

## Monday

### ■ MB-03

- 1 - **Management of uncertainty in disassembly systems based on stochastic programming**  
*M.-Lounes Bentaha*
- 2 - **A new algorithm for influence maximization**  
*Elisenda Molina, Juan Tejada, Juan Vidal-Puga*
- 3 - **ProjectManagement: an R package for managing projects**  
*Juan Carlos Gonçalves, Ignacio García-Jurado, Julian Costa*  
Paper moved to session TC-63  
**On-Demand Bus Routing Problem with Real-time Traffic and Stochastic Shortest Path**  
*Ying Lian, Kenneth Sörensen*

### ■ MC-02

- 1 - **Two-stage stochastic/robust scheduling using permutable operation groups: a constraint programming approach**  
*Louis Riviere, Christian Artigues, H el ene Fargier*
- 2 - **Robust Decision Tree for MMRCPSP**  
*Tom Portoleau, Christian Artigues, Romain Guillaume*
- 3 - **Evaluating productivity metrics for dynamic scheduling problems**  
*Gonalo Figueira*  
Paper moved to session MF-63  
**Stochastic Job shop to minimize expected maximum lateness**  
*Andrea Rivera, Ocampo Mar a Jos e, Gabriel Forero, Eliana Maria Gonzalez-Neira*

### ■ MC-04

- 1 - **Analyzing Dial-a-Ride systems in Austrian rural regions**  
*Kerstin Maier, Philipp Armbrust, Philipp Hungerl ander, Veronika Pachatz*
- 2 - **Rebalancing via combinatorial optimization in a real life smart bike-sharing service.**  
*Zisis Maleas, Georgia Ayfantopoulou, Josep Maria Salanova Grau, Panagiotis Tzenos, Andreas Nikiforiadis*
- 3 - **Optimised management of a fleet of electric autonomous vehicles**  
*Matthieu Bessoles, Pierre Hosteins, Paola Pellegrini, Joaquin Rodriguez*  
Paper moved to session MF-63  
**A fast hybrid evolutionary algorithm for a bi-criteria moving target travelling salesman problem**  
*Aalah Maskooki, Kalyanmoy Deb, Markku Kallio*

### ■ MD-03

- 1 - **A bi-objective K-nearest neighbors based imputation method for data with multilevel structures**  
*Maximiliano Cubillos, Sanne W ohlk*
- 2 - **Properties of Inverse Correspondence Analysis**  
*Rick Willemsen, Wilco van den Heuvel*
- 3 - **SOS-SDP: an Exact Solver for Minimum Sum-of-Squares Clustering**  
*Veronica Piccialli, Antonio Maria Sudoso, Angelika Wiegele*  
Paper moved to session TB-63  
**Enhancing feature selection in virtual metrology for semiconductor fabrication plants**  
*Oussama Djedidi, Valeria Borodin, Taki Eddine Korabi, Michel Juge, Agn es Roussy*

### ■ MD-30

- 1 - **Inadequate groundwater management and unsustainable agriculture: The case of pistachio production in Iran**  
*Ali Akhavan, Paulo Goncalves*
- 2 - **Exploring the effects of infrastructure policies on availability and accessibility of nutritious food in Brazilian favelas: A System Dynamics approach**  
*Thiago Piovani, Vinicius Picanco Rodrigues, Andr e Duarte*
- 3 - **Analyses of decontamination scenarios of an urban object**  
*Anna Selivanova, Igor Krejci*

New session:

### ■ MD-63

Monday, 14:30-16:00  
Virtual Room 63

### Last minute changes 1

Cluster: Last minute changes

*Invited session*

Chair: *Milad Elyasi*

- 1 - **Prioritizing patients for cancer prevention programs**  
*Maria-Carolina Poveda-Amaya, David Barrera Ferro, Sally Brailsford, Diego Patino, Raul Murillo*
- 2 - **Applying Machine Learning to improve Operation Room Scheduling under uncertainty**  
*Ricardo Otero*
- 3 - **Blood Donation Tailoring under Demand Uncertainty**  
*Milad Elyasi, Okan Ozener, Ihsan Yanikoglu, Ali Ekici*
- 4 - **An Adjustable Robust Optimization Approach for Emergency Relief Routing Problem**  
*Farzad Avishan, Milad Elyasi, Ali Ekici, Okan Ozener, Ihsan Yanikoglu*

New session:

