

Monday

■ MA-16

- 1 - **Electricity forward prices: Modelling and analysis with Nordic, Brazilian and German data**
Stein-Erik Fleten, Marina Dietze, Leif Kristian Falch, Eivind Almeland Rolstad, Alexandre Street, Davi Valladão
Cancellation
Utilizing Boundary Fitting and Importance Sampling for Simulated Real Option Valuation
Yuri Lawryshyn
- 3 - **New variant of the possibilistic FPOM for real option valuation for practical purposes**
Pasi Luukka, Jan Stoklasa, Mikael Collan

■ MA-20

- Cancellation
Applying DEMATEL to Explore the Dominant Relation among Sustainable Assessment Indicators in Taiwan Higher Education
Rouwen Wang, Ya-Ting Chuang, Hualing Chiang
- 2 - **Mathematical Programming with Julia - New open-source book**
Thomas Stidsen, Richard Lusby
Cancellation
The use of 3D printing technology in mathematical educational procedures
Evgenia Fronimaki, Athanasia Kadrefi, Maria Koltsaki, Maria Mavri
- 4 - **Gamification as a motivational tool to improve the performance and skills acquisition of social science students in quantitative subjects**
Marina Segura, Jesús Barreal

■ MA-21

- Cancellation
A Decision Support Model for Sustainable Agriculture Supply Chain: an ISM and AHP Approach
Sandeep Singh
- 2 - **Exploring the Decisive Factors of Port Logistics Service Quality — Using Fuzzy Delphi, ISM with Fuzzy MICMAC and ANP**
Jing Li, Chi-Hui Wu, Chien-Ke Huang, Tzu-Yuan Hsu
- 3 - **Exploring the Decisive Factors of Influencing Learners' Learning Behaviors and Outcomes in University Music Education Applying Information Technology**
Fang-Jie Shiu, Jing Li, Chi-Hui Wu

■ MA-24

- 1 - **Stochastic analysis of multi-server queue with working vacation and imperfect service**
Anshul Kumar, Madhu Jain

- 2 - **Firefly Algorithm for Cost Optimization of FM/FM/1/WV Retrial Queue with Catastrophes**
Sibasish Dhibar, Madhu Jain
- 3 - **Markov decision processes and partial conservation laws**
José Niño-Mora
Cancellation
Design of control charts for queueing systems with server breakdown
George Mytalas

■ MA-35

- 1 - **A Contiguity-based Optimization Model for Vehicle Routing in Sustainable Solid Waste Management**
Mario Marinelli, Mariano Gallo
Paper added to session
- 2 - **Mobility as a Service (MaaS) and Personalised Multimodal Journey Planning and Optimisation**
Hassana Abdullahi, School of Mathematics and Physics, university of portsmouth, Lion Gate Building, Lion Terrace, PO1 3HF, portsmouth, Hampshire, United Kingdom, hassana.abdullahi@port.ac.uk, Seda Sucu, Nima Dadashzadeh, Djamila Ouelhadj

Mobility as a Service (MaaS) offers a simplified platform where users can plan multimodal journeys and book and pay for their journeys. The Solent Future Transport Zone MaaS project, funded by the UK Department for Transport, is developing a MaaS app for the Solent region that allows for personalised multimodal journey planning, booking, and payment. Personalised multimodal journey planning is a complex task as individuals tend to trade-off multiple objectives to meet their specific needs and preferences. Some of these objectives include minimising travel time, minimising travel costs, maximising convenience, minimising environmental impact, etc. To the best of our knowledge, most MaaS apps find it challenging to adhere to more than two journey-related objectives. In this research, we propose a multiobjective optimisation model and a metaheuristic solution approach to generate personalised multimodal journey options for the Solent MaaS app. The multiobjective optimisation model considers travel time, travel costs, journey convenience, physical health, and environmental impact. These objectives tend to be relevant in the context of MaaS, especially as the Solent MaaS aims to increase the wider accessibility of sustainable transport options and help users make informed decisions. Test scenarios based on the Solent region will be used to evaluate the performance of the proposed multiobjective optimisation model and solution approach, and the results will be presented.

- Cancellation
Modeling and Solving a Real-Life Crowdsourced Delivery Problem
Shqiponja Ahmetaj, Fabian Eichhorner, Nysret Musliu, Patrick Taschner
- 4 - **Supporting sustainable mobility by the fair distribution of road network capacity**
Aleksandra Colovic, Luigi Pio Prencipe, Leonardo Caggiani, Michele Ottomanelli

■ MB-15

- 1 - **Salvage Logging Under Uncertainty**
Constanza Lorca, Rodrigo A. Carrasco

2 - **Strategic Workforce Planning with Deep Reinforcement Learning**

Sandjai Bhulai

Paper moved to session TA-15

An Application of Evidential Reasoning for Categorical Data Preprocessing

Fatima Almaghrabi, Swati Sachan

■ **MB-21**

Cancellation

Developing A Model: An Application of Analytic Hierarchy Process Techniques for Couchsurfers

Pin-Ju Juan

2 - **Assessments manipulation in the pairwise comparisons method**

Konrad Kułakowski, Michał Strada

3 - **Combination of AHP and GIS to select suitable sites for green hydrogen production in North Africa**

Maria Cristina Pinto, Emere Arco, Maria Gaeta

■ **MB-26**

1 - **Collection and sorting management phase of an industrial site after disaster**

Félix Combaud, Christophe Duhamel, Andréa Cynthia Santos

2 - **Scheduling priority tasks: an application on removing dangerous products after industrial disasters**

Thiago Jobson Barbalho, Juan Luis Jiménez Laredo, Andréa Cynthia Santos

Cancellation

Stochastic Optimization Approaches for Truck-Drone Tandems in Humanitarian Applications

Hannan Tureci Isik, Melih Celik, Ece Sancı

4 - **Debris recycling in post-disaster management**

Christophe Duhamel, Julien Autuori, Andréa Cynthia Santos, Stefan Balev

■ **MB-28**

1 - **Instance Density-based Adaptive Hybrid Oversampling to Imbalanced Classification Problems**

You-Jin Park

2 - **Exploring the Possibilities of Geometric Multidimensional Scaling for Large-Scale Data**

Viktor Medvedev, Martynas Sabaliauskas, Gintautas Dzemyda

Cancellation

Clustering with a Decision Tree Algorithm

Ioannis Tsiligkaridis

4 - **Scaling-out AutoML Pipeline Search with K8s Cluster**

Paulito Palmes, Akihiro Kishimoto, Radu Marinescu, Elizabeth Daly, Parikshit Ram

■ **MB-35**

1 - **On Sustainability and Stewardship in Transportation Asset Management**

Alexander Engau

2 - **The role of attitudes and perceptions in vehicle type choice behaviour**

Francesca Bruno, Roberta di Pace, Stefano de Luca

3 - **Fuel cell vehicles for road freight transport: possible impacts on greenhouse gas emissions in Italy**

Mariano Gallo, Mario Marinelli

Paper moved to session WC-38

Empirical Analysis of the Depreciation of Electric Vehicles compared to Gasoline Vehicles

Lukas Schloter

■ **MC-21**

1 - **4th Generation Product Management based on AHP and QFD - Designing and Testing Cyber-Physical Products**

Thomas Fehlmann, Eberhard Kranich

Cancellation

Development of an Operational Excellence Framework for Organisational Performance Improvement in the Sudanese Aviation Industry

Mohamed Ibrahim, Roslina Mohammad

3 - **An aggregation AHP-based procedure for ranking of DMUs: A comparison with DEA models**

Josef Jablonský

■ **MC-22**

1 - **Entering the Remanufacturing Business When There is Already One Actor Making Remanufacturing**

Mehmet Alegoz

2 - **Remanufacturing with Innovative Features: A Strategic Analysis**

Can Barış Çetin, Georges Zaccour

3 - **Production-Routing Problem with Disassembly Equipment Consideration in Closed-Loop Supply Chain**

