

OLA'2021 Int. Conf. on Optimization and Learning

Catania (Sicilia), Italy, ~~March 1-3, 2021~~ June 21-23, 2021



21-23 June 2021, Catania, Italia



## Program

## **OLA'2021 is organized by**

- University of Catania (Italy)
- University of Lille (France)

### **Conference chairs**

- Prof. Mario Pavone (Univ. of Catania, Italy)
- Prof. Lionel Amodeo (UTT, France)

### **Conference program chairs**

- Dr. Bernabé Dorronsoro (University of Cadiz, Spain)
- Prof. Vincenzo Cutello (University of Catania, Italy)

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- Prof. El-Ghazali Talbi (University of Lille & INRIA, France)

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- Hamamache Kheddouci (Univ. Lyon, France)

- Peter Korosec (Jožef Stefan Institute Ljubljana, Slovenia)
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- Antonio J. Nebro, University of Málaga (Spain)
- José Manuel García-Nieto, University of Málaga (Spain)
- Sergio Nesmachnow, University of the Republic (Uruguay)
- Gregor Papa (Jožef Stefan Institute, Slovenia)
- Apivadee Piyatumrong (NECTEC, Thailand)
- Angel Ruiz Zafra, University of Cádiz (Spain)
- Helena Ramalinho (Universitat Pompeu Fabra, Barcelona, Spain)
- Roberto Santana (University of the Basque Country, Spain)
- Alejandro Santiago, Polytechnic University of Altamira (Mexico)
- Andrei Tchernykh (CICESE, Mexico)
- Yaroslav D. Sergeyev (University of Calabria, Italy)
- Sartra Wongthanavas (Khon Kaen University, Thailand)
- Alice Yalaoui (Université de Technologie de Troyes, UTT, France)
- Farouk Yalaoui (Université de Technologie de Troyes, UTT, France)
- Xin-She Yang (Middlesex University London, UK)
- Martin Zaefferer (TH Köln University of Applied Sciences, Germany)
- Angel Ruiz Zafra, University of Cádiz (Spain)
- Nicolas Zufferey (Université de Genève, Switzerland)

## Invited keynote

### 1. Machine learning and combinatorial optimization: some possible catalytic effects

Prof. Vittorio Maniezzo (University of Bologna, Italy)

### 2. Learning and decision making and insect brain inspired computational models

Prof. Paolo Arena and Luca Patané (University of Catania, Italy)

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# Program at a glance

June 21<sup>th</sup>

|       |   |
|-------|---|
| 9h15  | <a href="#">Opening</a> (Dr. M. Pavone & Prof. E-G. Talbi)  |
| 9h30  | <a href="#">Session Optimization for learning</a><br>(chair: Prof. E-G. Talbi)  |
| 10h50 | Break   |
| 11h20 | <a href="#">Invited keynote</a> (chair: M. Pavone)<br><b>Machine learning and combinatorial optimization: some possible catalytic effects</b><br>Prof. Vittorio Maniezzo (University of Bologna, Italy) |
| 12h20 | Lunch   |
| 14h00 | <a href="#">Session Transportation and routing</a><br>(chair: T. Arbaoui)   |
| 15h20 | Break   |
| 15h50 | <a href="#">Session Engineering applications</a><br>(chair: R. Ellaia)  |

June 22<sup>th</sup>

|       |   |
|-------|---|
| 9h30  | <a href="#">Session</a> <b>Deep learning</b><br>(chair: Dr. A. Nakib)   |
| 10h50 | Break   |
| 11h20 | <a href="#">Invited keynote</a> (chair: M. Pavone)<br><b>Learning and decision making and insect brain inspired computational models</b><br>Prof. Paolo Arena and Luca Patané (Universiy of Catania, Italy) |
| 12h20 | Lunch   |
| 14h00 | <a href="#">Session</a> <b>Learning and optimization</b><br>(chair: Dr. B. Dorransoro)  |
| 15h20 | Break   |
| 15h50 | <a href="#">Session</a> <b>Logistics &amp; planning</b><br>(chair: L. Amodeo)   |
| 17h10 | End of Session  |