## ■ MF-63

Monday, 17:30-19:00

Virtual Room 63

### Last minute changes 2

Cluster: Last minute changes

Invited session

Chair: Ramin Raeesi

- 1 - **A fast hybrid evolutionary algorithm for a bi-criteria moving target travelling salesman problem**  
*Alaleh Maskooki, Kalyanmoy Deb, Markku Kallio*
- 2 - **Stochastic Job shop to minimize expected maximum lateness**  
*Andrea Rivera, Ocampo María José, Gabriel Forero, Eliana Maria Gonzalez-Neira*
- 3 - **Fuelling the zero-emissions road freight of the future: routing of mobile fuellers**  
*Ramin Raeesi*
- 4 - **Optimal bidding strategies of a microgrid in energy markets under uncertainty: A stochastic programming approach**  
*Robert Herding, Wayne W. Jones, Emma Ross, Sam Johnson, Vassilis Charitopoulos, Lazaros Papageorgiou*

## ■ MG-35

- 1 - **Mathematical programming formulations of the perfect vertex and edge domination problem**  
*Said Hanafi, Vinicius L. Do Forte, Abilio Lucena*
- 2 - **Using the QUBO model to Solve Large Set Partitioning Problems.**  
*Gary Kochenberger, Fred Glover*
- 3 - **Discrete diversity and dispersion maximization**  
*Anna Martínez-Gavara, Rafael Martí*

## Tuesday

### ■ TB-05

- 1 - **A Novel Approach to the Tail Assignment Problem at Vueling Airlines**  
*Luis Cadarso, Manuel Fuentes González, Vikrant Vaze, Cynthia Barnhart*
- 2 - **A Comprehensive Approach to Airline Operations Recovery at Vueling Airlines**  
*Manuel Fuentes González, Luis Cadarso, Vikrant Vaze*  
Paper moved to session TC-63  
**Enhancing day-ahead airline planning with data-driven flight delay predictions**  
*Sebastian Birolini, Stephanie Franklin, Alexandre Jacquillat, Gabrielle Rappaport*  
Paper moved to session TC-63

### Airline Network Planning: Data-driven Optimization with Demand-supply Interactions

*Mattia Cattaneo, Sebastian Birolini, Alexandre Jacquillat, Antonio Antunes*

### ■ TB-27

- 1 - **Large-Scale Process Monitoring**  
*Volker Kraft*  
Cancellation  
**Variable selection techniques for Big and Wide Data applied to data envelopment analysis (DEA) with application to the Swedish Electricity Distribution Market**  
*Kristofer Månsson*
- 3 - **Hourly Temperature Data do not support the Views of the Climate Deniers, Sceptics, and Trivializers: Evidence from Barrow Alaska**  
*Kevin Forbes*
- 4 - **Minimizing Bias in AI based recommender systems**  
*Monisha Bhattacharya, Shantanu Biswas, Saikat Chakraborty, Gunjan Bansal*

### ■ TB-35

- 1 - **Solution methods for the The Resource Constrained Project Scheduling Problem with a flexible Project Structure and Consumption and Production of Resources**  
*Tom van der Beek, Theresia van Essen, Jeroen Pruyn, Dimitris Souravlias*
- 2 - **Embedding decision-maker's preferences in the multi-objective Tabu search method for scheduling problems**  
*Madani Bezoui, Alexandru Olteanu, Marc Sevaux*
- 3 - **Exact solution of the two-machine flow shop problem with three operations**  
*Federico Della Croce, Fabio Salassa, Vincent T'kindt*  
Paper moved from session TE-06
- 4 - **Selecting directed cycles: a polyhedral study**  
*Marie Baratto, Yves Crama*  
Cancellation  
**The compromise method for solving the multi-criteria linear-fractional transportation problem of "fuzzy" type**  
*Alexandra Tkacenko*

### ■ TB-43

- 1 - **circular economy and humanitarian food supply chain management in Spain during COVID19: a case study**  
*Maria Alvarez, José Silva*
- 2 - **A multi-objective solution approach to assess the trade-off between packaging, food waste and environmental impact in grocery retailing**  
*Adhurim Imeri, Christian Fikar, Gerald Reiner*  
Paper added to session

### 3 - Reducing the bullwhip effect and plastic waste through incentivization by blockchain technology — The case of the plastic bottle supply chain

Gerald Reiner, Department of Information Systems and Operations Management, Vienna University of Economics and Business, Welthandelsplatz 1, 1020, Vienna, Austria, gerald.reiner@wu.ac.at, Maximilian Kunovjanek, Christian Wankmüller, Romana Polt, Johannes Pulsfort