Khakim Habibi

Paper moved to session WC-28

The effect of demand amplification into supply chain network designing

Pablo A. Miranda, Francisco J. Tapia-Ubeda, Luis

Olivares-Álvarez, Salvatore Cannella, Roberto Dominguez

■ **MC-25**

Cancellation

Towards Unifying Scheduling and Location Problems: A Non-Stationary Hypercube Model

Regiane Maximo Siqueira, Caio Vitor Beojone

2 - **Integer programming formulations for the p-median problem with distance constraints**

Nikolaos Ploskas, Kostas Stergiou

3 - **An adaptive evolutionary algorithm for congested edge-based p-median location problem**

Mokhtar Essaid

■ **MC-27**

Cancellation

Multi-Precision Quadratic Regularization Algorithm*Dominique Monnet, Dominique Orban*

- 2 - **Optimal correction of an infeasible system with its application in intensity-modulated radiation therapy**
Hossein Moosaei, Milan Hladik
- 3 - **On Exact and Inexact Convex Relaxations of Nonconvex Quadratic Programs**
E. Alper Yildirim

■ **MC-28**Cancellation**Mining product- and attribute- centric information on online-forums: Key learnings from an application in the automotive-sector***Shashwat Pande*

- 2 - **Econometric Analysis of the Impact of TV Advertising on Organic Webpage Traffic**
Lukás Veverka, Vladimír Holý
- 3 - **Eliciting sentiment on information security policies using deep learning affective computing**
Tiny Du Toit, Hennie Kruger, Lynette Drevin
- 4 - **Optimal Soccer Squad Selection**
Shubhabrata Das, Soudeep Deb

■ **MC-36**

- 1 - **Robust annual scheduling of medical residents using prioritized multiple training schedules to combat operational uncertainty**
Sebastian Kraul, Jens Brunner
- 2 - **Practical Recommendations for Staff Rostering Justified by Real-World Optimization**
Kimmo Nurmi
- 3 - **Workload balancing in hospital wards through optimized patient admission scheduling**
Pieter Smet, Greet Vanden Berghe

Cancellation**Exploring the role of flexible use of bed capacity in acute stroke pathways: a computer modelling study***Christos Vasilakis, Richard Wood, Simon Moss, Ben Murch, Philip Clatworthy*■ **MC-37**Cancellation**Time-Dependent Vehicle Routing Problem with Time Windows on a Road Network***Maha Gmira, Michel Gendreau, Andrea Lodi, Jean-Yves Potvin*

- 2 - **Time-dependent vehicle routing problem of waste collection on the real city network**
Dusan Hrabec, Dominik Závada, Vlastimír Nevrlý
- 3 - **Stochastic time-dependent VRPs with a large number of random variables.**
Stein W. Wallace, Zhaoxia Guo, Michal Kaut

4 - Learned Upper Bounds for the Time-Dependent Travelling Salesman Problem*Tommaso Adamo, Emanuela Guerriero, Gianpaolo Ghiani, Pierpaolo Greco*■ **MC-39**Cancellation**Towards better understanding of practitioners' methodological choices***Jane S. Christie, John Mingers*

- 2 - **Shall we Dance? In search of Collective Intentions in GDSS facilitated decision making**
Ashley Carreras
- 3 - **From problem formulation to problem structuring and back**
Mike Yearworth

■ **MD-06**

- 1 - **Operations-time-space network for solving train scheduling problems in real port systems**
Veronica Asta, Luca Abatello
- 2 - **A reduction technique for the k-Colour Shortest Path Problem**
Davide Donato Russo, Carmine Cerrone

Cancellation**The Cost-balanced Path problem for modelling ports operations.***Daniela Ambrosino, Anna Sciomachen*

- 4 - **The Generalized Close-Enough Traveling Salesman Problem**
Carmine Cerrone, Claudia Archetti, Andrea Di Placido, Bruce Golden

■ **MD-09**

- 1 - **A fast and effective time-space network model for a fully automated truck and drones delivery system**
Lavinia Amorosi, Paolo Dell'Olmo
- 2 - **Mathematical approach for Scheduling electric vertical take-off and landing vehicles at Vertiports**
Julián Alberto Espejo-Díaz, Edgar Alfonso Lizarazo, Jairo R. Montoya-Torres

Cancellation**Location and Routing Models for Brazilian Police Collaboration***Carlos Lamas-Fernandez, Walton Pereira Coutinho, Suprasad Gavhane, Wei Yifu*

- 4 - **CFLG.jl: an algorithmic toolkit for continuous set covering on networks**
Liding Xu, Mercedes Pelegrín

■ **MD-13**

- 1 - **Polyhedral study of min-up/min-down polytope variants**
Cécile Rottner
- 2 - **Hypergraph and Strong Valid Inequalities for Boolean Logical Pattern Generation**
Dongwoo Kang, Hong Seo Ryoo

3 - Two Hard Problems In Box-Total Dual Integral Polyhedra

Francesco Pisanu

Cancellation

A new class of valid inequalities for the binary knapsack polytope

Guneshwar Anand, Sachin Jayaswal, Srirangacharyulu Brundavanam

■ MD-14

1 - Online segment routing optimization considering polyhedral demand

Jérôme De Boeck, Bernard Fortz, Stefan Schmid

2 - The Hamiltonian p-Median Problem: Polyhedral Results and Branch-and-Cut Algorithm

Luís Gouveia, Michele Barbato

Cancellation

Optimizing Choices to Minimize the Spread of a Contagion While Maintaining Socioeconomic Activities

Mayank Goswami, Rakesh Ravindran, Jason Huang, Valentin Polishchuk, Joseph Mitchell, Rezaul Chowdhury, Esther Arkin

Paper moved to session WD-07

Interdicting dense clusters in network systems

Foad Mahdavi Pajouh, Haonan Zhong, Sergiy Butenko, Alkiviadis Vazacopoulos

■ MD-22

1 - The role of artificial intelligence in sustainable supply chains

Stefan Walter

2 - Evaluation of the energy usage of Ethereum blockchain network

Ernestas Filatovas, Aleksandr Igumenov, Viktor Medvedev, Remigijus Paulavičius

Cancellation

Developing a blockchain-based information system for sustainable supply chain management

Majid JavidiAlsadi, Seyed Hossein Siadat, Saeed Eini

4 - Applications of Blockchain Technology in Sustainable Fashion Supply Chains: Operational Transparency and Environmental Efforts

Shu Guo, Xuting Sun, Hugo Lam

■ MD-27

1 - New efficient ADMM algorithm for the Unit Commitment Problem

Rogier Wuijts, Marjan van den Akker, Machteld van den Broek

2 - Interior point methods applied to optimal power flow with uncertain demand

Aurelio Oliveira, Demacio Costa de Oliveira

3 - Identification of beneficial Expansion Measures in Coupled Power and Gas Transmission Systems

Raphal Houben

Cancellation

Accelerated Gradient-free Neural Network Training by Multi-convex Alternating Optimization

Junxiang Wang, Hongyi Li, Liang Zhao

■ MD-28

1 - Multi-Echelon Inventory Optimization using Deep Reinforcement Learning

Lotte van Hezewijk, Kevin Geevers, Martijn Mes

2 - Bayesian Learning in Maintenance Optimization for Multiple Single-Component Systems under Population Heterogeneity

Ipek Dursun, Alp Akcay, Geert-Jan van Houtum

3 - Prescriptive Supply Stability Optimization in Production Planning in a Case Study of the Semiconductor Industry

Tim Lauer

Paper moved from session WC-28

4 - On Peer Group Situations and Related Games under Fuzzy Uncertainty

İsmail Özcan, Sırma Zeynep Alparslan Gök, Gerhard-Wilhelm Weber

■ MD-32

1 - Competitive Industry's Response to Environmental Tax Incentives for Green Technology Adoption