June 23<sup>th</sup>

|       |   |
|-------|---|
| 9h30  | <a href="#">Session</a> <b>Learning for optimization</b> (chair: Prof. N. Melab)  |
| 10h50 | Break   |
| 11h20 | <a href="#">Session</a> <b>Learning and optimization</b> (chair: Prof. B. Dorronsoro)   |
| 12h20 | Lunch   |
| 14h00 | <a href="#">Session</a> <b>Scheduling and constraints</b><br>(chair: Prof. F. Yalaoui)<br><b>Recorded presentations</b> (available on web site) |
| 17h10 | End of conference   |

# Detailed program: Monday, June 21<sup>t</sup>

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## 9h15 - 9h30 [Link](#) Opening Session

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Prof. Dr. Mario Pavone (Italy) & Prof. El-Ghazali Talbi (France)

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## 9h30 - 10h50

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### [Link](#) - Session **Optimization for learning** (chair: Prof. E-G. Talbi)

- Embedding Simulated Annealing within Stochastic Gradient Descent  
*Matteo Fischetti, Stringher Matteo*
- A semi-infinite optimization approach to shape-constrained regression  
*Jochen Schmid, Martin Kurnatowski, Patrick Link, Lukas Morand, Jan Schwientek*
- Comparing local search initialization for k-means and k-medoids clustering in a planar Pareto Front, a computational study  
*Jiangnan Huang, Chen Zixi, Nicolas Dupin*
- A Recommendation System for Efficient PEH Bus Operation Based on Unsupervised Machine Learning  
*Patricia Ruiz, Juan Carlos de la Torre, Renzo Massobrio, Pablo Moreno, Marcin Seredynski, Bernabe Dorronsoro*
- Improved SAT models for NFA learning  
*Frédéric Lardeux, Eric Monfroy*

## 10h50 - 11h20 – Break

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## 11h20 - 12h20

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### [Link](#) - Invited Keynote

(chair: Dr. M. Pavone)

### **Machine learning and combinatorial optimization: some possible catalytic effects**

Prof. Vittorio Maniezzo (University of Bologna, Italy)

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## 12h20 - 14h00 **BREAK**

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## 14h00 - 15h20

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### [Link](#) - Session **Transportation and routing** (chair: Prof. T. Arbaoui)

- Multiple-tour constrained optimization for waste sites inspections  
*Francesco Nebula, Francesco Gargiulo, Gabriella Gigante, Domenico Pascarella, Luca Cicala*
- Solving Inventory Routing Problems  
*Danny Meier, Benjamin Keller, Markus Kolb, Thomas Hanne*
- Iterated Local Search with Neighbourhood Reduction for the Pickups and Deliveries Problem Arising in Retail Industry  
*Hanyu Gu, Zhang Yefei, Yakov Zinder*
- A stochastic and dynamic approach for the one-commodity pickup & delivery travelling salesman problem  
*Seddik Hadjadj, Hamamache Kheddouci*
- Mobile Clinics Routing in Response to Covid-19 Outbreak: An Intelligent Hyperheuristic Approach  
*Kassem Danach, Jomana Al Haj Hassan, Abbas Tarhini, Shahin Gelareh*

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## 15h50 - 16h20 – Break

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## 16h20 - 17h40

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### [Link](#) - Session **Engineering optimization** (chair: Prof. R. Ellaia)