This research study investigates the impact of blockchain technology (BT) on plastics supply chains (SC) to reduce plastic bottle waste along relevant SC processes (e.g. transport, storage, return). Aside from various causes, the bullwhip effect (BWE) in global SCs represents a major reason for the tremendously increased plastic pollution worldwide. This gradual increase of variability related cost drivers (e.g. inventories) upstream in a SC mainly stems from information distortion and lacking visibility between SC partners. BT seems to be a breakthrough for addressing those inefficiencies and for handling information distortion as compared to common electronic data interchange solutions. In the context of plastics SCs, the technology promises to enhance plastic flow visibility and SC data quality (e.g. point-of-sale) as well as data security. The tracking and tracing functionality of BT supports the collection of real-time information on plastic bottles (e.g. location) and potentially enables an incentive system to obtain higher collection and recycling rates. When combined with innovative SC policies a more risk hedging plastic value chain in terms of virgin raw material prices can be created, which in turn increases SC efficiency. The study proposes a system dynamics model that explores the key characteristics of BT in the context of the plastics life cycle while considering the BWE.

### ■ TB-45

#### 1 - Circuit partitioning with path delay-based minimization

Julien Rodriguez, François Galea, François Pellegrini, Lilia Zaourar

#### 2 - Deterioration of a system with Cox arrival times.

Lucía Bautista Bárcena, Inmaculada Torres Castro, Luis Landesa Porras

Paper added to session

#### 3 - Mathematical modelling of Logic Locking against the insertion of Hardware Trojan in an Integrated Circuit

Jonathan Fontaine, DSCIN, CEA - LIST, 8 Avenue de la Vauve, 91120, Palaiseau, France, France, jonathan.fontaine@lip6.fr, Lilia Zaourar, Roselyne Chotin

Nowadays, the increasing complexity of electronic devices has led to increase their cost. Therefore, several external agents ensure a part of the production of an Integrated Circuit (IC). A new threat has emerged from those companies. Checking that an IC works as specified by the designer and is not doing secret tasks is very difficult. In fact, it is possible to add electronic component to a malicious purpose, named Hardware Trojan (HT). This is a major security issue, especially for IC used in critical fields as transportation, health or military. It can be information leakage, material deterioration or denial of service. A solution to avoid that is to use Logic Locking. This method use a numeric key to lock the IC, which is only known from the designer. The aim is to obfuscate the logic function of the IC for untrusted party. Its purpose is to increase the security of the IC while limiting the impact on power consumption, critical path and area. The aim of this work is to model logic locking as an optimization problem. We represent the IC by a graph and express the set of constraints with a non-linear model. We first solved it exactly by linearization for small instances and we implemented a heuristic for larger ones. It compute for each pair of vertices the notion of pairwise secure. Then get all the maximum cliques. Finally, select the largest cliques, until reaching fixed keychain limit. We will present the numerical results and the prospects for improvement.

New session:

### ■ TB-63

Tuesday, 10:30-12:00

Virtual Room 63

### Last minute changes 3

Cluster: Last minute changes

Invited session

Chair: Alexis Tsoukias

#### 1 - A Riemannian Gauss-Newton algorithm for the symmetric tensor rank approximation problem

Rima Khouja, Bernard Mourrain

#### 2 - A new mathematical model to the spread of stochastic investing information and to analyze the behavior of investors

Selma-Christina Belen, Gerhard-Wilhelm Weber

#### 3 - Enhancing feature selection in virtual metrology for semiconductor fabrication plants

Oussama Djedidi, Valeria Borodin, Taki Eddine Korabi, Michel Juge, Agnès Roussy

#### 4 - The MCDA contribution and impact in environmental management

Panagiota Digkoglou, University of Macedonia, Greece, giotadigkoglou@outlook.com, Jason Papatthasiou, Alexis Tsoukias, Katerina Gotzamani

The reflections of environmental management are constantly increasing worldwide and represent a concern that is expected most probably to escalate in the near future. Simultaneously, ensuring a decision-making process for achieving sustainability is crucial and essential considering current environmental, financial and social problems. The discipline of Multiple Criteria Decision Analysis (MCDA) has already contributed to a large extent as regards issues like sustainability, pollution and environmental management. Hence, during the last decades, there is an increasing number of MCDA publications relevant to environmental management, while there is a challenging necessity for real actions and change in the way we face environmental pollution. This paper reviews the contribution of MCDA studies relevant to environmental issues and examines the degree to which these studies have actually assisted the policymakers of environmental management to make decisions that are more responsible and sound. We analyzed 43 published review papers, including approximately 8.148 papers, while emphasis is given on the impact of such publications on the real cases and decision-making related to environmental pollution. Thus, a critical analysis of the environmental challenges has been developed as a second direction of this paper with the aim to compare the raising interest of MCDA papers with the real efforts and needs for a greener and more sustainable future.