Anton Ovchinnikov, Dmitry Krass

2 - Policy Mix Dynamics of Manufacturers' R&D Investment and Government Regulations within a Socio-Technical System Case of Sustainable Transition to Alternative Fuel Vehicle

Wissam EL Hachem

Cancellation

Contracting for technology improvement: The effect of asymmetric bargaining power and investment uncertainty

Sam Aflaki

4 - Servitization as an alternative business model and its implications on product durability, profitability & environmental impact

Özgen Karaer, Mehmet Ali Kanatlı

■ MD-38

1 - Minimizing Emergency Assembly Points using Set Covering Analysis: A Case of Gaziantep University

Eren Özceylan

2 - A multi-period location-routing model for search and rescue teams in a disaster relief network

Kamran Sarmadi, Mehdi Amiri-Aref

Cancellation

Resource allocation for humanitarian relief chain coordination integrated with volunteers

Sule Itir Satoglu, Emine Nisa Kapukaya

4 - On the analysis of an idealized model to manage gasoline supplies in a short-notice hurricane evacuation

Rajan Batta, Monir Sabbaghtorkan, Qing He

Tuesday

■ TA-07

- 1 - **SMEs' leadership, managerial and financial performance: A mediated moderation model from product life cycle perspective**
Eduard Gabriel Ceptureanu, Sebastian Ion Ceptureanu
- 2 - **Generalized Optimal Transport Problems in Finance and Economics**
David Saunders
Cancellation
Escaping paradise? governance indicators and international entrepreneurship of island based firms
Guido Rojer, Anoop Rai, Rebeca de Juan Diaz, Karen Watkins
- 4 - **Machine Learning in Due Diligence evaluation to increase NPLs profitability transactions on secondary market**
Maria Carannante, Valeria D Amato

■ TA-14

- Cancellation
Identification and prioritizing of suitable cities to construct zero-energy buildings using MCDM techniques (Case study: Iran)
Aliyeh Kazemi, Parichehr Nouri
- Cancellation
A Multi-criteria Decision Making Process to Prioritize Applying of Wave Energy Converters
Sadaf Nasrollahi, Aliyeh Kazemi, Mohammad-Hossein Jahangir
- 3 - **The potential of greenhouse technology in various climate zones: An energy-saving analysis using a fuzzy decision-making approach (case study of Iran)**
Farzin Ahmadi, Hossein Nasrollahi, Shima Najafi Nobar

■ TA-15

- 1 - **A Game-Theoretical Approach for Assisting Humans in Online Information Sharing**
Shani Alkoby, Ron Hirschprung
- 2 - **Reshaping decision conferencing for current times: what can we learn from experience and how should it be adjusted to virtual settings?**
Edgar Mascarenhas, Mónica Oliveira
Paper moved from session MB-15
- 3 - **An Application of Evidential Reasoning for Categorical Data Preprocessing**
Fatima Almaghrabi, Swati Sachan

■ TA-16

- 1 - **Fast computation of Tukey trimmed regions and median in higher dimensions**
Pavlo Mozharovskyi, Xiaohui Liu, Karl Mosler

- 2 - **On Duality in Polyhedral Projection Problems**
Benjamin Weißing
- 3 - **Backtesting Systemic Risk Forecasts using Multi-Objective Elicitability**
Tobias Fissler
Cancellation
Computation of quantile sets for bivariate ordered data
Daniel Kostner, Andreas H. Hamel

■ TA-28

- 1 - **Anomaly Detection for Cash Operations in Retail Stores**
Buse Mert, Ilknur Bektas, Defne İdil Eskiocak, Birol Yüceoglu, Basak Ayfer Erdem, Karın Çakan, Işıl Öztürk
- 2 - **Portfolio Optimization across Financial Market States: An application of Clustering Algorithm**
Salah Ayari, Hayette Gatfaoui
Cancellation
Discrete-Time Survival Analysis of Aircraft Maintenance Data for Planned Maintenance
Young H. Chun, Seong-Jong Joo
- 4 - **Maintaining capital goods under incomplete information and constrained maintenance capacity**
Ragnar Eggertsson, Rob Basten, Geert-Jan van Houtum

■ TA-31

- Cancellation
Co-designing policies for the resilience of the Water-Energy-Food nexus
Raffaele Giordano
- 2 - **Cognitive Maps and Value Trees in Conflict Transformation and Management**
Halil Berkay Tosunlu, Joseph Guillaume, Irene Pluchinotta
 - 3 - **Pathways for improving heat pump performance in the UK: understanding the complex network of socio-technical influencers**
Eleni Oikonomou, Tadj Oreszczyn, Mike Davies, Nici Zimmermann
 - 4 - **Differences in system boundary perceptions: comparing Causal Loop Diagrams**
Irene Pluchinotta, Giuseppe Salvia, Gemma Moore, Nici Zimmermann

■ TA-33

- Cancellation
Government subsidy, Micro-Small-Medium- Enterprises channel power, and product and process innovation
Nandan Kumar Singh, Vinay Ramani
- 2 - **Incomplete cooperative games and 1-convexity**
Jan Bok, Martin Cerny
 - 3 - **Priority coalitional games and claims problems**
Iago Núñez Lugilde, Estela Sanchez-Rodriguez, Arantza Estévez Fernández
 - 4 - **A new Shapley value-based rule for distributing delay costs in stochastic projects**
Ignacio García-Jurado, Juan Carlos Gonçalves-Dosantos, Julian Costa

■ TA-36

- 1 - **An integrated nurse re-rostering and routing problem in home hospitalization**

Anisha Maharani, Yasemin Arda, Véronique François

- 2 - **Integrated decision-making in home health care: review and first model**

Arne Delaet, Kris Braekers, Yves Molenbruch, Katrien Ramaekers

Cancellation

A decision-support framework for home health-care delivery – transportation planning with joint staff scheduling and multi-vehicle routing

Janny Leung, Yong-Hong Kuo, Jamal Abdul Nasir

Cancellation

An integrated mobility concept for home care workers and ambulant patients

Lorena Reyes-Rubiano

■ TB-03

Cancellation

Bringing Data Science and Machine Learning into Electricity Markets

Yury Dvorkin

- 2 - **Strategies for Virtual Power Plant Bidding in Energy and Ancillary Service Markets**

Lesia Mitridati, Riccardo de Nardis di Prata

- 3 - **Neural Networks for GNSS data Analysis, Positioning and Attitude Determination**

Raúl de Celis, Luis Cadarso

- 4 - **Combining learning and optimization for real-time scheduling problems**

Farzaneh Pourahmadi

■ TB-10

- 1 - **Living on the Edge: An Unified Approach to Antithetic Sampling**

Roberto Casarin

- 2 - **The estimation error in the Basel II IRB approach: floors to the estimated parameters**

Mariacristina Uberti, Simone Casellina, Simone Landini

Cancellation

Geo-referenced data and complex networks for measuring road accident risk

Gian Paolo Clemente, Francesco Della Corte, Diego Zappa

- 4 - **Correlation expansions methods in derivatives pricing**

Alessandro Ramponi

■ TB-13

- 1 - **A Decentralized Problem Decomposition Scheme for Sequencing and Scheduling: Application in Outpatient Appointment Systems**

Pardis Seyedi, Michael Carter, Kourosh Eshghi

- 2 - **Investigating Hyper-heuristics for Real-World Test Laboratory Scheduling**

Florian Mischek, Nysret Musliu

Cancellation

An integer programming approach to intraday scheduling of chemotherapy patients

Pablo A. Rey, Alejandro Cataldo, Antoine Sauré, Gustavo Angulo, Alejandro Cifuentes, Gabriel Lyon

Paper moved from session WD-08

- 4 - **Course Allocation with Friendships**

Tal Grinshpoun, Ilya Khakhiashvili, Lih Dery

■ TB-15

- 1 - **Bi-objective goal programming for balancing costs versus nutritional adequacy**

