



Dibris
Dipartimento
di Informatica,
Bioingegneria,
Robotica e
Ingegneria dei Sistemi



ODS 2019

INTERNATIONAL CONFERENCE ON
OPTIMIZATION AND DECISION SCIENCE

XLIX ANNUAL MEETING OF AIRO - ITALIAN OPERATIONS RESEARCH SOCIETY

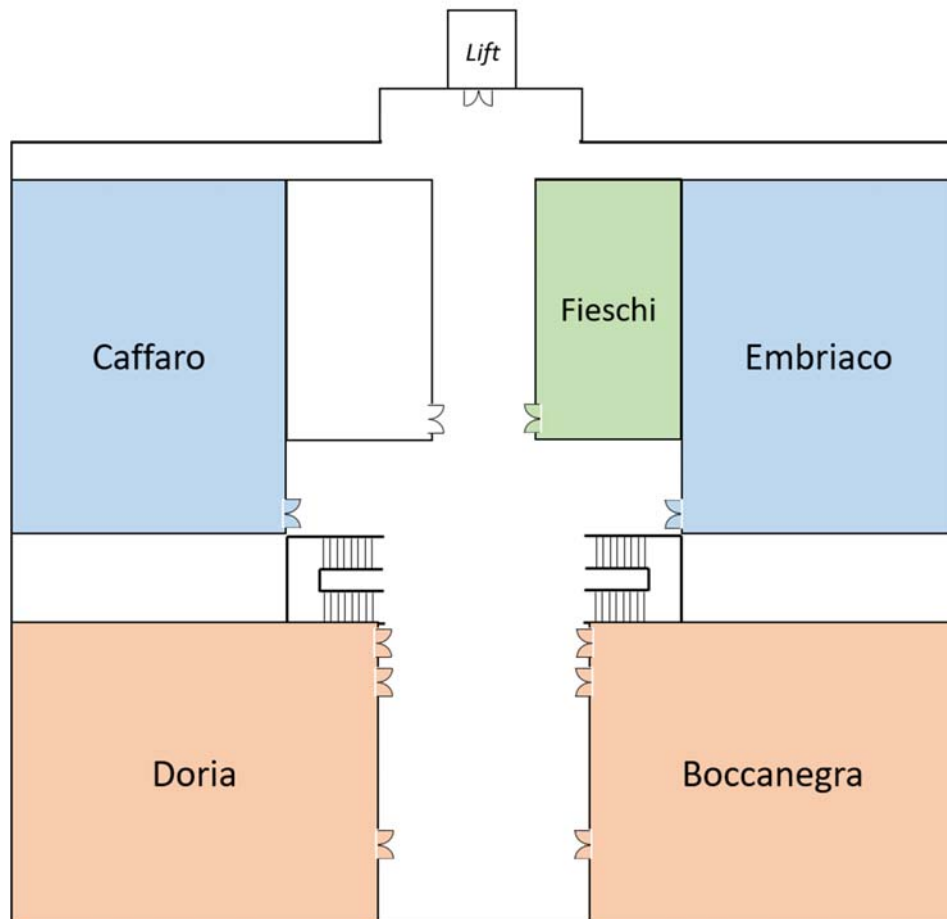
GENOVA, ITALY, SEPTEMBER 4-7, 2019



CONFERENCE PROGRAMME

Map of the Conference Rooms

DIEC – 4th floor



Programme at Glance

Wednesday - September 4th, 2019

11:00 – 13:30	Registration			
Room	Embriaco			
13:45 - 14:30	Opening Session			
Room	Embriaco	Caffaro	Doria	Boccanegra
14:30 - 16:30	W1 Smart Port Terminal Operations - 1	W2 Data Exploitation: Methods and Applications	W3 Financial Modeling	W4 Optimization in Public Transport (AIRO-OPTSM Chapter)
16:30-17:00	Coffee break			
Room	Embriaco			
17.00-18.00	Plenary Lecture - Paolo Signorini			
18.00-18.30	Walking transfer to Palazzo San Giorgio			
	Palazzo San Giorgio - Sala dei Capitani			
18:30 – 20:00	Round Table Resilience and Management of Emergencies in Logistic Networks			
	Palazzo San Giorgio - Portico			
20:00-22:00	Welcome Cocktail			

Thursday - September 5th, 2019

Room	Embriaco	Caffaro	Doria	Boccanegra	Fieschi
8:30-10:30	T1 Optimization in Machine Learning - 1	T2 OR Support to Industry 4.0 and Smart Manufacturing - 1	T3 Health Care Management and Planning - 1	T4 Data Analytics and Optimization	Software Demo
10:30-11:00	Coffee break				
Room	Embriaco	Caffaro	Doria	Boccanegra	Fieschi
11:00 -13:00	T5 Optimization in Machine Learning - 2	T6 OR Support to Industry 4.0 and Smart Manufacturing - 2	T7 Health Care Management and Planning - 2	T8 WORKSHOP OR Towards Technology Transfer: From Data to Actionable Knowledge	Software Demo
13:00-14:00	Lunch				
Room	Embriaco				
14.00-15.00	Plenary Lecture - Nello Cristianini				
Room	Embriaco	Caffaro	Doria	Boccanegra	Fieschi
15:00-16:30	T9 (AIRO)Young Reserchers in Machine Learning and Operations Research	T10 Scheduling	T11 Equilibrium Problems, Variational Models, and Applications - 1	T12 WORKSHOP OR Towards Technology Transfer: From Data to Actionable Knowledge	
16:30-17:00	Coffee break				
Room	Embriaco	Caffaro	Doria	Boccanegra	Fieschi
17:00-18:30	T13 Mixed Integer Programming	T14 OR Applications - 1	T15 Equilibrium Problems, Variational Models, and Applications - 2	T16 (AIRO)Young Tutorial Session: Young OR Specialists in the Industry - Experiences, Tips, and Panel Discussion	Roundtable: Comparing the Contents of the OR Courses in Italian Universities
Evening	Social Event				