### ■ TC-04

#### 1 - A Stochastic Nash equilibrium problem for medical supply competition

Georgia Fargetta, Laura Rosa Maria Scrimali, Antonino Maugeri

#### 2 - Rich Location Routing Problem with application to Multi-hospital network

Ons Saidi, Malek Masmoudi, Koffi Cobbold, Edgar Alfonso Lizarazo, Pascal Albert

#### 3 - Optimization of non-pharmaceutical interventions in networked infectious diseases spreading model under

**different spatial and decision granularity**

Mariusz Kaleta, Robert Olszewski, Tomasz Sliwinski, Izabela Zoltowska, Karolina Nowak, Malgorzata Kesik-Brodacka

Paper moved to session MD-63

**Blood Donation Tailoring under Demand Uncertainty**

Milad Elyasi, Okan Ozener, Ihsan Yanikoglu, Ali Ekici

## ■ TC-05

### 1 - Knowledge economy in Central and Eastern European countries: a multi-criteria approach

Sandra Milanovic, Jelena J. Stanković, Ivana Marjanović, Milica Jovanovic, Sasa Drezgic

### 2 - Aggregate Production Planning with Human Factors, Overtime and Outsourcing Options under Uncertain Seasonal Demand

Gerhard-Wilhelm Weber, Selma Gütmen, Alireza Goli, Erfan Babae Tirkolae

## ■ TC-37

### 1 - The impact of External Reference Pricing on the health care system: a hybrid simulation exploration of equitable drug access, affordability and availability

R Kazakov, Susan Howick, Alec Morton

### 2 - Interventions on the French wheat-to-bread food value chain and their effects on equitable value distribution: insights from a policy scenario simulator

Seán McGarraghy, Rossen Kazakov, [Elise.huber@iddri.org](mailto:Elise.huber@iddri.org), [Elise.huber@iddri.org](mailto:Elise.huber@iddri.org), William Loveluck, Mircea Gherasim, Cosmin Ailoaie, [Pierremarie.aubert@iddri.org](mailto:Pierremarie.aubert@iddri.org), [Pierremarie.aubert@iddri.org](mailto:Pierremarie.aubert@iddri.org)

### 3 - Simulation exploration of the North Italian tomato food value chain from the perspective of equitable relations and value distribution among market actors

Gianandrea Esposito, Rossen Kazakov, Antonella Samoggia, Seán McGarraghy

Paper added to session

### 4 - IMPACT OF ETHICAL BUSINESS PRACTICES ON ORGANISATIONAL COMPETITIVENESS - A Study on Service Sector in India

Rohit Kanda, University School of Financial Studies, Guru Nanak Dev University, Amritsar, 38, Lane 1, Dream City, Chabal Road, 143009, Amritsar, Punjab, India, [rohitkanda.gndu@gmail.com](mailto:rohitkanda.gndu@gmail.com), Harish Handa, Pushpkant Shaktwiphee, Jasveen Kaur, Gunmala Suri, G. S. Bhalla, Savita Gautam, Narendra Dashora

The Dissertation held from above study is that Regions with lesser Development in General, in terms of Business, Infrastructure and Economic Development and Lower or Negligible Development in Particular, in terms of Service Sector have more Significance in Existence of Ethical Business Practices, as well as have a Strong Belief that Ethical Business Practices have Positive Impacts on Business Growth & Organisational Competitiveness. Exceptions to the Above Statement are Duly Acknowledged in the Detailed Analysis of Study. The Hypothesis reconfirms to the Empirically proved statement that "ethical practices in business help to create favorable relationships with other organizations and establish long-term positive relationships with existing and potential future customers". Hence, It is recommended for especially for the sampled start-up segment in service sector that "Companies must adopt and disseminate a written Code of Ethics, build a company tradition of ethical behavior, and hold its people fully responsible for observing ethical and legal guidelines to become able to innovate new solutions and values in a socially responsible way, are most likely to succeed (Labbai, 2013). A further research on Asian Perspectives on Growth and Scenario of Services may be an Eye Opener.