Melissa Koenen, Marleen Balvert, Hein Fleuren

- 2 - **Police Service District Planning**

Tobias Vlcek, Knut Haase, Malte Fliedner, Tobias Cors

Cancellation

A Decision Support Tool for Sustainable Public Lighting

Djamila Ouelhadj, Ramazan Esmeli, Hassana Abdullahi

■ TB-20

Cancellation

A comparative study of maintenance efficiency across public bus companies in India using DEA

Shivam Kushwaha, Shankar Prawesh, Anand Venkatesh

Cancellation

Specification Issues in Diversification Consistent DEA Portfolio Models

Stavros Kourtzidis, Giannis Karagiannis

- 3 - **Analysing the export potentials of the Portuguese footwear industry by Data Envelopment Analysis**

Dimitrios-Georgios Sotiros, Vasco Rodrigues, Maria Silva

- 4 - **Mixed Datasets with Partially Deficient Variable Sets Embodied in Mixed Variable DEA (MV-DEA)**

Joseph Paradi, Maryam Badrizadeh

■ TB-29

Cancellation

Towards the Additive Manufacturing Evolution: determination of time sensitive factors

Maria Koltsaki, Maria Mavri

- 2 - **A Data-driven Approach to Enhance Worker Productivity by Optimizing Facility Layout**

Mahdi Ghorashi Khalilabadi, Debjit Roy, René de Koster

- 3 - **Hybrid Machine Learning/Simulation Approaches applied to Logistics Systems**

Francisco Maia

Cancellation

Industry 4.0 on Supply Chain Functions and classification of technologies: An overview

Marios Vasileiou, Vasileios Zeimpekis

■ TB-35

- 1 - **Green cyclic inventory routing with fleet sizing**

Anass Kajji, Tarik Aouam, Asmae ElMokrini, Birger Raa

2 - **Integrating production scheduling and vehicle routing with limited storage capacity**

Leon Lan, Joost Berkhout, Rob van der Mei, Sandjai Bhulai

3 - **A new multi-period mathematical model for locating long-haul autonomous transportation enablers**

Ebrahim Mohammadi, Rob Zuidwijk, Marie Schmidt

Paper added to session

4 - **Rail freight transport in the age of decarbonization and autonomous driving**

Stefan Voss, Wirtschaftsinformatik/Information Systems, University of Hamburg, Von-Melle-Park 5, 20146, Hamburg, Germany, stefan.voss@uni-hamburg.de, Joachim R. Daduna

For many years, there have been increasing claims in the EU to strengthen rail freight transport with the objective to promote ecologically-oriented transport services. Interest groups are agitating for subsidies of many billions of euros for the infrastructure expansion and a politically supported prioritization of this transport mode. However, if we look at the development of the modal split in recent years, we see a continuous decline in market share due to a lack of competitiveness.

The reasons for this are the goods-structure effect, changed production structures with increasing facility dislocation, and the transition to on-demand-based additive manufacturing. This results in a transport demand with low order volumes and flexible service, which predominantly covers a distance range of less than 150 km. From an economic and operational point of view, however, this market segment cannot be served by rail freight transport, not even by bi-modal transport.

Due to the politically forced decarbonization of road transport, the repeatedly propagated ecological advantages of rail freight transport can no longer be justified in the future. The use of autonomous trucks with e-drives will lead to decisive changes, as a result of which the freight transport market will be even more clearly dominated by road transport. The actual developments are explained in detail and in this context also the subsidy policy in the area of the EU is discussed.

■ **TB-38**

Cancellation

Site Selection of a Green Humanitarian Logistics Center: A MCDM Approach

Ayca Ozceylan

Cancellation

Identification and prioritization of barriers in humanitarian supply chain: A case for effective relief material distribution during natural disaster

Chetna Chauhan

3 - **Cost of the Diet Linear Program: Finding Distinct Solutions with close to Optimal Cost**

Romée Geelen, Melissa Koenen, Marleen Balvert

■ **TC-03**

1 - **Machine learning approaches to forecasting cryptocurrency volatility: considering internal and external determinants**

Yijun Wang, Galina Andreeva, Belen Martin Barragan

2 - **Interpretable machine learning for imbalanced credit scoring datasets**

Yujia Chen, Belen Martin Barragan, Raffaella Calabrese

Cancellation

Clustering-based optimization in fraud detection classifier training

Dalia Breskuvienė, Gintautas Dzemyda

4 - **Fairness of ML in the context of credit scoring**

Darie Moldovan

■ **TC-07**

Cancellation

Revisiting Informational Efficiency: a Long-memory Oriented System for Bitcoin Cross-market Disparity

Jinqiang Ye, Jeremy Cheah, Tapas Mishra, Ming-Chien Sung, Johnnie Johnson, Zhuang Zhang

2 - **Need for Speed, but How Much Does It Cost? Unpacking the Fee-Speed Relationship in Bitcoin Transactions**

Guangzhi Shang

3 - **Which cryptocurrency is leading the market? Evidence from dynamic networks**

Barbara Będowska-Sójka, Piotr Wójcik

4 - **BRICS stock markets, cryptocurrencies, and stablecoins: Asymmetry and quantile dependency**

Mariam Ibrahim

■ **TC-08**

Cancellation

An optimal parallel model of GWO: Application for spectrum allocation in cognitive cellular networks

Sihem Sehli, Malika Babes

2 - **Solving the problem of batch deletion and insertion members in the Logical Key Hierarchy structure by a DC Programming approach**

Thi Tuyet Trinh Nguyen, Hoai An Le Thi

3 - **Multi-period facility location and capacity expansion with modular capacities and convex short-term costs for hydrogen production in Norway**

Šárka Štádlarová, Peter Schütz, Asgeir Tomasgard

4 - **Strong bounds from linearized formulations and relaxations of the Cross-dock Door Assignment Problem**

M. Araceli Garin, Laureano Fernando Escudero, Aitziber Unzueta

■ **TC-14**

1 - **Electricity supply and demand dynamics in Iran considering climate change induced stresses**

Behzad Zamanipour, Hesam Ghadaksaz, Ilkka Keppo, Yadollah Saboohi

2 - **Market equilibria on regional flexibility markets for congestion management considering a strategic aggregator**

Hannes Hobbie, Matthew Schmidt

Cancellation

Condition-based Production and Maintenance Planning for Offshore Power Systems with Stochastic Accessibility

Luuk Pentinga, Onur Kilic, Jasper Veldman, Ruud Teunter

- 4 - **Insights on Joint Integration of Renewable Energy Sources and Hydrogen Storage into Power Networks**
Sezen Ece Kayacik, Albert Schrottenboer, Evrim Ursavas, Iris F.A. Vis

■ TC-15

- 1 - **Decision Support for Companies' Disaster and Crisis Management**
Markus Lüttenberg, Miriam Klein, Marcus Wiens, Frank Schultmann
- 2 - **Resilient control algorithms for food security in large-scale food supply networks**
Sissi Bazan, Hanno Friedrich, Sebastian Albrecht, Rudolf Sollacher
- 3 - **Water main deterioration with nearby excavations**
Lieke van der Heide, Bram de Jonge, Dirk Pieter Van Donk
 Cancellation
- Changes in health status of elderly in long-term care in Finland during COVID-19**
Mikko Nuutinen, Ira Haavisto, Riikka-Leena Leskelä

■ TC-18

- 1 - **A Robust Optimization Model for Nonlinear Support Vector Machine**
Andrea Spinelli, Francesca Maggioni
- 2 - **A Simheuristics framework for stochastic combinatorial optimization**
Joost Berkhout, Arik Berkan, Ger Koole
- 3 - **On the Structure of Bilevel Stochastic Linear Problems with Integer Variables**
Johanna Burtscheidt, Matthias Claus
 Cancellation
- Robust spectral risk optimization when information on risk spectrum is incomplete.**
Wei Wang, University of Southampton, 7 Friars way, SO18 2JU, Southampton, Please Select, United Kingdom, ww1e17@soton.ac.uk, Huifu Xu, Tiejun Ma

A spectral risk measure (SRM) is a weighted average of value at risk where the weighting function (also known as risk spectrum or distortion function) characterizes a decision maker's risk attitude. In this paper, we consider the case where the decision maker's risk spectrum is ambiguous and introduce a robust SRM model based on the worst risk spectrum from a ball of risk spectra centered at a nominal risk spectrum. When the ball consists of step-like risk spectra, we show that the robust SRM can be computed by solving a linear programming problem. For the general case, we propose a step-like approximation scheme and derive an error bound for the approximation. As an application, we apply the proposed robust SRM to one-stage stochastic optimization with the objective of minimizing the robust SRM and propose an alternating iterative algorithm for solving the resulting minimax optimization problem. Moreover, to examine the stability of the robust spectral risk optimization model with respect to perturbation of observed data from the underlying exogenous uncertainty in data-driven environments, we investigate the statistical robustness of the model and derive sufficient conditions for the required stability.