Friday - September 6 th , 2019				
Room	Embriaco	Caffaro	Doria	Boccanegra
8:30-10:30	F1 Smart Port Terminal Operations - 2	F2 Transportation Networks Performance and Reliability	F3 Nonlinear Optimization and Applications - 1	F4 VRP and Related Problems
10:30-11:00	Coffee break			
Room	Embriaco	Caffaro	Doria	Boccanegra
11:00 -13:00	F5 Sochastic Programming: Optimization Under Uncertainty and Applications	F6 OR for Drone Applications	F7 Nonlinear Optimization and Applications - 2	F8 Optimization in Eco-Sustainable Transportation
13:00-14:00	Lunch			
Room	Embriaco			
14:00-15:00	Plenary Lecture: Bruce Golden			
Room	Embriaco	Caffaro	Doria	Boccanegra
15:00-16:00	F9 Rail Port Operations	F10 New Last-mile Transportation Paradigms Under Clever Resource Usage and Prominent Technologies	F11 Combinatorial Optimization	F12 OR Applications in Routing
16:30-17:00	Coffee break			
17:00-18:30	AIRO Meeting			
19:00-23:00	Visit to Genova Cathedral and Social Dinner at Chiostro di San Lorenzo			

Saturday - September 7 th , 2019				
Room	Embriaco	Caffaro	Doria	Boccanegra
8:30 - 10:30	S1 OR Applications - 2	S2 Inventory	S3 Graphs	S4 Travelling Salesman and Arc Routing Problems
10:30-11:00	Coffee break			
11:00-12:30	S5 Optimization in Telecommunication Networks and Queueing Systems	S6 Optimization for Sustainable Energy Systems	S7 Logistics	S8 Game Theory
12:30-13:00	Closing Session			
Afternoon - Evening	Social Event			

Plenary Sessions

Wednesday - September 4th, 2019

Opening Session

Embriaco Room - 13:45 - 14:30

Plenary Lecture

Embriaco Room - 17:00 - 18:00

Paolo Emilio Signorini - President of Ports of Genova

Chair: Anna Sciomachen - ODS2019 PC Chair

Thursday - September 5th, 2019

Plenary Lecture

Embriaco Room - 14:00 - 15:00

Nello Cristianini - University of Bristol

Things to Keep in Mind when Designing Intelligent Agents

Chair: Marcello Sanguineti

Friday - September 6th, 2019

Plenary Lecture

Embriaco Room - 14:00 - 15:00

Bruce Golden - University of Maryland

The Power of Linear Programming: Some Surprising and Unexpected LPs

Chair: Daniele Vigo

Saturday - September 7th, 2019

Closing Session

Embriaco Room - 12:30 - 13:00

Round Table

Resilience and Management of Emergencies in Logistic Networks

Chair: Michele Piana

Wednesday - September 4th, 2019

Palazzo San Giorgio, Sala dei Capitani – 18:30 – 20:00

Invited speakers:

- **Paolo Signorini**, President of the Western Ligurian Sea Port Authority
- **Marco Bucci**, Mayor of Genova
- **Yuval Hadas**, Bar-Ilan University, IL
- **Michele Piana**, University of Genova
- **Emanuele Strano**, MindEarth, Biel, CH

The Round Table will also be an opportunity to present some of the results of the working group set up by the University of Genova, following the collapse of the Morandi Bridge on 14 August 2018.

Workshop

Teaching OR: Comparing the Contents of the OR Courses in Italian Universities

Chair: Federico Malucelli

Thursday - September 5th, 2019

Fieschi Room – 17:00 – 18:30

Presenting traditional and new forms of teaching OR: projects and results.

Speakers:

- **Federico Malucelli**, Politecnico Milano
- **Alice Raffaele**, University of Trento
- **Anna Sciomachen, Daniela Ambrosino** University of Genova
- **Alberta Schettino**, I.I.S. "G. Galilei", Imperia

Workshop

OR Towards Technology Transfer: From Data to Actionable Knowledge

Chair: Enza Messina

Thursday - September 5th, 2019

Boccanegra Room - 11:00 - 13:00, 15:00 - 16:30

Operations Research analysts use advanced mathematical and analytical methods to help organizations investigate complex issues, identify and solve problems, and make better decisions.

The goal of this workshop is to bring together companies and researchers from Academia to exchange ideas, knowledge and expertise, promote collaborations and outline the forthcoming landscape for OR driven innovation.

Practitioners and transfer facilitators in OR and analytics, from Academia, OR start-up/spin-off and intermediary organizations, are invited to present their experiences in exploiting the synergy of OR with data analytics, artificial intelligence, and machine learning to enable more effective business decisions and more productive systems.

Tutorial

Young OR Specialists in the Industry - Experiences, Tips, and Panel Discussion

Thursday - September 5th, 2019

Boccanegra Room - 17:00 - 18:30

What will happen after your PhD? How is the transition from Academia to industry? How is it to apply OR in a company? Two young researchers, with different experiences in industry, are here to share their opinion and answer your questions.

Students who decide to keep studying Operations Research at a PhD level and beyond are attracted by its applications in solving real world problems. Although the gap between academic research and the actual use of models and solutions methods at the industry level is still wide, an increasing number of industries are starting to look at Operations Research as a means to optimize their business. But what is the path that leads to working in such industries? And what are the challenges of adapting academic results to real-world applications?