New session:

## ■ TC-63

Tuesday, 12:30-14:00

Virtual Room 63

## Last minute changes 4

Cluster: Last minute changes

Invited session

Chair: Georgia Ayfantopoulou

Chair: Georgia Ayfantopoulou

### 1 - On-Demand Bus Routing Problem with Real-time Traffic and Stochastic Shortest Path

Ying Lian, Kenneth Sørensen

### 2 - Enhancing day-ahead airline planning with data-driven flight delay predictions

Sebastian Birolini, Stephanie Franklin, Alexandre Jacquillat, Gabrielle Rappaport

### 3 - Airline Network Planning: Data-driven Optimization with Demand-supply Interactions

Mattia Cattaneo, Sebastian Birolini, Alexandre Jacquillat, Antonio Antunes

### 4 - Development of Decision Support Systems for the Optimization of Mobility Services

Georgia Ayfantopoulou, Hellenic Institute of Transport (HIT), Centre for Research and Technology Hellas (CERTH), GR57100, Thessaloniki, Greece, [gea@certh.gr](mailto:gea@certh.gr), Ioannis Mallidis, Josep Maria Salanova Grau

The highly polluting urban mobility ecosystem, characterized by increased car transportation, has resulted in the emergence of innovative mobility services such as ridesharing and bike sharing. Under this new reality, city planners face critical challenges associated to the optimal planning and control of such services while meeting economic and socially optimal requirements. Four step transport modelling has been largely used as a decision-support tool for policy makers, but the complexity of the new mobility services creates the necessity for lighter methodologies able to provide faster solutions with less data requirements. Still, these will not replace conventional modelling approaches, but at a first level analysis, they will provide initial insights and delimitate the analyses to be done at the next levels. Under this context, the purpose of this paper is to develop close form solutions that can be employed by urban planners as decision support tools. The developed tools will allow for the stochastic optimization of tactical planning and operational control ridesharing, and bike-sharing decisions under total economic and social optimization objectives.

### ■ TD-03

#### 1 - Recent Advances in EAGO.jl: Easy Advanced Global Optimization in Julia

*Matthew Stuber, Matthew Wilhelm*

#### 2 - Mixed Finite Differences Scheme for Gradient Approximation

*Marco Boresta, Alberto De Santis, Stefano Lucidi, Tommaso Colombo*

#### 3 - Inexact Newton-type iteration methods for solving the system of general absolute value equations

*Dongmei Yu*

Paper moved to session TB-63

#### A Riemannian Gauss-Newton algorithm for the symmetric tensor rank approximation problem

*Rima Khouja, Bernard Mourrain*

### ■ TD-06 has moved from TD-27

*Tuesday, 14:30-16:00*

*Building A, Room Δ103*

### Large scale optimization II

Cluster: Big Data and Optimization

*Invited session*

Chair: *Natasa Krejic*

#### 1 - A Generalized CUR decomposition for matrix pairs

*Perfect Gidisu, Michiel Hochstenbach*

#### 2 - Optimization methods for graph clustering

*Giulia Ferrandi*

#### 3 - Line-search Second-Order Stochastic optimization methods for minimizing finite sums

*Natasa Krejic, Daniela di Serafino, Natasa Krklec Jerinkić, Marco Viola*

#### 4 - A Modified Levenberg-Maquardt Method for Large Scale Network Adjustment

*Greta Malaspina, Natasa Krejic*

### ■ TD-27 has moved to TD-06

### ■ TD-31

#### 1 - Joint maintenance and quality control for unreliable manufacturing systems

*Dorsaf Daldoul, Nadia Bahria*

Cancellation

#### A price and incentive-based mathematical model for load management in smart residential buildings

*Aliyeh Kazemi, Hossein Talebi, Hamed Shakouri G., Ayse Selin Kocaman*

#### 3 - Strategies to deal with epidemics using a system dynamics model: development on real-life experience

*Alvimar Lucena, Mischel Carmen N. Belderrain*

#### 4 - PROMETHEE-SAPEVO-M1 a hybrid approach and decision support system for multicriteria evaluation in complex scenarios

*Miguel Moreira, Carlos Francisco Simoes Gomes, Marcos dos Santos*

### ■ TD-35

#### 1 - Financial sustainability of an NDC pension system with LTC benefits

*Massimiliano Menziatti, Susanna Levantesi, Lorenzo Fratoni*

#### 2 - Progressivity in Individual Pension account and life expectancy heterogeneity

*Keivan Diakite*

#### 3 - On the assessment of the payment limitation for health care expenditure

*Fabio Baione, Davide Biancalana, Paolo De Angelis*

Paper added to session

#### 4 - Fulfilling Consensus: Bitcoin Cross-market Price Convergence

*Jinqiang Ye, Business school, University of Southampton, 5023, Business School, University Road, SO17 1BJ, Southampton, United Kingdom, jy6m14@soton.ac.uk, Jeremy Cheah, Ming-Chien Sung, Zhuang Zhang, Johnnie Johnson*