■ TC-22

Cancellation

Closed-Loop Supply Chain Coordination with Contracts: a Literature Review

Nazanin Nami, Grigory Pishchulov, Joao Quariguasi Frota Net

- 2 - **Closed-loop supply chain coordination contracts with price-dependent stochastic demand**
Petr Fiala, Renata Majovska
- 3 - **Production allocation for global manufacturing under import quota restriction and uncertainty**
Yue Wu, Lin Zhu
- 4 - **Design and planning of symbiotic supply chains: a case study in pulp and paper and construction industries**
Margarida Espadinha, Bruna Mota

■ TC-29

- 1 - **An enhanced Bayesian Condition-Based Maintenance policy for industrial equipment subject to non-exponential deterioration.**
Dimitris Kampitsis, Sofia Panagiotidou
 Cancellation
- Planning of rotor blade maintenance processes on onshore wind turbines**
Martin Klingebiel, Carolin Kellenbrink
- 3 - **Data Driven Condition Based Maintenance**
Ruud Teunter
- 4 - **Integrated Planning of Asset-Use and Dry-Docking for a Fleet of Maritime Assets**
Halit Metehan Dilaver, Alp Akcay, Geert-Jan van Houtum

■ TD-03

- 1 - **Deep Neural Networks pruning via the Structured Perspective Regularization**
Matteo Cacciola, Antonio Frangioni, Andrea Lodi
 Cancellation
- Learning heuristics for A***
Daniilo Numeroso, Petar Veličković, Davide Bacciu
- 3 - **Learning for Spatial Branching: An Algorithm Selection Approach**
Ignacio Gómez-Casares, Bissan Ghaddar, Julio González-Díaz, Brais González Rodríguez, Beatriz Pateiro-López, Sofía Rodríguez-Ballesteros
- 4 - **Predict and Optimize: Through the Lens of Learning to Rank**
Jayanta Mandi, Victor Bucarey, Maxime Mulamba, Tias Guns

■ TD-06

Cancellation

Comparative study of new formulations of asymmetric traveling salesman problem using mixed integer programming

Gabriel Solari Carbajal

- 2 - **Two-Commodity Opposite Direction Network Flow Formulations for the Travelling Salesman Problem**
Konstantin Pavlikov, Niels Christian Petersen

- 3 - **A discrete artificial humming bird algorithm for asymmetric travelling salesman problem**
Karuna Panwar, Kusum Deep
- 4 - **A two-phase metaheuristic for solving the multi-depot k-traveling repairman problem**
Alan Osorio-Mora, John Willmer Escobar, Paolo Toth

■ TD-08 has moved to TD-39

■ TD-08 has moved from TD-39

Tuesday, 14:30-16:00

U4

MAI: The OR/analytics sales pitch

Cluster: Making an Impact

Invited session

Chair: Tuomas Lahtinen

1 - Making the OR/analytics sales pitch

Tuomas Lahtinen

■ TD-14

Cancellation

Adiabatic based Algorithm : a comprehensive algorithmic description

Philippe Lacomme, Fleury Gerard

- 2 - **Performance evaluation of quantum annealing on bipartite matching instances**
Daniel Vert
- 3 - **Quantum Side Channel Attacks**
Eric Bourreau, Florent Bruguier, Imran Meghazi
- 4 - **Optimization with Quantum Annealing Machines**
Samuel Deleplanque

■ TD-16

Cancellation

Optimal portfolio selection under solvency requirements

Cosimo Munari

- 2 - **On corporate demand for insurance: a dynamic perspective on property insurance**
Mario Sikić
- 3 - **A decomposition of general premium principles into risk and deviation**
Max Nendel
- 4 - **Distributionally robust liability-driven pension fund management**
Asmerilda Hitaj, Giorgio Consigli, Rui Gao, Anton Kleywegt

■ TD-18

Cancellation

A decomposition method for the analysis of unreliable production lines with finite buffers and spare parts

Florian E. Sachs, Stefan Helber, Gudrun Kiesmuller

- 2 - **A Censored-Data Multiperiod Dual Sourcing Problem**
Michalis Deligiannis, George Liberopoulos, Dimitrios Pandelis
- 3 - **Scalable policies for the dynamic traveling multi-maintainer problem with alerts**
Peter Verleijdsdonk
- 4 - **A Hybrid decomposition approach to solve the network-constrained unit commitment problem**
Ricardo Pinto de Lima, Gonzalo Constante-Flores, Antonio Conejo, Omar Knio

■ TD-20

- 1 - **Which developing oil-countries are efficient in low-carbon energy transition?**
Naeun Yoon, Aliyeva Simuzar, So Young Sohn
- 2 - **The joint use of data envelopment analysis and life cycle assessment for eco-efficiency assessment including cost resources**
Leonardo Vásquez, Alfredo Iriarte, Marcela C. Gonzalez-Araya, Lidia Angulo Meza, Ricardo Rebolledo-Leiva

Cancellation

A robust network data envelopment analysis model with undesirable outputs to assess the efficiency in the power industry

Fatemeh Sarvandi, Aliyeh Kazemi, Mostafa Radsar

- 4 - **Performance growth through a multi-hierarchy of technologies and spillovers. is learning facilitated by adopting greener technologies?**
Nikos Chatzistamoulou, Kostas Kounetas

■ TD-24

- 1 - **Inventory Optimization for a Grocer in an Omni-Channel Setting with Retailer-driven Transshipment and Customer-driven Substitution**
Martin Waitz, Lena Silbermayr
- Cancellation
- Allocating to customer orders in online retail with fair policies**
- Gonçalo Figueira, Willem van Jaarsveld, Pedro Amorim, Jan C. Fransoo*
- 3 - **Inventory decisions for ameliorating products under consideration of stochastic demand**
Marjolein Buisman
 - 4 - **Using Genetic Programming to induce policies for Fulfillment Optimization**
Sérgio Castro, Gonçalo Figueira, Bernardo Almada-Lobo

■ TD-25

- 1 - **Order and pod assignment problem in a multi-level robotic mobile fulfillment system**
Giorgi Tadumadze, Julia Wenzel, Simon Emde, Felix Weidinger, Ralf Elbert
- Cancellation
- A two-stage approach for order and rack allocation in a mobile rack environment**
- J. E. Beasley, Cristiano Arbex Valle*

3 - Mobile Robot Automation in Warehouses: a Multiple Case Study

Hendrik Reefke, Alp Yildirim, Emel Aktas

■ TD-30

1 - Vector optimization with respect to variable domination structures

Christiane Tammer, Truong Q. Bao, Boris Mordukhovich, Antoine Soubeyran

2 - Extension of continuous quasiconvex functions

Carlo Alberto De Bernardi

3 - New efficient search strategies for direct search algorithms in multiobjective derivative-free optimization

Ludovic Salomon, Sébastien Le Digabel, Jean BIgeon

Cancellation

Stability analysis of conically perturbed linearly constrained least-squares problems. A vector optimization approach.