AIROYoung is the chapter of AIRO dedicated to young researchers in Operations Research. It has therefore a special focus on PhDs and PostDocs and organizes different activities to create a network between students and foster collaboration with industries. At our 1st AIROYoung school in Rome this year we proposed a new type of tutorials “from young to young”, where more experienced PhD/PostDocs from all over the world taught the new PhDs skills and tools that they found relevant during their PhDs. Given the success of the initiative and the positive feedbacks from the participants, AIROYoung has decided to re-propose the framework in the special session of ODS2019 dedicated to young researchers in Operations Research. Young speakers that are nowadays working using OR in the Industry will share their experience and showcase some examples on how they used their OR background in practice. Part of the session will be dedicated to open discussion with the audience and Q&A.

The invited speakers, who have different industrial experiences, will give to the attendees a broad picture and offer plenty of inspiration. The talks will be given by:

- **Veronica Dal Sasso**, Operations Research Scientist at Optrail
- **Martina Fischetti**, Lead Engineer in Operations Research at Vattenfall

Programme

W1 - Smart Port Terminal Operations - 1

Chair: Walter Ukovich - Embriaco, 14:30 – 16:30

1. A New ILP Formulation for the Multi-Day Container Drayage Problem
Alberto Locatelli, Maria Pia Fanti, Gabriella Stecco, Walter Ukovich
2. A Receding Horizon Approach for Berth Allocation Based on Random Search Optimization
Mauro Gaggero, Cristiano Cervellera, Danilo Macciò
3. Integrating Ship Movement Scheduling and Tug Assignment Within a Canal Harbor
Matteo Petris, Giacomo di Tollo, Raffaele Pesenti
4. Optimization Requirements in Intermodal Transportation: Business Cases Emerging from the Market
Andrea Rusich
5. Three Approaches for a Multiperiod Drayage Problem
Ali Ghezelsou, Massimo Di Francesco, Paola Zuddas, Antonio Frangioni

W2 – Data Exploitation: Methods and Applications

Chair: Francesco Archetti - Caffaro, 14:30 – 16:30

1. The Maximum Nearby Flow Problem
Stefano Gualandi, Marco Veneroni, Gennaro Auricchio
2. Extending the Potential-Based Measure of Efficiency to Multiperiod Data
Sebastián Lozano
3. A New Methodological Perspective for Classification Model Selection
Elena Ballante, Silvia Figini
4. A Data Analytics Approach for 4D Trajectories in Air Traffic Flow Management
Guglielmo Lulli, Luigi De Giovanni, Carlo Lancia, Davide Meneghetti
5. Learning Context for Multi Armed Bandits
Fabio Stella

W3 – Financial Modeling

Chair: Pierpaolo Uberti - Doria, 14:30 – 16:30

1. Risk Parity with Expectiles
Francesco Cesarone, Fabio Bellini, Christian Colombo, Fabio Tardella
2. The Optimal Number of Allowances in an ETS: A Bilevel Stochastic Programming Approach
Pelizzari Cristian, Falbo Paolo, Rizzini Giorgio
3. Linear Models for Portfolio Selection with Real Features
Leandro Mundim, Thiago Alves de Queiroz, Andre de Carvalho
4. Portfolio Leverage in Asset Allocation Problems
Mario Maggi, Pierpaolo Uberti
5. Superiority Conditions for the 1/N Investment Strategy: A Theoretical Approach
Maria Laura Torrente, Pierpaolo Uberti

W4 – Optimization in Public Transport (AIRO-OPTSM Chapter)

Chair: Valentina Cacchiani - Boccanegra, 14:30 – 16:30

1. Robust Capacitated Train Rescheduling with Passenger Reassignment Under Stochastic Disruptions
Xin Hong, Lingyun Meng, Francesco Corman, Andrea D’Ariano, Lucas P. Veelenturf, Sihui Long
2. Effective Pruning Strategies for Heuristic and Exact Train Scheduling Algorithms
Marcella Samà, Andrea D’Ariano, Dario Pacciarelli, Marco Pranzo
3. Energy-Efficient Train Control
Federico Naldini, Valentina Cacchiani, Antonio di Carmine, Giacomo Lanza, Michele Monaci, Luca Prezioso, Rosalba Suffritti, Daniele Vigo
4. Comparing Yield Management Models Performances Through Live Testing at Trenitalia
Alessandra Berto, Stefano Gliozzi, Emanuela Valle
5. Light Robustness in Train Stop Planning and Timetabling with Uncertain Demand
Valentina Cacchiani, Jianguo Qi, Lixing Yang

Plenary Lecture

Paolo Emilio Signorini

Chair: Anna Sciomachen - Embriaco, 17:00 – 18:00

Round Table

Resilience and Management of Emergencies in Logistic Networks

Chair: Michele Piana - Palazzo San Giorgio, Sala dei Capitani, 18:30 – 20:00

T1 – Optimization in Machine Learning – 1

Chair: Manlio Gaudio - Embriaco, 8:30 – 10:30

1. Adaptive Random Projections for Efficient Second/First/Zeroth-Order Optimization
Daniele Calandriello, Luigi Carratino, Alessandro Lazaric, Michal Valko, Lorenzo Rosasco
 2. Support Vector Machine Based Bayesian Optimization Under Unknown Constraints
Antonio Candelieri, Riccardo Perego, Francesco Archetti
 3. On the Optimal Trade-Off Between Sample Size and Precision of Supervision
Giorgio Gnecco, Federico Nutarelli
 4. Gradient Boosting with Extreme Learning Machines for the Optimization of Nonlinear Functionals
Danilo Macciò, Cristiano Cervellera
 5. Enhancing the Performance of Randomized Decision Trees
Andrea Manno, Edoardo Amaldi, Antonio Consolo
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T2 - OR Support to Industry 4.0 and Smart Manufacturing – 1