- Multi-Objective Optimization Model for Sustainable Urban Transportation Ensuring the Quality of Service  
*David Peña Morales, Patricia Ruiz, Andrei Tchernykh, Bernabe Dorronsoro*
- Towards a hybrid positioning approach for IoT-based smart factories  
*Andrés Millán-Alcaide, Angel Ruiz-Zafra, Guadalupe Ortiz*
- An Application of BnB-NSGAll: Initializing NSGAll to Solve 3 Stage Reducer Problem  
*Ahmed JABER, Pascal LAFON, Rafic YOUNES*
- Incorporating User Preferences in Multi-objective Feature Selection in Software Product Lines using Multi-Criteria Decision Analysis  
*Takfarinas SABER, Anthony Ventresque, Malika Bendeche*
- The horizontal linear complementarity problem and robustness of the related matrix classes  
*Milan Hladík, Miroslav Rada*

## Detailed program: Tuesday, June 22<sup>th</sup>

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## 9h30-10h50

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### [Link](#) - Session **Deep Learning** (chair: Dr. Amir Nakib)

- Robustness of Adversarial Images against Filters  
*Raluca Chitic, Nathan Deridder, Franck Leprevost, Nicolas Bernard*
- Guiding Representation Learning in Deep Generative Models with Policy Gradients  
*Luca Lach, Timo Korthals, Francesco Ferro, Malte Schilling, Helge Ritter*

- FFCNN: Fast FPGA based Acceleration for Convolution neural network inference  
*Amir Nakib*

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**10h50 – 11h20 – Break**

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**11h20-12h20**

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[Link](#) - Invited Keynote

(chair: Dr. M. Pavone)

**Learning and decision making and insect brain inspired computational models**

Prof. Paolo Arena and Luca Patané (University of Catania, Italy)

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**12h20 - 14h00**      **BREAK**

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[Link](#) - Session **Learning and optimization** (chair: Dr. B. Dorronsoro)

- Neighborhood Enumeration in Local Search Metaheuristics  
*Michiel Van Lancker, Greet Vanden Berghe, Tony Wauters*
- A Bayesian Optimisation Approach for Multidimensional Knapsack Problem  
*Hanyu Gu, Alireza Etmanniesfahani, Amir Salehipour*
- Bayesian Optimization with deceptive Gaussian Processes : How to maintain efficiency in the optimization process ?  
*Jérémy Sadet, El-Ghazali Talbi, Franck Massa, Thierry Tison, Isabelle Turpin*
- An Exploratory Analysis on a Disinformation Dataset  
*Matheus Marinho, Anthony Lins, Carmelo Bastos Filho*

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**15h20 - 15h50 – Break**

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**15h50 - 17h10**

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[Link](#) - Session **Logistics and Planning** (chair: Prof. L. Amodeo)

- A genetic algorithm for the Three-dimensional Open Dimension Packing problem  
*Cong Tan Trinh Truong, Lionel Amodeo, Farouk Yalaoui*
- Formulation of a Layout-Agnostic Order Batching Problem  
*Johan Oxenstierna, Louis Janse van Rensburg, Volker Krueger, Jacek Malec*
- Theoretical analysis of a dynamic pricing problem with linear and isoelastic demand functions  
*Mourad Terzi, Alice Yalaoui, Yassine Ouazene, Farouk Yalaoui*
- Time-indexed formulations for the Order Acceptance Scheduling problem considering energy aspects with sequence-dependent setup-times  
*Mariam Bouzid, Oussama Masmoudi, Alice Yalaoui*
- A multi-objective approach for an energy-efficient buffer allocation  
*Yasmine Alaouchiche, Farouk Yalaoui, Yassine Ouazene*

# Detailed program: Wednesday, June 23<sup>th</sup>

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**9h30 - 10h30**

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[Link](#) - Session **Learning for optimization** (chair: Prof. N. Melab)

- Reinforcement Learning for the Pick-up & Delivery Problem  
*Jacopo Pierotti, Theresia van Essen, Maximilian Kronmuller, Javier Mora, Wendelin Böhmer*
- Reinforcement Learning-Based Adaptive Operator Selection  
*Rafet Durgut, Mehmet Aydin*
- A Learning-based Iterated Local Search Algorithm for Solving the Traveling Salesman Problem  
*Maryam Karimi Mamaghan, Bastien Pasdeloup, Mehrdad Mohammadi, Patrick Meyer*
- Space Partitioning with multiple models for Parallel Bayesian Optimization  
*Maxime Gobert, Jan Gmys, Nouredine Melab, Daniel Tuytens*