Miguel Sama, Akhtar Khan

■ TD-36

1 - Linear Mathematical Models for Real Time Scheduling of Vaccination with Inventory Constraint

Gerçek Budak

Cancellation

Waterfall approach to minimizing wastage in vaccine supply chains

Katarzyna Gdowska, Radosław Kapłan, Roger Książek, Piotr Łebkowski

Cancellation

Two Stage Stochastic Optimization Model for Vaccine Supply Chain Network in Pandemic Situation

Paulina Kus Ariningsih, Chandra Irawan, Antony Paulraj

4 - A linear programming model to evaluate the anti-covid vaccination campaign in Italy

Roberto Aringhieri, Alberto Guastalla

■ TD-39 has moved to TD-08

■ TD-39 has moved from TD-08

Tuesday, 14:30-16:00

U8

Problems on graphs

Cluster: Combinatorial Optimization

Invited session

Chair: *James Orlin*

1 - Price&Cut for the graph coloring problem

Alexandre Dupont-Bouillard

2 - Reconstructing the tree topology in telecommunication networks

Siv Sørensen, David Pisinger

3 - An upper bound on clique coloring of B1-EPGt graphs

Vitor de Luca, María Pía, Fabiano Oliveira, Jayme Szwarcfiter

4 - All pairs shortest paths in $O(nm)$ time.

James Orlin, Laszlo Vegh

Wednesday

■ WA-07

1 - An integrated vision of the Triple Bottom Line perspective through a methodological advancement of the ITACA Protocol

Francesca Abastante, Isabella Lami

2 - Low carbon morphology city planning based on indicator-based approach

Sara Torabi Moghadam, Patrizia Lombardi, Francesca Abastante, Chiara Genta, Maurizia Pignatelli

3 - Supporting the assessment of strategic regeneration scenarios using the A'WOT method

Marta Bottero, Caterina Caprioli, Federico Dell'Anna

Cancellation

Value functions for marginal territories: a spatial methodological approach

Alessandra Oppio, Marta Dell'Ovo, Catherine Dezio

■ WA-10

1 - Solution of HJB equation arising from Portfolio Management problem using monotone operator technique

Cyril Izuchukwu Udeani

2 - Estimating the potential of fuel cell buses with real option analysis

Tero Haahtela

3 - New Approaches for Identifying Robust Dominating Portfolios Based on Second-Order Stochastic Dominance

Peng Xu

Cancellation

Exploring the unit commitment problem to assess the potential of hydroelectric flexible technologies

Flávia Barbosa, Luis Guimarães, Armando Leitão

■ WA-11

Paper added to session

1 - Multicriteria decision support for planning renewable power production at Moroccan airports

Risto Lahdelma, Department of Energy Technology, Aalto University, Otakaari 4, 02150, Espoo, Finland, risto.lahdelma@aalto.fi, Abdellah Menou, Pekka Salminen

The Moroccan Airport Authority ONDA has introduced a green airports program by which airports will be supplied by solar and wind power in addition to conventional power from the national grid. The problem is to select at which airports ONDA should build solar and wind power parks. The choice is made subject to multiple criteria, including economy, technical feasibility, and environmental concerns. In this paper we use Stochastic Multicriteria Acceptability Analysis (SMAA) for ranking the airports for producing renewable power. The analysis was conducted in phases with different sets of criteria. As a theoretical novelty, the pairwise winning indices of SMAA were used to form stochastic partial and complete rankings of the alternatives. The Ranked Pairs method was suggested for resolving intransitive pairwise preferences into a complete ranking. Based on the results, same two alternatives obtained the best and second-best rank in every model, and one alternative was always last. The rank of the remaining alternatives varied somewhat depending on the model.

Cancellation

Towards a heterodox DCFA/OR perspective in the promotion of the spread archaeological heritage

Maria Rosa Trovato, Salvatore Giuffrida, Carmelo Marisca, Cheren Cappello, Ludovica Nasca

- 3 - **New SDG11-related indicators to underpin complex urban decisions**
Marika Gaballo, Beatrice Mecca, Isabella Lami, Elena Todella, Francesca Abastante
- 4 - **Selection of complex energy-related technological R&D pathways with Multi-Criteria Decision Analysis**
Francisco Silva Pinto
- 5 - **Development of a Spatial Decision Support System (DSS) using Multi-criteria Analysis for Flood Management Planning**
Mohammad Fikry Abdullah, Sajid Siraj, Richard Hodgett

■ **WA-13**

- 1 - **Column-and-constraint generation for risk-averse two-stage stochastic programs**
Jongheon Lee, Kyungsik Lee
- 2 - **Incremental Maximum Satisfiability**
Andreas Niskanen, Jeremias Berg, Matti Järvisalo
- 3 - **Efficient computation of tolerances of combinatorial bottleneck problems**
Marcel Turkensteen, Gerold Jäger

Cancellation

Combining interior point methods and first order methods to solve Max-Cut to optimality

Timotej Hrga, Janez Povh

■ **WA-15**

Cancellation

Time and Space Predictive Analytics of Crime and Policing For Vehicle Routing and Optimal Resource Allocation.

Thyago Nepomuceno, Rayane Araújo Lima, Jean Gomes Turet, Lucio Camara e Silva, Ana Paula Costa

- 2 - **Comparison of metaheuristics for the location of firebreaks in wildfires combat**
David Palacios, Jaime Carrasco, Sebastián Dávila, Cristobal Pais, Andrés Weintraub

- 3 - **Paris Agreement targets under uncertain negative emission technologies and climate sensitivity**
Theresa Schaber, Tommi Ekholm
- 4 - **Complex systemic problems in regulation - case study in demand response in Finland**
Anni Niemi

■ **WA-18**

Cancellation

New Approach to Solution of Packing and Covering Problem with Complex-Shape Objects

Sergiy Yakovlev

Cancellation

A fast deepest-left-bottom-fill algorithm to solve 3D nesting problems using a semi-discrete representation

Sahar Chehrazad, Dirk Roose, Tony Wauters

- 3 - **An Intelligent Packing System (IPS) with Industry-Grade Features**
David Álvarez-Martínez, Daniel Cuellar-Usaquen, Juan Carlos Pachon, Germán Fernando Pantoja Beanvides, Juan Camilo Martínez, Luis Miguel Escobar Falcón, Cesar Marin, Laura Escobar, Camilo Quiroga, Julio Daza Escorcía

■ **WA-28**

Cancellation

Novel Adaptive Pattern Extraction and Matching Algorithms for Forecasting COVID-19 Time Series

Michael Katehakis

- 2 - **COVID-19 Daily Case and Death Prediction using Deep Learning Models with Time-lag Features**
Yajie Duan, Javier Cabrera, Dhammika Amaratunga, Michael Katehakis, Jin Wang, Nuria Diaz-Tena, Chun Pang Lin, Michalis Xyntarakis, Wenting Wang, Debopriya Ghosh
- 3 - **Voucher Effect in Sequencing Arrivals of Appointment-Based Queues**
Boray Huang
- 4 - **Forecasting COVID-19 deaths using time series model with changes points**
Chun Pang Lin, Javier Cabrera, Dhammika Amaratunga, Yajie Duan, Michael Katehakis, Jin Wang, Wenting Wang

■ **WA-35**

- 1 - **Electric Aircraft Charging Network Design for Regional Routes: A Novel Mathematical Formulation and Kernel Search Heuristic**
Sebastian Birolini

Cancellation

An integrated air cargo routing problem with environmental considerations: a metaheuristic approach

Mattia Cattaneo

- 3 - **An efficient exact algorithm for the airport slot allocation problem**
Sergio García Quiles, Paula Fermín Cueto, Miguel F. Anjos
- Cancellation
Planning Inductive Charging Infrastructures on Airport Aprons
Niklas Pösch, Justine Broihan