Chair: Massimo Paolucci - Caffaro, 8:30 – 10:30

1. Industry 4.0: The New Scenario and Challenges for Cyber Physical Manufacturing Systems Decisional Processes
Flavio Tonelli, Melissa Demartini
 2. Industrial Clusters Optimization
Roberto Montemanni, Jafar Jamal
 3. Decision Support System for Augmented Maintenance in a Cyber Physical Production System
Matteo Casu, Silvia Cavanna
 4. Smart Thermal Calibration – Machine Learning in ABB Circuit Breaker Manufacturing
Diego Maria Pinto, Laura Palagi, Federico Lo Sinno
 5. Machine Learning Application in Optimization: Job-Shop Scheduling in Industry 4.0
Yuanyuan Li, Edoardo Fadda, Daniele Manerba, Klodiana Goga, Roberto Tadei
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T3 – Health Care Management and Planning - 1

Chair: Elena Tànfani - Doria, 8:30 – 10:30

1. Nurse-to-Patient Assignment in Home Care Services with Uncertain and Temporally Correlated Patient Demand
Giuliana Carello, Ettore Lanzarone, Mara Servilio
2. The Price of Flexibility in Surgery pre-Admission Appointment Scheduling
Paola Cappanera, Saligrama R. Agnihotri, Maddalena Nonato, Filippo Visintin
3. A MILP Model for Biological Sample Transportation in Healthcare
Paolo Detti, Mario Benini, Garazi Zabalo Manrique de Lara
4. OPT3COR: Citizen Centered Integrated Digital Services for Optimized Access Management to Medical Support Services for Maternity Care
Massimo Roma, Gianni Di Pillo, Paolo De Luca, Alberto De Santis, Stefano Lucidi, Mauro Messedaglia, Laura Palagi, Tommaso Giovannelli, Massimo Maurici, Luca Paulon, Sofia Colaceci
5. Master Oncologists Planning in a Cancer Outpatient Center
Elena Tànfani, Giuliana Carello, Jacopo Guercini, Paolo Landa, Nicola Rosso, Angela Testi

T4 – Data Analytics and Optimization

Chair: Enza Messina - Boccanegra, 8:30 – 10:30

1. Efficient Kernel-based Subsequence Search in Data Streams
Stanislav Fedorov, Enza Messina
2. Constrained Named Entity Recognition
Daniele Ferone, Elisabetta Fersini, Enza Messina
3. Active Scenario-Generation for Stochastic Programming
Bruno Giovanni Galuzzi, Francesco Archetti, Antonio Candelieri, Ilaria Giordani, Enza Messina
4. Constrained Deep Attributed Graph Embedding Model
Debora Nozza, Elisabetta Fersini, Enza Messina
5. Deep Learning Models for Predicting Extreme Stock Movements Integrating News Sentiment
Pietro M. Campi, Enza Messina, Debora Nozza, Xiang Yu

T5 – Optimization in Machine Learning - 2

Chair: Marcello Sanguineti - Embriaco, 11:00 – 13:00

1. Infinite Kernel Extreme Learning Machine
Elisa Marcelli, Renato De Leone
2. Least Action Principles and Well-Posed Learning Problems
Alessandro Betti, Marco Gori
3. Probabilistic Tools for Optimization of Classifiers on Large Data Sets
Vera Kůrková, Marcello Sanguineti
4. Optimization Problems in Machine Learning
Claudio Gambella, Bissan Ghaddar, Joe Naoum-Sawaya
5. A Reinforcement Learning Based Multi-Objective Hyper-Heuristic
Roberto Ronco, Massimo Paolucci

T6 - OR Support to Industry 4.0 and Smart Manufacturing – 2 (Contributions from AD-COM Project)

Chair: Giovanni Righini - Caffaro, 11:00 – 13:00

1. Single Machine on-Time-in-Full Scheduling
Alberto Ceselli, Marco Casazza, Giovanni Righini
2. Heuristic Data-Driven Feasibility on Integrated Planning and Scheduling
Marco Casazza, Alberto Ceselli
3. Evaluating Automated Storage and Retrieval System Policies with Simulation and Optimization
Marco Premoli, Michele Barbato, Alberto Ceselli
4. Rolling-Horizon Heuristics for Capacitated Stochastic Inventory Problems with Forecast Updates
Emanuele Tresoldi, Alberto Ceselli
5. Paths and Matchings in an Automated Warehouse
Giovanni Righini, Michele Barbato, Alberto Ceselli

T7 - Health Care Management and Planning - 2

Chair: Paola Cappanera - Doria, 11:00 – 13:00

1. A Simulation Approach to Support Internal Medicine Wards Reorganization
Angela Testi, Paolo Landa, Micaela La Regina, Francesco Orlandini, Elena Tànfani
2. Priority-Based Scheduling of Operating Rooms Using Artificial Intelligence
Giuseppe Galatà, Ivan Porro, Muhammad Kamran Khan, Marco Maratea, Carmine Dodaro
3. A Simulation-Optimization Approach to Reduce Overcrowding in an Hospital Emergency Department Through the Improvement of Low-Complexity Patient Flow
Laura Palagi, Laura De Vito, Alberto De Santis, Tommaso Giovannelli, Stefano Lucidi, Mauro Messedaglia, Massimo Roma, Ferdinando Romano
4. A Flexible Generalized Simulation Model to Describe Hospital Departments and Care Systems
Arturo Liguori, Giorgio Romanin-Jacur
5. Coordinating the Emergency Response of Ambulances to Multiple Mass Casualty Incidents Using an Optimization-Based Approach
Haya Aldossary, Graham Coates