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**10h30 – 11h – Break**

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**11h00 - 12h00**

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[Link](#) - Session **Learning and optimization** (chair: Prof. E-G. Talbi)

- Cryptographic Primitives Optimization Based on the Concepts of the Residue Number System and Finite Ring Neural Network  
*Andrei Tchernykh, Mikhail Babenko, Bernardo Pulido-Gaytan, Egor Shiryayev, Elena Golimblevskaia, Arutyun Avetisyan, Nguyen Viet Hung, Jorge M. Cortés-Mendoza*
- Investigating Overlapped Strategies to Solve Overlapping Problems in a Cooperative Co-evolutionary Framework  
*Julien Blanchard, Charlotte Beauthier, Timoteo Carletti*
- Automatic Synthesis of Boolean Networks from Biological Knowledge and Data  
*Athénaïs Vaginay, Taha BOUKHOBZA, Malika Smail-Tabbone*
- Combination of Machine Learning and Optimization: A Survey of Recent Methods for Large Complex Problems  
*Oumayma Bahri, Lionel Amodeo*

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**12h20 - 14h00**

**BREAK**

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[Link](#) - Session **Scheduling and constraints** (chair: Prof. F. Yalaoui)

- Optimal demand response scheduling of a residential Microgrid  
*Mohamed Saâd EL HARRAB, Michel NAKHLA*
- A Hybrid Approach for Data-based Models Using a Least-squares Regression  
*Malin Lachmann, Christof Büskens*
- Rescheduling in textile industry : an unrelated parallel machines problem with setup times  
*Alice Berthier, Hicham Chehade, Alice Yalaoui, Farouk Yalaoui, Lionel Amodeo, Christian Bouillot*
- Simultaneous Lot Sizing and Scheduling Problem in Tire Industry : Eligibility Constraint Sensitivity Analysis  
*Cyril Koch, Taha Arbaoui, Yassine Ouazene, Farouk Yalaoui, Humbert De Brunier, Nicolas Jaunet*
- Mathematical model and metaheuristics for scheduling production processes in hospital catering  
*Fatima ABDERRABI, Matthieu Godichaud, Alice Yalaoui, Farouk Yalaoui, Lionel Amodeo, Ardian Qerimi*

**Recorded available presentations**

- Synthesis of scheduling heuristics by composition and recombination  
*Jan Winkels, Christin Schumacher, Dominik Mäckel*
- A comparison of Learnheuristics using different Reward Functions to solve the Set Covering Problem  
*Broderick Crawford, Ricardo Soto, Felipe Cisternas-Caneo, Diego Tapia, Hanns de la Fuente-Mella, Wenceslao Palma, José Lemus-Romani, Mauricio Castillo, Marcelo Becerra-Rozas*
- Deep Reinforcement Learning for Dynamic Pricing of Perishable Products  
*Vibhati burman, Rajesh Vashishtha, Rajan Kumar, Sharadha Ramanan*
- Time Series Prediction of Flow Field around a Two-Dimensional Cylinder Using Autoencoder and LSTM  
*Yusuke Yamada, Masahiro Kanazaki*
- Lift rise spots exploration of a yaw-wise rotational flap by enhanced-Kriging-based efficient global optimization  
*Kazuhisa CHIBA, Masahiro KANAZAKI*
- Solving QAP with Auto-parameterization in Parallel Hybrid Metaheuristics  
*Jonathan Duque, Danny Munera, Daniel Diaz, Salvador Abreu*
- A hybrid FLP-AHP approach for Optimal Product Mix in Pulp and Paper Industry  
*Meenu Singh, Millie Pant*
- The Multi-Objective Team Set Orienteering Problem  
*Houssemeddine Ben smida, Francisco Chicano, Saoussen Krichen*