■ WA-36

Cancellation

Rolling Horizon Scheduling of Biopharmaceutical Therapies via a Two-Step Lookahead Heuristic

Siamak Naderi, Juergen Branke

- 2 - **Reducing cost and waste in hospital inventory management: A demand-driven replenishment strategy**
Gaspard Hosteins, Allan Larsen, Dario Pacino, Christian Sørup
- 3 - **A location-inventory model for the cooperative hospital supply chain**
Lien Vanbrabant, Lotte Verdonck
- 4 - **An inventory-routing problem for cooperative hospital supply chain operations**
Silia Mertens, Kris Braekers, An Caris, Lien Vanbrabant

■ WB-05

- 1 - **Burglary prediction via machine learning and crime report app data**
Sebastian Maldonado, Joaquín Roa, Richard Weber, Carla Vairetti
- 2 - **Improving crime report categorization and prioritization via text analytics and deep learning**
Carla Vairetti, Matías Ponce, Sebastian Maldonado, Richard Weber
- 3 - **Named entity extraction as a tool to enrich crime investigation**
Richard Weber, Florencia Signorini, Santiago Valdivieso, Sebastian Maldonado, Carla Vairetti

Cancellation

Finding Criminal Groups in Suspect Networks Using a Steiner Tree Approach

Fredy Troncoso, Richard Weber, Alex Barrales-Araneda

■ WB-07

- 1 - **A multi-domain evaluation methodology to assess building performance based on real-time monitored data**
Giulio Cavana, Anthony Suppa, Giulia Vergerio, Federico Dell'Anna, Cristina Becchio, Marta Bottero, Sara Viazzo, Stefano Corgnati
- Cancellation
- The application of multi-criteria methodology in spatial planning. The case study of Greece.**
Vasiliki Charalampidou
- 3 - **Autocracy vs "Solidarchy". The Territories of Energy and Shapes of Landscape in the Environmental Accountability**
Salvatore Giuffrida, Maria Rosa Trovato, Cheren Cappello, Ludovica Nasca

■ WB-12

- 1 - **Convex Relaxations for the Multi-period Natural Gas Storage Optimization Problem**
Bahar Okumusoglu, Burak Kocuk

- 2 - **Exact solution of the OPF problem based on compact quadratically constrained convex relaxation**
Amélie Lambert

Cancellation

Strengthened Linear and SOCP Relaxations for the Generalized Pooling Problem

Mosayeb Jalilian, Burak Kocuk

- 4 - **Solving Bilevel AC OPF Problems by Smoothing the Complementary Conditions**
Karlo Šepetanc, Hrvoje Pandzic, Tomislav Capuder

■ WB-15

- 1 - **Charging Strategies and Infrastructure Policies Supporting the Adoption of Electric Vehicles in Fleet Utility Operations**
Vidura Sooriyaarachchi, Anne Liret, Jiyin Liu, Rupal Rana
- 2 - **The System Dynamics model of recovery of inhabited areas**
Anna Selivanova, Igor Krejci, Tereza Sedlářová Nehézová

Cancellation

Dynamic Supply Chain Mapping: Backbone of a Tailored Intelligent Decision Support

Sahar Validi

■ WB-17

Cancellation

AI Infused FinTech: Achieving National Sustainability for South African SMEs

Amos Mpofo, Helper Zhou, Gordon Dash, Nina Kajiji

Cancellation

A Radial Basis Function Approach to Corporate Distress Modelling in Zimbabwe

Louisa Muparuri, Nina Kajiji, Gordon Dash, Victor Gumbo

- 3 - **Efficient Shallow Neural Network Methods for Mapping the Determinants of SMME Performance**
Helper Zhou, Gordon Dash, Nina Kajiji
- 4 - **AI Universal Approximation with Big Data to Model Bond Volatility Spillovers between SALT States and the South African Government Bond Market**
Gordon Dash, Nina Kajiji, Domenic Vonella

■ WB-21

- 1 - **Target-oriented utility, rank and status**
Jeffrey Keisler
 - 2 - **Spatial decision analysis under incomplete preference information**
Mikko Harju, Juuso Liesiö, Kai Virtanen
- Cancellation
- An agent-based model to investigate how different agent behaviors affect a crowd**
Carolina Crespi, Georgia Fargetta, Mario F. Pavone, Rocco Alessandro Scollo
- 4 - **GAM: Behaviour elicitation using games for agent-based simulation**
Stephan Onggo

■ WB-25

- 1 - **Order picking problem: Exact and heuristic algorithms for the Generalized Travelling Salesman Problem with geographical overlap between clusters.**

Farzaneh Rajabighamchi, Stan Van Hoesel, Christof Defryn

Cancellation

An overview study for the development and evaluation of vision guided order picking systems in logistics operations

Nikolaos Chondromatidis, Anastasios Gialos, Vasileios Zeimpekis

- 3 - **A data-driven analysis of route deviations in an order picking process**

Aïcha Leroy, Kris Braekers, An Caris, Benoît Depaire

- 4 - **Storage location assignment in warehouses to minimise walking in order picking**

Jiyin Liu, Wei Jiang, Yun Dong, Li Wang

■ WB-28

Cancellation

Analyzing the impact of COVID-19 on spatio-temporal mobility patterns using mobile device data

Michalis Xyntarakis, Briance Mascarenhas

- 2 - **Using fractal analysis to measure the dimensionality of a worldwide dataset for detecting countries with excess COVID deaths**

Nuria Diaz-Tena

Cancellation

The impact of socio-economic factors and commuter pattern between New York and New Jersey on the spread of COVID-19 cases and deaths

Wenting Wang

- 4 - **SEIR Filter: A Stochastic Model of Epidemics**

Martin Smid

■ WB-29

- 1 - **Workload Smoothing and the Robustness of Assembly Line Balancing: A Simulation Analysis**

Oncu Hazir, Maher Agi, Jeremy Guerin

Cancellation

Assembly Line Balancing Problem with Parallel Station

Gorkem Yilmaz, Industrial Engineering, Ozyegin University, Çekmeköy Campus Nişantepe District, Orman Street,, Çekmeköy, 34794, İSTANBUL, Turkey, gorkem.yilmaz@ozyegin.edu.tr, Tunahan Bilgic, Erinc Albey

This paper focuses on the assembly line balancing problem of the TV production facility of Vestel Electronics. The production includes numerous tasks, and the tasks also have a precedence relationship, which increases the complexity of the problem. Production is made in a given cycle time, and the goal is to increase the efficiency of the related assembly line. In the given framework, identical parallel stations can be opened to increase the line production rate. We develop a mathematical model which solves the simple assembly line type 1 problem with parallel workstations. Moreover, company-specific constraints are added to the model to satisfy the production requirements. Computational experiments show that the developed model can be used as a decision support tool to satisfy the production metrics.