Witnessing an unprecedented price spurt since launching, Bitcoin has attracted rising exposures to various stakeholders. An examination of cross-market inherent consensus formation given existing market wide heterogeneity can be a novel approach towards Bitcoin's unobserved price process and valuation. Our strategy quantifies collective dynamics among international bitcoin markets via cross-market risk-return distances. We link price dynamics among major Bitcoin-fiat pairs as distance-dependent measure regarding risk-adjusted return position. Empirical evidence supports a solid convergence pattern from both individual markets and the aggregated market perspectives, and we thus draw inference on cross-market consensus. We further discuss the impacts of positive and negative macroeconomic shocks on convergence, followed by an analysis of impacts brought by converging trends on information sharing efficiency amongst selected Bitcoin markets. Our distance measures in addition serve as a model-free instrument to uncover pricing mysteries for emerging and zero-fundamental speculative assets.

### ■ TD-38

#### 1 - An Attacker-Defender Sequential Game

*Krzysztof Szajowski*

#### 2 - Strategic Interactions of Urban Land Developers in the Housing Market

*Margarida Catalão-Lopes, Pedro Garcês, Cesaltina Pires, Joana Pinho, Sílvia Jorge, Adriana Alventosa*

Paper moved to session TB-63

**A new mathematical model to the spread of stochastic investing information and to analyze the behavior of investors**

*Selma-Christina Belen, Gerhard-Wilhelm Weber*

## ■ TD-41

### 1 - A Column Generation Approach for the Integrated Crew Re-Planning Problem

*Bart van Rossum, Thomas Breugem, Twan Dollevoet, Dennis Huisman*

### 2 - Mathematical Modelling For Tackling Covid19 In Public Transport Networks

*Nikola Besinovic*

## ■ TE-04

### 1 - A heuristic approach for an evacuation and supply distribution problem facing a natural disaster.

*M. Teresa Ortuno, Inmaculada Flores, Gregorio Tirado*

### 2 - Scenario generation from historical data for humanitarian logistics preparedness models

*Begoña Vitoriano, Adán Rodríguez*

Paper moved to session MD-63

### An Adjustable Robust Optimization Approach for Emergency Relief Routing Problem

*Farzad Avishan, Milad Elyasi, Ali Ekici, Okan Ozener, Ihsan Yanikoglu*

## ■ TE-05

### 1 - Integrating feasible balancing of the network system with the p2p energy trade mechanisms for flexible peers

*Mariusz Drabecki, Eugeniusz Toczylowski*

### 2 - Innovation decisions for green products: the role of regulation incentives and acquisitions in a duopoly game

*Inês C Nunes, Margarida Catalão-Lopes*

### 3 - A matheuristic for solving non-convex economic dispatches

*Loïc Van Hoorebeeck, P.-a. Absil, Anthony Papavasiliou*

Paper moved to session MF-63

### Optimal bidding strategies of a microgrid in energy markets under uncertainty: A stochastic programming approach

*Robert Herding, Wayne W. Jones, Emma Ross, Sam Johnson, Vassilis Charitopoulos, Lazaros Papageorgiou*

## ■ TE-06

### 1 - Matheuristic Algorithms for the Quadratic Multiple Knapsack Problem

*Paolo Toth, Laura Galli, Silvano Martello, Carlos Rey*

Paper moved to session TB-35

### Selecting directed cycles: a polyhedral study

*Marie Baratto, Yves Crama*

## ■ TE-08

### 1 - Assessing CO<sub>2</sub>, NoX and noise emission reduction potential of last mile interventions using a large-scale urban simulation model

*Lena Bell, Stefan Spinler, Matthias Winkenbach*

### 2 - Supply chain coordination for perishable products under "minimum life on receipt" (MLOR) agreements

*Navid Mohamadi, Sandra Transchel, Jan C. Fransoo*

Paper moved to session TE-56

### A collaborative approach for supporting wine grape harvesting planning

*Franco Basso, Mauricio Varas, Raul Pezoa, Paul Bosch, Juan Pablo Contreras*

## ■ TE-27

### 1 - Gauss-Newton approach for large-scale Riccati equations

*Marcos Raydan*

### 2 - Stochastic trust-region methods with inexact restoration

*Stefania Bellavia, Natasa Krejic, Benedetta Morini, Simone Rebegoldi*

### 3 - Learning exact solutions for geometric set cover and related problems

*Dena Tayebi, Deepak Ajwani, Saurabh Ray*

Paper moved from session TD-06

### 4 - An adaptive subsampled Hessian-free optimization method for statistical learning

*Fabian Bastin, Jean Laprés-Chartrand, Jeremy Rieussec, Loïc Shi-Garrier*

Paper moved to session TD-06

### A Modified Levenberg-Maquardt Method for Large Scale Network Adjustment

*Greta Malaspina, Natasa Krejic*

New session:

