

## Monday

### ■ MA-04

- 1 - **Integrated maintenance planning and order scheduling**  
*Andreas Junker, Peter Letmathe*
- 2 - **Production scheduling and inventory management for an ice cream manufacturer using hierarchical planning models**  
*Andrea Cameron, Eldon Gunn*  
*Paper added to session*
- 3 - **On solving scheduling problems by using optlets**  
*Hans Heller, CT PP7, SIEMENS AG, Otto-Hahn-Ring 6, 81739, München, Germany, hans.heller@siemens.com, Aleksei Fishkin*

We make an attempt to bridge the gap between scheduling research and practice. Our results are threefold. First, we have developed a declarative and object-oriented programming language called SLOTS (Scheduling Language for Optlets Schedulers) which can specify a wide range of scheduling problem classes. Second, we have developed a compiler that generates the necessary C++ code for a fully functional optimizer based on the OptLets framework. Finally, we have conducted extensive experiments on publicly available instances of different scheduling problem classes.

### ■ MA-05

- 1 - **Rna structure elucidation via nmr: processing of spectral data.**  
*Marta Szachniuk, Mariusz Popenda, Lukasz Popenda*
  - 2 - **Algorithm for non-classical sequencing by hybridization**  
*Marcin Radom, Piotr Formanowicz*  
*Paper added to session*
  - 3 - **New computational approach for identification of restriction enzymes**  
*Pedamallu Chandra Sekhar, Bioinformatics / Computational Biology, New England Biolabs, 240 County Road, 01938, Ipswich, MA, United States, pcs.murali@gmail.com, Janos Posfai*
- Restriction enzymes (REases) are important tools of genetic engineering and DNA manipulation. Sequences of TypeII REases possess neither overall sequence similarity, nor characteristic sequence motifs, and sequence similarity based direct identification of new members is rarely possible. In this paper, we present a new method to identify new REases genes from genome seq.'s. This method is based on a composite score calculated from gene sim., gene context info., secondary struct. and fold sim., recognition spec. and DNA cleavage pattern. Wet lab experiments of our predictions are in progress.
- 4 - **Non linear excitation in one dimensional lattices.**  
*Elsó Drigo Filho, Hernan Cortez, Jose Roberto Ruggiero*

### ■ MA-07 has moved to MC-07

### ■ MA-07 has moved from MC-07

Monday 08:00-09:20

GSI - S 29

### Rescheduling in railways

Cluster: Optimization in Public Transport

*Invited session*

Chair: *Marco Laumanns*

Chair: *Gabrio Curzio Caimi*

- 1 - **Precise operation — accurate and fast rescheduling: potential benefits and challenges in the field of railway operations research**  
*Marco Lüthi*

- 2 - **Design of an effective algorithm for fast response to the re-scheduling of railway traffic during disturbances**  
*Johanna Törnquist Krasemann*
- 3 - **A model for real-time-dispatching of connection conflicts in railway operation**  
*Stephan Kurby, Matthias Bär*
- 4 - **Impact of rescheduling trains with transfer connections in disturbed traffic conditions**  
*Marco Pranzo, Francesco Corman, Andrea D'Ariano, Dario Pacciarelli*

### ■ MA-23

- 1 - **AHP and topsis to evaluate the emerging industry credit ability for banking sector**  
*Yi-Shan Chen, Chin-Tsai Lin, Jung-Ho Lu*  
*Cancellation*  
**A locational decision making of a logistics center for turkish clothing industry**  
*Selin Hanife Eryuruk, Murat Baskak, Fatma Kalaoglu*
- 3 - **A new approach of the AHP method: application for trend determination**  
*Szabolcs Duleba*
- 4 - **An integrated approach for global supplier selection decision**  
*Aycan Aytekin, Arzu Tektas*

### ■ MA-31

- 1 - **Mining the most representative models of patient care process with process mining methodology**  
*Hongying Fei, Nadine Meskens*
- 2 - **High speed pattern mining for huge data - algorithm and implementation -**  
*Takeaki Uno*
- 3 - **A new algorithmic method for telecom event correlation using association rule mining**  
*Behrad Analui*  
*Paper added to session*
- 4 - **Survey, visual analysis & modeling of risk attitudes**  
*Cemre Kefeli, Manufacturing Systems Engineering, Sabanci University, Cavusbasi Cad. Atis Sok. Forest Hill Villalari B1 Cekmek?y ISTANBUL, 34765, Istanbul, cemrekefeli@su.sabanciuniv.edu, Ozge Onur, Kerem Uzer*

The aim is to analyze how human behavior alters under different risk situations. 656 participants from different working groups completed the 42 questioned risk survey. An algorithm to calculate a risk score for each participant is developed. Regression method is used to eliminate less important and contradictory questions and calculate distinctive weight coefficients for each question. Data analysis with Miner3D and Omnisciope is completed to find answers to many questions which are believed to provide efficient information to the areas of advertising, insurance, risk management, banking, economics.