- 3 - **Robust optimization for mixed-model assembly line balancing with dynamic task assignment and walking workers**

Seyyed Ehsan Hashemi Petroodi, Simon Thevenin, Sergey Kovalev, Alexandre Dolgui

■ WB-31

- 1 - **Alternating proximal-gradient steps for (stochastic) nonconvex-concave minimax problems**

Axel Böhm

Cancellation

Convergence of an Asynchronous Block-Coordinate Forward-Backward Algorithm for Convex Composite Optimization

Saverio Salzo

- 3 - **Strengthened splitting methods for computing resolvents**

Francisco Javier Aragón Artacho, Rubén Campoy, Matthew Tam

■ WB-38

- 1 - **E-scooter Rebalancing with En Route Charging Capability**

Xiangyu Jin, Yufeng Cao, Yu Yang

- 2 - **Smart Charging of Electrical Vehicles: Coordinated energy consumption through a digital platform**

Mario Guajardo, Endre Bjørndal, Mette Bjørndal, Jacob Dalton, Elisabet Kjerstad Bøe

Cancellation

Design and location of shared mobility infrastructure assets

Josep Maria Salanova Grau, Zisis Maleas, Georgia Ayfantopoulou

■ WC-04

- 1 - **Fairness in multiple linear regression: a Bayesian approach**

Rafael Jiménez, Emilio Carrizosa, Pepa Ramirez Cobo

- 2 - **Revisiting pitch framing using Bayesian Additive Regression Trees**

Sameer Deshpande

Cancellation

Spike-and-slab group lassos for grouped regression and sparse generalized additive models

Ray Bai

- 4 - **Variational Inference and Sparsity in High-Dimensional Deep Gaussian Mixture Models**

Lucas Kock, Nadja Klein, David J. Nott

Title change:

■ WC-07

Wednesday, 12:30-14:00

U3

Multi-objective combinatorial optimization 1

Cluster: Multiobjective Combinatorial Optimization

Invited session

Chair: Matthias Ehrgott

- 1 - **A minimax regret based interactive approach for inverse multiple criteria sorting problem**
Ozgur Ozpeynirci, Selin Özpeynirci, Vincent Mousseau
- 2 - **New Dynamic Programming Algorithm for the Multiobjective Minimum Spanning Tree Problem**
Pedro Maristany de las Casas
- 3 - **Approximated anytime method to solve multiobjective combinatorial optimization problems**
Miguel Ángel Domínguez Ríos, Francisco Chicano, Manuel López-Ibáñez
- 4 - **An evaluation of the fairness of railway timetable rescheduling**
Matthias Ehrgott, Edwin Reynolds, Judith Y. T. Wang

■ WC-20

- 1 - **Trusting alone and together**
Benedikt Meylahn, Arnoud den Boer, Michel Mandjes
- 2 - **The Use of Volatility Modeling in Monetary Policy Evaluation**
Dominik Kavřík
Cancellation
Impact of equilibrium concepts on dynamic environmental agreements
Samar Garrab

■ WC-28

- 1 - **Exploring the potential of discrete-event simulation modelling to develop urban mobility scenarios**
Mario Jadric, Maja Cukusic, Tea Mijac
- 2 - **Interpretable Cost-Sensitive Regression through One-Step Boosting**
Thomas Decorte, Tim Verdonck, Jakob Raymaekers
- 3 - **Multi-objective Regression Modeling for Natural Gas Prediction with Ridge Regression and CMARS**
Ayse Ozmen
Paper moved from session MC-22
- 4 - **The effect of demand amplification into supply chain network designing**
Pablo A. Miranda, Francisco J. Tapia-Ubeda, Luis Olivares-Álvarez, Salvatore Cannella, Roberto Dominguez
Paper moved to session MD-28
On Peer Group Situations and Related Games under Fuzzy Uncertainty
İsmail Özcan, Sırma Zeynep Alparslan Gök, Gerhard-Wilhelm Weber

■ WC-31

- 1 - **Duality and limiting formulas for convex infinite optimization problems**
Miguel Goberna
Cancellation
The set of strong Slater points of a linear semi-infinite system
Margarita Rodríguez Álvarez, José Vicente-Pérez
- 3 - **Fenchel duality for convex optimization on Riemannian manifolds**
Jose Vidal-Nunez, Roland Herzog, Ronny Bergmann, Mauricio Louzeiro
- 4 - **On subdifferentials via a generalized conjugation scheme: an application to DC problems and optimality conditions**
Maria Dolores Fajardo, Jose Vidal

■ WC-32

- 1 - **Stochastic Nash Equilibrium Problems during emergency situations**
Georgia Fargetta, Laura Rosa Maria Scrimali
Cancellation
Operations Research Application for Solving Transportation Problems
Lorena Reyes-Rubiano
- 3 - **Time is Money: Scheduling in Production and Logistics**
Julia Lange
- 4 - **Using real-time information to plan a Smart Waste Collection Operation**
Carolina Soares de Morais, Tania Ramos, Ana Paula Barbosa-Póvoa

■ WC-36

- 1 - **MILP model for designing menus for controlled feeding trials**
J.c. Gerdessen, Karin Borgonjen-van den Berg
- 2 - **New insight into the CATIE study by constrained confidence partitioning**
Andreas Brieden
Cancellation
Managing drug prices in a complex competitive and regulatory environment using a multimethod scenario simulator
R Kazakov, Susan Howick, Alec Morton
- 4 - **What is the value of explicit priority setting for health interventions? A simulation study**
Alec Morton, Euan Barlow, Saudamini Dabak, Sven Engels, Wanrudee Isaranuwatjai, Yot Teerawattananon, Kalipso Chalkidou

■ WC-38

- 1 - **A welfare optimal model for intermediate public transportation services**
Atanu Bhuyan

- 2 - **An adaptive modular evolutionary scheme for solving the integrated timetabling and vehicle scheduling problem**
Lucas Mertens, Bastian Amberg, Natalia Kliewer
- 3 - **Social rerouting in public transport networks**
Oskar Eikenbroek, Xiaojie Luan, Francesco Corman, Eric van Berkum
Paper moved from session MB-35
- 4 - **Empirical Analysis of the Depreciation of Electric Vehicles compared to Gasoline Vehicles**
Lukas Schloter

■ WD-06

- 1 - **Scenario-Based Algorithms for Same-Day Delivery Problems**
Francesco Gallesi, Jean-François Côté, Thiago Alves de Queiroz, Manuel Iori
Cancellation
The Hybrid Flexible Flowshop with Transportation Times: Models, Metaheuristics, and Hybrid Heuristics
Michele Garraffa, Eddie Armstrong, Barry OSullivan, Helmut Simonis
- 3 - **Logic-Based Benders' Decomposition - evaluation of cut-strengthening techniques**
Aigerim Saken, Emil Karlsson, Stephen Maher, Elina Rönnberg
- 4 - **Exact and Heuristic Solution Techniques for Mixed-Integer Quantile Minimization Problems**
Marius Roland, Diego Cattaruzza, Martine Labbé, Matteo Petris, Martin Schmidt

Title change:

■ WD-07

Wednesday, 14:30-16:00

U3

Multiobjective combinatorial optimization 2

Cluster: Multiobjective Combinatorial Optimization

Invited session

Chair: *Manuel López-Ibáñez*

- 1 - **An analysis of the facility location problems in personalised biopharmaceuticals**
Andreea Avramescu, Richard Allmendinger, Manuel López-Ibáñez
- 2 - **Metaheuristics for the Support Vector Machine: evaluating the performance through ROC analysis**
Daniel Valero Carreras, Javier Alcaraz, Mercedes Landete
- 3 - **Interdicting dense clusters in network systems**
Foad Mahdavi Pajouh, Haonan Zhong, Sergiy Butenko, Alkiviadis Vazacopoulos

■ WD-08

- 1 - **EURO-2022 conference scheduling: Related session scheduling**
Thomas Stidsen
- 2 - **A metaheuristic approach to the shift minimization personnel task scheduling problem**
Nico Kyngäs, Kimmo Nurmi
Paper moved to session TB-13
Course Allocation with Friendships
Tal Grinshpoun, Ilya Khakhiashvili, Lihi Dery

■ WD-11

- 1 - **A stakeholder-involved criteria pre-processing framework in the multi-actor multi-criteria analysis**
He Huang, Cathy Macharis
- 2 - **A framework to reach sustainable consensus in the multi-actor multi-criteria analysis**
Shary Heuinckx, He Huang
Cancellation
Multi-criteria multi-actor analysis of emission abatement and energy efficiency measures in container terminals
Erik Pohl, Sebastian Schär, Jutta Geldermann

■ WD-14

- Cancellation
Board Packing Problem (BoPP)
Tomas Attila Olaj, Gyorgy Dosa, Lars Magnus Hvattum, Zsolt Tuza, Gyula Abraham
- 2 - **Hybridization of PSO and PAES to minimize tardiness and flowtime in a hybrid flow shop with unrelated parallel machines**
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