Plenary Lecture

Nello Cristianini

Things to Keep in Mind when Designing Intelligent Agents

Chair: Marcello Sanguineti - Embriaco, 14:00 – 15:00

T8 - Workshop

**OR towards Technology Transfer:
From Data to Actionable Knowledge**

Chair: Enza Messina - Boccanegra, 11:00 - 13:00

T9 - (AIRO)Young Reserchers in Machine Learning and OR

Chair: Martina Fischetti - Embriaco, 15:00 – 16:30

1. Traveling Salesman Problem and Machine Learning
Umberto Junior Mele, Xiaochen Chou, Roberto Montemanni, Luca Maria Gambardella
2. A New Polarization Measure for Decision Tree Models
Marta Galvani, Elena Ballante, Silvia Figini, Pierpaolo Uberti
3. A New Ensemble Tree Model based on Bayesian Bootstrap
Chiara Bardelli, Marta Galvani, Silvia Figini
4. A Computational Comparison of New Techniques for Reoptimizing Shortest Paths
Serena Fugaro, Paola Festa, Francesca Guerriero

T10 – Scheduling

Chair: Alessandro Agnetis - Caffaro, 15:00 – 16:30

1. GPU Scheduling for Deep Learning
Michele Ciavotta, Arezoo Jahani, Marco Lattuada, Danilo Ardagna, Edoardo Amaldi
2. Price-and-Branch for Minimizing Total Completion Time on Parallel Batching Machines
Andrea Grosso, Arianna Alfieri, Alessandro Druetto, Fabio Salassa
3. Scheduling Orders for a Last-Mile Meal Delivery Food Company
Andrea Pacifici, Alessandro Agnetis, Matteo Cosmi, Gaia Nicosia
4. A Bi-Objective Heuristic for Green Identical Parallel Machine Scheduling
Massimo Paolucci, Roberto Ronco

T11 – Equilibrium Problems, Variational Models, and Applications - 1

Chair: Massimo Pappalardo - Doria, 15:00 – 16:30

1. Quasi-Variational Equilibrium Models for Network Flow Problems
Giandomenico Mastroeni, Massimo Pappalardo
2. A Game Theory Model of Online Content Competition
Laura Scrimali, Georgia Fargetta
3. General Oligopolistic Market Equilibrium Problem via Tensor Variational Inequalities: Existence and Regularity Results
Annamaria Barbagallo, Serena Guarino Lo Bianco
4. A Variational Formulation for a Human Migration Problem
Patrizia Daniele, Giorgia Cappello

T12 - Workshop

**OR towards Technology Transfer:
From Data to Actionable Knowledge**

Chair: Enza Messina - Boccanegra, 15:00 - 16:30

T13 – Mixed Integer Programming

Chair: Matteo Fischetti - Embriaco, 17:00 – 18:30

1. Flying Safely by Bilevel Programming
Martina Cerulli, Claudia D'Ambrosio, Leo Liberti
2. Computational Evaluation of Data Driven Local Search for MIP Decompositions
Saverio Basso, Alberto Ceselli
3. Chance Constraint Problem with Integer Scenario Variables
Paolo Paronuzzi, Enrico Malaguti, Michele Monaci, Giacomo Nannicini
4. Intersection Cuts for Quadratic Mixed-Integer Optimization
Matteo Fischetti, Michele Monaci

T14 – OR Applications - 1

Chair: Giuseppe Stecca - Caffaro, 17:00 – 18:30

1. An Integer Programming Formulation for University Course Timetabling
Gabriella Colajanni
2. On the Sizing of Security Personnel Staff While Accounting for Overtime Pay
Patrick Hosein, Victor Job, Alana Sankar-Ramkarran, Trisha Lawrence
3. Dynamic Tabu Search for Enhancing the Productivity of a Bottle Production Line
Marie-Sklaerder Vié, Nicolas Zufferey
4. Swap Minimization in Nearest Neighbour Quantum Circuits: An ILP Formulation
Claudio Sterle, Maurizio Boccia, Adriano Masone, Antonio Sforza

T15 - Equilibrium Problems, Variational Models, and Applications - 2

Chair: Mauro Passacantando - Doria, 17:00 – 18:30

1. A Traffic Equilibrium Nonlinear Programming Model for Optimizing Road Maintenance Investments
Fabio Raciti, Mauro Passacantando
2. On Dynamical Systems to Solve the GNEP
Tangi Migot, Monica Cojocar
3. Opinion Dynamics in Multi-Agent Systems Under Proportional Updating and Any-to-Any Influence
Maurizio Naldi, Loretta Mastroeni, Pierluigi Vellucci
4. A Constructive Method for Solving Optimal Control Models Governed by Parabolic Equations
Stefania Ragni

T16 – (AIRO)Young Tutorial Session: Young OR Specialists in the Industry - Experiences, Tips, and Panel Discussion

Chair: Lavinia Amorosi - Boccanegra, 17:00 – 18:30

1. **Veronica Dal Sasso**, Operations Research Scientist at Optrail
2. **Martina Fischetti**, Lead Engineer in Operations Research at Vattenfall

Panel Discussion

T17 - Workshop - Comparing the Contents of the OR Courses in Italian Universities

Chair: Federico Malucelli - Fieschi, 17:00 – 18:30

1. Activation of a Huge Class: Mission Impossible?
Federico Malucelli
2. Teaching Operations Research before University
Alice Raffaele, Alessandro Gobbi
3. Soft Skills and Problem Solving More and More Required: OR in New Academic Programs
Anna Sciomachen, **Daniela Ambrosino**
4. O.R. Teaching Before University: Educational Experiences in the Technical Institutes, Logistics & Transport Curriculum. Reflections and New Perspectives
Alberta Schettino