### ■ MA-35

- 1 - **Developing MCDM tools for research project assessment**  
*Theodor Stewart, K. Nadia Papamichail*
- 2 - **Extending the use of scenario planning and mcda: an application to food security in trinidad & tobago**  
*Camelia Ram, Gilberto Montibeller, Alec Morton*  
*Cancellation*  
**Facilitated decision conferences in public participation:**  
*Simon French*

## ■ MA-41

- 1 - **Modelling classical swine fever spread using a spatial hybrid model**  
*Benjamin Ivorra, Angel Manuel Ramos, Beatriz Martinez-Lopez, Jose Manuel Sanchez-Vizcaino*
- 2 - **Incorporation of clinical signs for characterization of individual sows in the sow replacement problem.**  
*Sara Verónica Rodríguez-Sánchez, Tina Jensen, Lluís Miquel Pla, Anders Kristensen*
- 3 - **A two-stage stochastic program for planning production in breeding farms**  
*Lluís Miquel Pla, Sara Verónica Rodríguez-Sánchez, Víctor Albornoz*  
*Paper moved from session WA-32*
- 4 - **Modeling uncertainties for the magnitude of droughts and biological processes**  
*Laureano Fernando Escudero, Eva-Maria Ortega*

## ■ MC-06

- 1 - **Evolutionary approaches to maximizing the self availability in a chaotic warehouse**  
*Sacramento Quintanilla, Francisco Ballestin, M.Pilar Lino, M. Angeles Pérez, Vicente Valls*
- 2 - **Simuroute: using Monte Carlo simulation and splitting techniques to produce a solutions set to the cvrp**  
*Justo Garcia-Ortega, Fernando Lera-Lopez, Angel A. Juan, Javier Faulin, Scott Grasman*
- 3 - **Determination of the transport and delivery capacity in a postal company**  
*Manuel Mateo, Paolo Gaianigo, Imma Ribas*
- 4 - **A tabu search approach for the green cvrp**  
*Javier Faulin, Francisco Arcelus, Sergio Ubeda*  
*Paper added to session*
- 5 - **Simulation education in the Internet age: some experiences in three spanish universities**  
*Javier Faulin, Department of Statistics and OR, Public University of Navarre, Los Magnolios Building, 1st Floor, Campus Arrosadía., 31006, Pamplona, Navarra, Spain, javier.faulin@unavarra.es, Angel A. Juan*

In this paper we analyze several cases related to three different Spanish universities that make use of the World Wide Web to teach simulation courses online. These universities are the Open University of Catalonia, the University of Lleida and the UNED. At these three universities different infrastructures, tools and learning models are employed to deliver simulation education online. All together, they represent a good example of how information technologies can be used in today's higher-education systems and, in particular, in the area of simulation education.

## ■ MC-07 has moved to MA-07

## ■ MC-07 has moved from MA-07

Monday 12:00-13:20  
GSI - S 29

## Public Transport Scheduling in Taiwan

Cluster: Optimization in Public Transport

*Invited session*

Chair: *Anthony F. Han*

- 1 - **Commuter bus routing problem: formulation and ta heuristics**  
*Anthony F. Han, Cheng Wei Chu*

- 2 - **Mass rapid transit crew scheduling and rostering: constraint programing applications**

*Anthony F. Han, Chun-Te Li*

- 3 - **A particle swarm optimization algorithm for the fixed-route bus network design**

*Wen-Chi Ho, Jau-Ming Su*

## ■ MC-14

- 1 - **A decomposition approach for solving the maximal covering location problem with an m/m/1 queuing system**  
*Hossein Taghizadeh Kakhki, Foroogh Moeen Moghadas*
- 2 - **The fermat-weber problem in a logistic and service network**  
*Hans Daduna, Vanessa Lange*  
*Cancellation*  
**Location of multiple-server immobile facilities operating as m/er/m/n queues**  
*Vladimir Marianov*

## ■ MC-28

- Cancellation*
- Skewness-aware asset allocation: empirical evidence**  
*Dessislava Pachamanova, Melvyn Sim, Cheekiat Low*
- 2 - **Stochastic portfolio optimization with market frictions**  
*Miguel Lejeune*
  - 3 - **Application of interactive surrogate constraint method to financial optimization problems**  
*Yuji Nakagawa, Yuriko Isada, Nobuko Igaki, Chanaka Edirisinghe*
  - 4 - **The effect of shorting in optimal tracking error portfolios**  
*Diana Barro, Gautam Mitra, Diana Roman*