## ■ TE-56

*Tuesday, 16:30-18:00*

*Virtual Room 56*

## Last minute changes 5

Cluster: Last minute changes

*Invited session*

Chair: *Mahsa Alirezai*

### 1 - Scenarios of Profitability and Employment in Western Mediterranean Demersal Fisheries in Effort Control Regime

*Negar Akbari*

### 2 - A collaborative approach for supporting wine grape harvesting planning

*Franco Basso, Mauricio Varas, Raul Pezoa, Paul Bosch, Juan Pablo Contreras*

### 3 - Considering the role of personality in the impact of emphasis on safety and productivity in warehouse driving: A VR experiment

*Mahsa Alirezai, Jelle de Vries, René de Koster*

**4 - Introducing Panocracy: and People-Driven Governance**

*Cathal MacSwiney Brugha*, Centre for Business Analytics,  
University College Dublin, Quinn School of Business,  
Belfield, Dublin 4, Ireland, [Cathal.Brugha@ucd.ie](mailto:Cathal.Brugha@ucd.ie)

Two opposite drivers of governance are resource-driven and people-driven. With resource-driven, subjectors, whether corporate or autocratic, subject and obtain resources for their own ends. Then agencies, whether educational or democratic, project and develop what subjectors have obtained. Next institutions, whether state or bureaucratic, connect and advance what agencies have developed: hospitals, schools, housing, industry. The intention, then, is that communities, whether voluntary or panocratic, would reflect and integrate what institutions have advanced, to benefit the people. Except this doesn't happen. There is no panocracy, no reflecting governance of, by, and for all the people. The alternative people-driven governance starts with communities, whether voluntary or panocratic, that reflect people's intentions and integrates them into systems. Then institutions, whether state or bureaucratic, connect and advance what communities have integrated. Next agencies, whether educational or democratic, project and develop what institutions have advanced. Finally, subjectors, whether corporate or autocratic, subject and obtain the resources needed for what the agencies have developed. Except none of this happens. Resource-driven governance by autocrats and bureaucrats has depleted the planet's air, energy, environment, cannot cope with pandemics. People-driven governance needs both democrats and panocrats, and we governance analytics experts should develop this future.

**■ TF-31****1 - Global Agricultural Supply Chains under Tariff Rate Quotas**

*Behzad Hezarkhani, Sobhan Asian, Afshin Mansouri*

**2 - Stable Linking of Emission Permit Markets**

*Greys Sosic*

**3 - On the impact of DMUs on overall efficiency in the event of a merger**

*Alejandro Saavedra-Nieves, Maria Gloria Fiestras-Janeiro*

Paper added to session

**4 - Efficient Effort Equilibrium in Cooperation with Pairwise Cost Reduction**

*Ana Meca*, Operations Research Center, Universidad Miguel Hernández, Avda. Universidad s/n, Edificio Torretamarit, 03202, Elche, Alicante, Spain, [ana.meca@umh.es](mailto:ana.meca@umh.es), *Jose A. Garcia-martinez, Antonio Jose Mayor-Serra*

There is multiple situations in which bilateral interaction of agents results in considerable cost reductions. This pairwise cooperation often requires that the agents involved make a certain level of effort to achieve it. It is natural to think that the amount of cost that one agent could reduce to other agent could depend on the effort that this agent exerts. In the first stage, agents decide how much effort they are to exert, which have a direct impact on their pairwise cost reductions. This stage is modelled as a non-cooperative game, in which agents determine the level of pairwise effort to reduce the cost of their partners. In the second stage, agents participate in a bilateral interaction of independent partners. We study this bilateral cooperation as a cooperative game among agents, in which, as a result of cooperation, agents reduce their cost respectively, so that the total reduction of the cost of each agent in a coalition is the sum of the reductions generated by the rest of the members of that coalition. Based on this model, we explore the costs associated with setting up a pairwise effort network. We identify a family of cost allocations with weighted pairwise reduction, which are always feasible in the cooperative game and contains the Shapley value. We show that there always exist cost allocations with weighted pairwise reduction that generate an optimal level of efficient effort and provide a procedure to find the efficient effort equilibrium.

