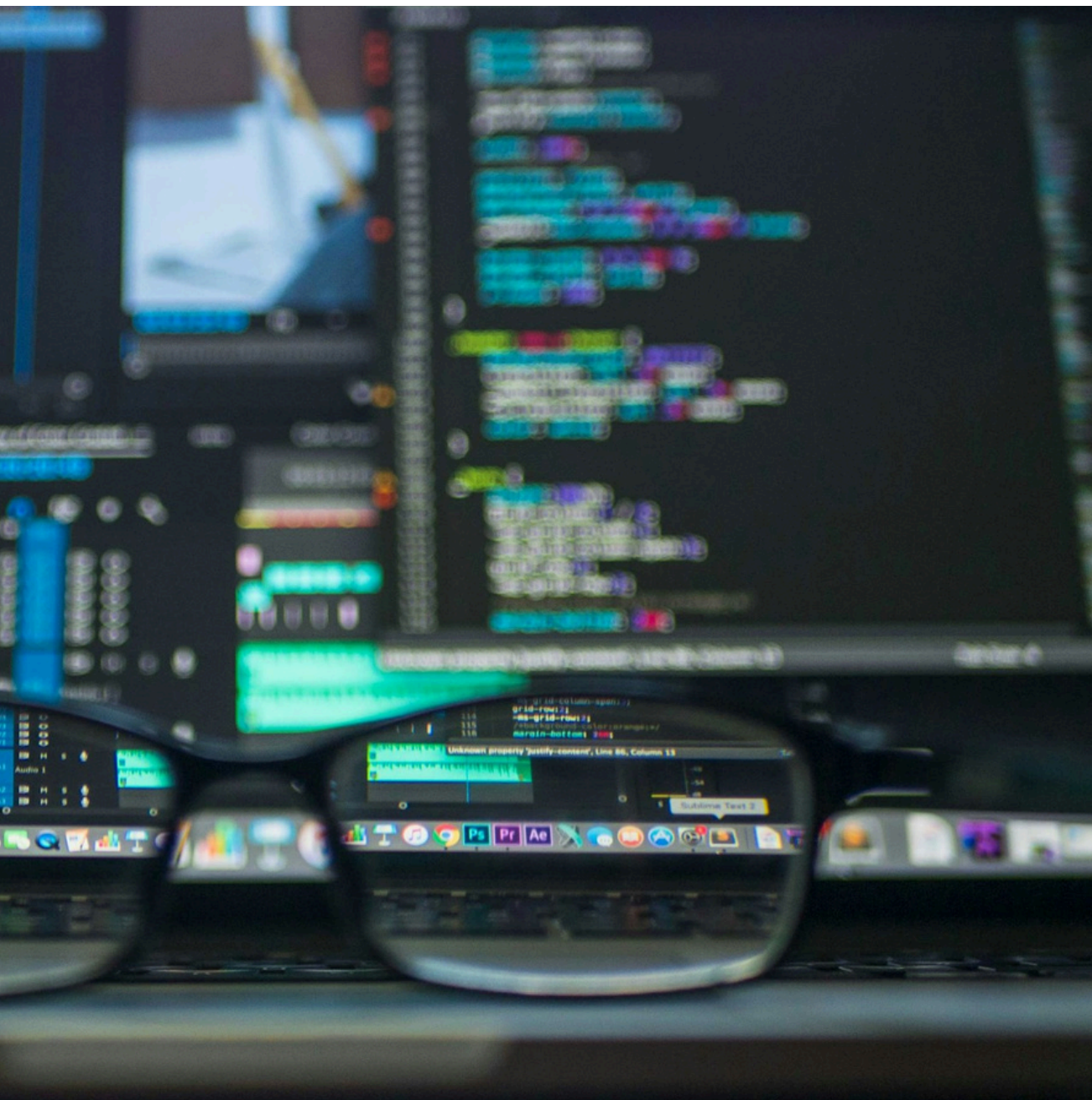
SEMINAR

Machine Learning and Optimisation in Logistics: A Bidirectional Tutorial on Routing and Inventory Applications

Prof. Pantelis Z. Lappas
University of the Aegean

Chair: Prof. Luca Bertazzi
University of Brescia

Thursday, July 17th, 2025, 9 AM
Room B5, C.da S. Chiara 50



The increasing interplay between Machine Learning (ML) and Operations Research (OR) is reshaping how complex logistics problems are addressed in both academic and applied settings. This tutorial-style seminar presents a bidirectional perspective on the integration of ML and OR, with a focus on two fundamental areas in logistics: routing and inventory management. We outline and implement structured modeling pipelines that demonstrate how predictive and learning-based methods can enhance classical optimization tasks such as heuristic selection, demand forecasting, risk-aware route planning, and inventory policy recommendation. Synthetic yet realistic datasets are constructed to reflect operational scenarios involving network disruptions, sensor data variability, and digitally monitored inventory systems. In parallel, we explore how OR techniques can support ML workflows, including model evaluation through multi-criteria decision-making, parameter tuning via optimization strategies, and structured approaches to feature selection. The seminar-style tutorial emphasizes conceptual clarity, methodological reproducibility, and practical relevance, offering a resource for researchers and practitioners interested in developing data-driven decision-support systems within logistics and supply chain contexts.

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