F1 - Smart Port Terminal Operations - 2

Chair: Anna Sciomachen - Embriaco, 8:30 – 10:30

1. Maritime Container Terminals can Support Investments for Increasing the Rail Transport Modality?
Daniela Ambrosino, Roberto Garelli, Anna Sciomachen
 2. A Heuristic Approach to Solve the Interval Immune Transportation Problem
Ciriaco D'Ambrosio, Francesco Carrabs, Raffaele Cerulli, Federico Della Croce, Monica Gentili
 3. Displacing Containers from Mega-Ships to Dry Ports with Limited Buffer and Network Capacity
Giuseppe Stecca, Anna Sciomachen
 4. A New Formulation of the Single Door Truck Scheduling Problem
Maria Flavia Monaco
 5. Emerging Digital Technologies in Port-Related Logistics Centres: Business Opportunities and Managerial Implications
Francesco Parola, Giovanni Satta, Francesco Vitellaro, Nicoletta Buratti
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F2 – Transportation Networks Performance and Reliability

Chair: Yuval Hadas - Caffaro, 8:30 – 10:30

1. Optimization of Car Traffic in Emergency Conditions
Luigi Rarità
 2. Disruption Management in Public Transport Systems
Benedikt Bienhuels, Antonio Frangioni, Samuela Carosi
 3. Centrality Metrics After the Morandi Bridge Collapse
Marina Ribaud, Vincenzo Petito, Maurizio Leotta
 4. Resilience of Traffic Networks: Definition and Evaluation Methods
Enrico Siri, Simona Sacone, Silvia Siri
 5. Reliability Evaluation of Public Transportation Transfers via a Game-Theoretic Approach
Yuval Hadas, Giorgio Gnecco, Marcello Sanguineti
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F3 – Nonlinear Optimization and Applications - 1

Chair: Massimo Roma - Doria, 8:30 – 10:30

1. Efficient Local Search Procedures for Quadratic Fractional Programming
Marco Locatelli, Luca Consolini, Jiulin Wang, Yong Xia
2. Some Spherical Separation Variants for Classification Problems
Annabella Astorino, Antonio Fuduli
3. An Efficient Optimization Approach for Subset Selection, with Application to Linear Regression and Auto-Regressive Time Series
Matteo Lapucci, Leonardo Di Gangi, Fabio Schoen, Alessio Sortino
4. Large Scale Global Optimization Through an Intelligent Selection of Local Search Starting Points
Fabio Schoen, Marco Locatelli, Luca Tigli
5. Lipschitz Continuity of Perturbed Quadratic Programs and Applications
Lucian Coroianu

F4 – VRP and Related Problems

Chair: Paolo Toth - Boccanegra, 8:30 – 10:30

1. On a Dynamic Orienteering Problem
Carlo Filippi, Enrico Angelelli, Claudia Archetti, Michele Vindigni
2. The Cumulative Capacitated Vehicle Routing Problem with Profits Under Uncertainty
Patrizia Beraldi, Maria Elena Bruni, Samuel Nucamendi-Guillén, Sara Khodaparasti
3. The Team Orienteering Problem with Overlaps
Nicola Bianchessi, Christos Orlis, Roberto Roberti, Wout Dullaert
4. Logic-Based Benders Decomposition for the Heterogeneous Vehicle Routing Problem with Time Windows
Vinicius Armentano, Ramon Faganello Fachini
5. A Kernel Search Heuristic for the Multi-Vehicle Inventory Routing Problem
Claudia Archetti, Gianfranco Guastaroba, Diana L. Huerta-Muñoz, Maria Grazia Speranza

F5 - Stochastic Programming: Optimization under Uncertainty and Applications

Chair: Francesca Maggioni - Embriaco, 11:00 – 13:00

1. Dealing with the Stochastic Home Energy Management Problem
Antonio Violi, Patrizia Beraldi, Maria Elena Bruni, Gianluca Carrozzino
2. A Two-Stage Stochastic Programming Approach for Generation and Transmission Expansion Planning with High Shares of Renewables
Maria Teresa Vespucci, Giovanni Micheli, Marco Stabile, Cinzia Puglisi
3. Optimization Methods for the Same-Day Delivery Problem
Thiago Alves de Queiroz, Jean-François Côté, Francesco Gallesi, Manuel Iori
4. A Deterministic Approximation for the Long-Term Capacitated Supplier Selection Problem with Total Quantity Discount and Activation Costs Under Uncertainty
Giudo Perboli, Daniele Manerba, Roberto Tadei
5. Sampling Methods for Multistage Robust Convex Optimization Problems
Francesca Maggioni, Fabrizio Dabbene, Georg Ch. Pflug

F6 – OR for Drone Applications

Chair: Claudio Sterle - Caffaro, 11:00 – 13:00

1. Flying Sidekick Traveling Salesman Problem with Multiple Drones
Stefano Novellani, Mauro Dell'Amico, Roberto Montemanni
2. Drone-Based Humanitarian Logistics for Delivery of Perishable Items
Alessandro Agnetis, Monica Gentili, Pitu Mirchandani
3. A Continuous Solution Method for the Multi-Visit Drone Routing Problem
Adriano Masone, Bruce Golden, Stefan Poikonen
4. Exact and Heuristic Approaches for the Flying Sidekick TSP
Maurizio Boccia, Adriano Masone, Antonio Sforza, Claudio Sterle
5. An Integrated Location-Covering Model for an Hybrid UAV-Based Delivery System
Lavinia Amorosi, Teodor Gabriel Crainic, Paolo Dell'Olmo, Nicoletta Ricciardi

