



STEM Research
Equality, Diversity and Inclusion

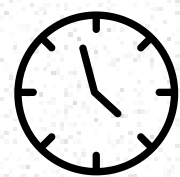
Inscrição:



step.ipb.pt



October 1, 2024



10h00 (Portugal)
11h00 (CET)



Sala de Atos 1 (ESTIG)

Distributed Optimization

This seminar addresses advanced techniques in optimizing urban infrastructure and energy systems using distributed optimization algorithms. As smart cities evolve, their networks, such as traffic systems, and energy distribution, require scalable and efficient solutions. The discussion will focus on distributed optimization methods, which enable decentralized decision-making while ensuring overall system efficiency. These techniques are particularly valuable in managing energy resources, reducing grid congestion, and enhancing the integration of renewable energy sources also keeping privacy preservation. Some real case study are also discussed.

Speaker: Giulio Ferro received the B.S. degree in industrial engineering, the M.S. degree in power systems engineering, and the Ph.D. degree in systems engineering from the University of Genoa, Genoa, Italy, in 2014, 2016, and 2020, respectively. He is an Assistant Professor with the University of Genoa. He was a visiting student with the AAC Lab, MIT, Cambridge, MA, USA. He has co-authored more than 40 publications in international journals, books, invited chapters, and conference proceedings. His research is focused on optimizing and managing microgrids, distribution networks, and decentralized optimization.

Optimization Models

To reduce greenhouse gas emissions, energy scenarios have changed with the use of distributed generation systems, renewables, and microgrids. Integrating these resources into intelligent microgrids with Energy Management Systems can help manage power sources and loads effectively. This presentation will focus on optimization models for polygeneration energy districts and the difference between discrete time and discrete event approaches.

Speaker: Michela Robba is Associate Professor of Systems Engineering at University of Genoa. She received the Degree in Environmental Engineering in 2000, and the PhD in Electronic and Computer Engineering in 2004, from the University of Genova. She is lecturer at the Polytechnic School of University of Genova, member of the scientific board of the Italian Energy Technological Cluster, and she is the President of Liguria Region (Italy) Energy Consortium. The research activity is focused on optimization and control of smart grids, electric vehicles, renewable energy resources, and natural resources management.

Applications in Optimization

Several applications incorporating different types of optimization models combined with advanced stochastic methods, such as Genetic Algorithms, Particle Swarm Optimization, and the Non-dominated Sorting Genetic Algorithm (NSGA), will be explored. These approaches will be presented in detail, highlighting their effectiveness in addressing complex optimization problems across diverse domains.

Speaker: Ana Isabel Pereira is Coordinator Professor at the Department of Mathematics, Polytechnic Institute of Bragança, and she is vice-coordinator the Research Centre in Digitalization and Intelligent Robotics (CeDRI) - Polytechnic Institute of Bragança She is author or co-author of more than two hundred journal papers, book chapters and conference proceedings. She participates in more than thirty research projects in the areas of robotics, optimization and innovate tools in teaching.