**Wednesday****■ WA-01****1 - Tree-Based Ensemble Strategies for Predicting Loss Given Default of Bank Loans**

*Aida Salko*

**2 - Monetary Policy and Macroeconomic News in Central Bank Announcements of Mexico**

*Anoop Rai*

**■ WA-02****1 - Multiple-channel Strategy Selection: A Novel Application of Dominance-based Rough Set Approach**

*Mladen Stamenković, Aleksa Dokić, Dragan Stojkovic*

**2 - Using capabilities for aiding policy design.**

*Nicolas Fayard, Chabane Mazri, Alexis Tsoukias*

**3 - Composite indicators as decision making tools: the joint use of compensatory and non-compensatory schemes**

*Samira El Gibari, Jose Manuel Cabello, Trinidad Gomez, Francisco Ruiz*

Paper moved to session TE-56

**Scenarios of Profitability and Employment in Western Mediterranean Demersal Fisheries in Effort Control Regime**

*Negar Akbari*

**■ WA-03****1 - A reinforcement learning-based operator selection in iterated local search for solving scheduling problems**

*Maryam Karimi Mamaghan, Patrick Meyer, Mehrdad Mohammadi, Bastien Pasdeloup*

**2 - A Hybrid Adaptive Large Neighborhood Search for Vehicle Routing Problems with Location Decisions**

*Stefan Voigt, Heinrich Kuhn, Markus Frank, Pirmin Fontaine*

Paper moved to session MF-63

**Fuelling the zero-emissions road freight of the future: routing of mobile fuellers**

*Ramin Raeesi*

**■ WA-06 has moved to WA-39****■ WA-39 has moved from WA-06**

*Wednesday, 8:30-10:00*

*Virtual Room 39*

**Game Theory and Operations Management****4**

Cluster: Game Theory and Operations Management

*Invited session*

Chair: *Shoshana Anily*

**1 - Equity Crowdfunding***Ella Segev, Arieh Gavious, Hana Tzur***2 - Sensitivity analysis for the hospitals-residents with consistent couples matching model***Nitsan Perach, Shoshana Anily***3 - Total balancedness of a parallel job-splitting scheduling game***Shoshana Anily, Tzvi Alon***4 - Partial Vertical Ownership and Information Exchange in a Supply Chain***Noam Shamir, Tal Avinadav***■ WB-45****1 - Efficient decentralised supply chains for optimal service levels: Simulating, optimizing, and benchmarking supply chains for retailers***Matthew Bayani, Tiru Arthanari, Timofey Shalpegin***2 - A two-stage optimization framework for scheduled E-grocery delivery***Siddhartha Paul, Goda Doreswamy*Cancellation**The Sequential MNL Model: Algorithmic Frameworks for Product Recommendation Displays and Data-Driven Case Studies***Danny Segev, Jacob Feldman***■ WC-06****1 - Optimal design for the telescopic lift Autonomous Case-Handling Robot system***Zhe Yuan, Yeming Gong***2 - Finding the Right One: Decision Support System for Selecting Robotized Order Picking Solutions***Fabian Lorson, Fabian Schäfer, Alexander Hübner*Paper moved to session TE-56**Considering the role of personality in the impact of emphasis on safety and productivity in warehouse driving: A VR experiment***Mahsa Alirezaei, Jelle de Vries, René de Koster***■ WC-26****1 - Deferred correction, Newton-Krylov methods, and preconditioning for time-dependent PDE-constrained optimization***John Pearson***2 - Preconditioners for saddle point weak-constraint 4D-Var with correlated observation errors***Jemima Tabeart, John Pearson***3 - A New Preconditioning Approach for an Interior Point-Proximal Method of Multipliers for Linear and Convex Quadratic Programming***Luca Bergamaschi*Paper added to session**4 - A low-rank matrix equation method for solving PDE-constrained optimization***Alexandra Buenger, Mathematics, TU Chemnitz, Reichenhainer Str. 39, 09126, Chemnitz, Sachsen, Germany, alexandra.buenger@math.tu-chemnitz.de, Valeria Simoncini, Martin Stoll*

Discretizing a PDE-constrained optimization problem and using a Lagrangian approach result in a large-scale saddle-point system, which is challenging to solve, and acquiring a full space-time solution is often infeasible. We present a new framework to efficiently compute a low-rank approximation to the solution by reformulating the KKT system into a Sylvester-like matrix equation. We use a rational Krylov subspace method to subsequently project the problem and solve a reduced system, making our framework time- and memory-efficient.