F7 - Nonlinear Optimization and Applications - 2

Chair: Stefano Lucidi - Doria, 11:00 – 13:00

1. Linesearch Based Algorithms for Continuously Differentiable Multiobjective Optimization Problems
Stefano Lucidi, Guido Cocchi, Giampaolo Liuzzi, Marco Sciandrone
 2. An Augmented Lagrangian Method Exploiting Second Order Information
Gianni Di Pillo, Andrea Cristofari, Giampaolo Liuzzi, Stefano Lucidi
 3. Feature Selection in SVM via k-Norms
Manlio Gaudioso, Enrico Gorgone, Jean-Baptiste Hiriart-Urruty
 4. On the Use of k-Norms in MINLP Models for Feature Selection
Giovanna Miglionico, Manlio Gaudioso, Giovanni Giallombardo
 5. Multiple Instance Learning via Spherical Classifiers and DC Optimization
Giovanni Giallombardo, Manlio Gaudioso, Giovanna Miglionico, Eugenio Vocaturo
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F8 - Optimization in Eco-Sustainable Transportation

Chair: Maurizio Bruglieri - Boccanegra, 11:00 – 13:00

1. Optimization and Business Modeling in Car-Sharing Services: A Taxonomic Review
Mariangela Rosano, Guido Perboli
 2. On the Optimization of Charge and Relocation Operations in Electric Carsharing Systems
Leonardo Zamberlan, Stefano Carrese, Fabio D'Andreagiovanni, Tommaso Giacchetti, Antonella Nardin
 3. Vehicle Routing Problem in Urban Area: The Role of Parking Availability in Mitigating Environmental Impact
Carmine Cerrone, Raffaele Cerulli, Anna Sciomachen
 4. The Green Vehicle Routing Problem with Reserved Capacitated Stations
Ornella Pisacane, Maurizio Bruglieri, Simona Mancini
 5. The Collaborative Relocation in One-Way Electric Carsharing Systems
Maurizio Bruglieri, Fabrizio Marinelli, Ornella Pisacane
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Plenary Lecture

Bruce Golden

The Power of Linear Programming: Some Surprising and Unexpected LPs

Chair: Daniele Vigo - Embriaco, 14:00 – 15:00

F9 – Rail Port Operations

Chair: Daniela Ambrosino - Embriaco, 15:00 – 16:30

1. The Design of a Port Authority Rail Application Module - How to Manage the Need for National Standardization with Local Requirements
Simone Arecco
2. A Mathematical Approach for Managing the Train Loading Process
Silvia Siri, Daniela Ambrosino
3. A Fixed-Parameter Tractability Result for the Train Marshalling Problem
Franca Rinaldi, Romeo Rizzi
4. Intermodality and Rail Transport: Focus on Port Rail Shunting Operations
Veronica Asta, Daniela Ambrosino

F10 - New Last-Mile Transportation Paradigms Under Clever Resource Usage and Prominent Technologies

Chair: Francesca Guerriero - Caffaro, 15:00 – 16:30

1. Trucks and Drones Cooperation in the Last-Mile Delivery Process
Luigi Di Puglia Pugliese, Giusy Macrina, Francesca Guerriero
2. A Variable Neighborhood Search for the Vehicle Routing Problem with Occasional Drivers and Time Windows
Giusy Macrina, Luigi Di Puglia Pugliese, Francesca Guerriero
3. Efficient Solutions for the VRP with Occasional Drivers and Time Windows
Paola Festa, Daniele Ferone, Luigi Di Puglia Pugliese, Francesca Guerriero, Giusy Macrina
4. A Framework to Transform Truck-and-Drone Coordination Problems into Traveling Salesman Problems
Stefan Poikonen, Adriano Masone, Bruce Golden

F11 - Combinatorial Optimization

Chair: Silvano Martello - Doria, 15:00 – 16:30

1. A New Exact Approach for the Bilevel Knapsack with Interdiction Constraints
Rosario Scatamacchia, Federico Della Croce
2. The LEGO Construction Problem
Enrico Malaguti, Torkil Kollsker, Thomas Stidsen, Mathias Stolpe
3. The Multiple Multidimensional Knapsack with Family-Split Penalties
Carlo Meloni, Michele Ciavotta, Simona Mancini
4. The k-Color Shortest Path Problem
Tommaso Pastore, Daniele Ferone, Paola Festa

F12 - OR Applications in Routing

Chair: Mauro Dell'Amico - Boccanegra, 15:00 – 16:30

1. Booking of Loading/Unloading Areas
Andrea Mor, Maria Grazia Speranza, Joaquim Viegas
2. The VRP with Private and Shared Delivery Location in e-Commerce
Simona Mancini
3. A Milk Collection Problem with Gradual Blending
Germán Paredes-Belmar, Armin Lürer-Villagra, Claudio Araya-Sassi
4. The Traveling Repairman Problem App for Mobile Phones: A Case on Perishable Product Delivery
Maria Elena Bruni, Marco Forte, Alessandro Scarlato, Patrizia Beraldi

S1 - OR Applications - 2

Chair: Antonio Sforza - Embriaco, 8:30 – 10:30

1. A Graph-based Analysis on the Growth and Migration of MDA-MB-231 Breast Cancer Cells
Andrea Pizzuti, Massimo Bracci, Fabrizio Marinelli, Ornella Pisacane
 2. Dining at a Conference
Fabio Salassa, Gabriele Dragotto, Tommaso Traetta, Federico Della Croce, Marco Buratti
 3. Operational Research Methodologies for the Pompei Archeological Park
Antonio Sforza, Maurizio Boccia, Claudio Sterle, Massimo Osanna, Luana Toniolo, Alberto Bruni
 4. Integrating Vehicle Routing and Resource Allocation in a Pharmaceutical Network
Roxanne Tison, Nicolas Zufferey
 5. Project Selection in a Process of IT Innovation
Maria Franca Norese, Gian Franco Bono
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S2 - Inventory

Chair: Paolo Brandimarte - Caffaro, 8:30 – 10:30

1. A Real Case on Making Strategic Logistics Decisions with Production and Inventory Optimization Models
Enrique Parra
 2. A Bi-Objective Mixed Integer Model for the Single Link Inventory Routing Problem Using the e-Constraint Method
Arianne Mundim, Maristela Santos, Reinaldo Morabito
 3. Models for Disassembly Lot Sizing Problem with Decisions on Surplus Inventory
Meisam Pour Massahian Tafti, Matthieu Godichaud, Lionel Amodeo
 4. A Robust Approach to the Integrated Inventory Replenishment, Lateral Transshipments, and Routing Problem in a Single-Commodity Supply Chain
Naseraldin Hussein, Shiry Varem, Aharon Ben-Tal
 5. Learning Inventory Control Rules for Perishable Items by Simulation-Based Optimization
Paolo Brandimarte, Remigio Berruto, Patrizia Busato
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S3 – Graphs

Chair: Raffaele Cerulli - Doria, 8:30 – 10:30

1. Finding Dense Subgraphs
Naga V.C. Gudapati, Enrico Malaguti, Michele Monaci
2. A Genetic Algorithm for Minimum Conflict Weighted Spanning Tree Problem
Andrea Di Placido, Carmine Cerrone, Davide Donato Russo
3. Computing Dissimilar Pairs of Paths
Ali Moghanni, Marta Pascoal
4. Polyhedral Analysis of the 2-Edge-Connected Minimum Branch Vertices Problem
Federica Laureana, Raffaele Cerulli, Bernard Fortz, Martine Labbé
5. The Concurrent Shortest Path Problem
Davide Donato Russo, Carmine Cerrone, Andrea Di Placido

S4 – Travelling Salesman and Arc Routing Problems

Chair: Renata Mansini - Boccanegra, 8:30 – 10:30

1. A Metaheuristic Algorithm for the Probabilistic Orienteering Problem
Xiaochen Chou, Umberto Junior Mele, Luca Maria Gambardella, Roberto Montemanni
2. Algorithmic Strategies for a Fast Exploration of the TSP 4-OPT Neighborhood
Giuseppe Lancia, Marcello Dalpasso
3. A Computational Evaluation of Online ATSP Algorithms
Michele Barbato, Alberto Ceselli, Filippo Mosconi
4. The Refrigerated Traveling Salesman Problem
Sara Ceschia, Antonella Meneghetti
5. Kernel Search: An Application to the Time-Dependent Rural Postman Problem
Renata Mansini, Gianpaolo Ghiani, Emanuela Guerriero, Roberto Zanotti

S5 - Optimization in Telecommunication Networks and Queueing Systems

Chair: Franco Davoli - Embriaco, 11:00 – 12:30

1. Modeling of Traffic Flows in Internet of Things Using Renewal Approximation
Florian Wamser, Phuoc Tran-Gia, Stefan Geißler, Tobias Hoßfeld
2. The Shortest Queue System with Jockeying
Rachel Ravid
3. A Multiband Robust Optimization Approach to Green 5G Virtual Network Function Placement
Fabio D'Andreagiovanni, Thomas Bauschert, Andreas Kassler, Antonella Nardin
4. Flow Assignment in Multi-Core Network Processors
Franco Davoli, Mario Marchese, Fabio Patrone

S6 - Optimization for Sustainable Energy Systems

Chair: Michela Robba - Caffaro, 11:00 – 12:30

1. A Relocation Model for Electric Free-Floating Car-Sharing Services
Paola Tresca, Alberto Coloni, Alessandro Luè, Roberto Nocerino
2. Extensive Analysis of Models and Indicators for the Optimal Location of Electric Vehicle Charging Stations
Daniele Manerba, Edoardo Fadda, Gianpiero Cabodi, Paolo Camurati, Roberto Tadei
3. Solving a Home Energy Management Problem by Simulated Annealing
Andrea Schaerf, Edoardo Bastianetto, Sara Ceschia
4. Optimal Charging and Routing of Electric Vehicles
Giulio Ferro, Massimo Paolucci, Michela Robba

S7 – Logistics

Chair: Claudia Archetti - Doria, 11:00 – 12:30

1. Solving a Bi-Objective UAV Ground Control Station Location-Allocation Problem
Mumtaz Karatas, Ertan Yakici, Abdullah Dasci
2. A Mathematical Model to Face Congestion Issues in Container Terminals through a Non-Mandatory Truck Appointment System
Claudia Caballini, Daniela Ambrosino, Lorenzo Peirano, Simona Sacone
3. The Impact of Consolidation Hubs on Epidemics Response Supply Chains
Laura Turrini, Florian Luckner, Maria Besiou
4. Air Intermodal Freight Transportation: The Freight Forwarder Service Problem
Lorenzo Peirano, Enrico Angelelli, Claudia Archetti

S8 – Game Theory

Chair: Laura Levaggi - Boccanegra, 11:00 – 12:30

1. Analysis of Human Movement Qualities via an Automated Approach Based on Cooperative Games on Graphs
Ksenia Kolykhalova, Antonio Camurri, Giorgio Gnecco, Marcello Sanguineti, Gualtiero Volpe
2. Braess' Paradox and Cooperative Games
Mauro Passacantando, Giorgio Gnecco, Yuval Hadas, Marcello Sanguineti
3. Multiobjective Games with Potential
Laura Levaggi, Lucia Pusillo
4. A Citation Index Based on a Discrete Version of the Nash Bargaining Problem
Josep Freixas, Roger Hoerl, William Zwicker



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