## ■ MC-29

- 1 - **Power plant dispatch and portfolio management under uncertain fuel and electricity prices**  
*Dominik Möst, Dogan Keles, Wolf Fichtner*
- 2 - **Advantages of a stochastic optimization in mid-term generation and trading planning**  
*Bernd Tersteegen, Tobias Mirbach, Gerd Hinueber*
- 3 - **Valuation of a flexible gas fired unit under uncertain prices**  
*Marc Hasenbeck*  
*Paper added to session*
- 4 - **Recombining scenario trees for stochastic optimization of decentralized energy supply with wind energy and storages**  
*Oliver Woll, Universitaet Duisburg-Essen, Universitaetsstraße 12, 45117, Essen, Germany, oliver.woll@uni-due.de*

Strong fluctuations of the wind increase problems to the network operators. On the other side, electric storages offer the possibility of decoupling supply and demand. Because of changing basic conditions in the liberalised energy markets, there is the need of stochastic programming to analyse energy supply systems. For this, a multistage stochastic optimization model with the task of cost minimization and the optimal investments in storage and power plants is developed to research the relevance of storages in the long term. The solution of the model is done using recombining scenario trees.

## ■ MC-39

- 1 - **Price of anarchy (poa) in the markovian single server**  
*Gail Gilboa-Freedman, Rafi Hassin, Yoav Kerner*  
*Paper added to session*

## 2 - Robust dynamic games for modelling the interaction between forward and spot markets

Nalan Gulpinar, Warwick Business School, The Warwick University, UK., CV4 7AL, Coventry, United Kingdom, Nalan.Gulpinar@wbs.ac.uk, Fernando Oliveira

Stochastic decision-making involves uncertainty and consequently risk. An important tool to address the inherent error for forecasting uncertainty is worst-case analysis. In this paper we consider robust competitive games in oligopolistic future markets under uncertainty. The interaction between futures and spot prices is described by a function of the possible behavior of the other players in the industry. The two-stage stochastic model is extended to a minimax model with rival demand scenarios.

## 3 - On the ordinal equivalence of values in cooperative games

Josep Freixas, Montserrat Pons

## 4 - Between the prekernel and the prenucleolus

Ilya Katsev, Elena Yanovskaya

## ■ MC-43

### 1 - Forest as an investment

Thomas Knoke

### 2 - Adaption to uncertainty: sustainable forest management and intergenerational justice

Andreas Hahn

*Paper added to session*

### 3 - The German round wood market structure — implications for long-term investments: an economic analysis

Kajetan Zwirgmaier, Fakultät für Wirtschaftswissenschaften, TU München, Lehrstuhl für Forstliche Wirtschaftslehre, 85354, Freising, Germany, k.zwirgmaier@mytum.de

Since more than one decade the structure of the German round wood market has dramatically changed. Changes on the side of demand, caused by the establishment of saw mills with huge capacities, the in general ongoing concentration in the wood-processing industry and the appearance of new market players have led to alterations in the market. The purpose of this article is the investigation of these alterations in respect to the market structure and the implications for long-term investments.

### 4 - Finding the optimal rotation age under risk by means of survival probability

Bernhard Moehring, Kai Staupendahl

## ■ MD-39

### 1 - On optimal organization of government and corporate control

Alexander Vasin

### 2 - Fuzzy subjective conflict analysis

Teruhisa Nakai

### 3 - Decisiveness-related generalized class of power values for cooperative games

Dorota Marciniak

### 4 - Computing $\alpha$ -efficient cost allocations

Mariusz Kaleta

*Paper moved to session MC-39*

### Robust dynamic games for modelling the interaction between forward and spot markets

Nalan Gulpinar, Fernando Oliveira

## ■ MD-42

### 1 - Fuzzy clustering employing wavelet coefficients for detection of mitral valve disorders

Necaattin Barisci

### 2 - Is integrated care a solution to health care problems? on redesigning antenatal care processes with computer simulation.

Angele Pieters, Henk Akkermans

### 3 - A new challenge: paediatric palliative care planning

Giorgio Romanin-Jacur, Giada Aspergh, Paola Facchin, Anna Ferrante, Laura Visona\_Dalla\_Pozza

*Cancellation*

### Multi-attribute decision support for stroke imaging software selection

Leonid Churilov, Liu Daniel, Geoffrey Donnan

## ■ MG-01

### 1 - Neighborhood exploration using mip solvers for a tank allocation problem

Lars Magnus Hvattum, Kjetil Fagerholt, Vinicius Armentano

### 2 - A multi level branching strategy algorithm for the 01mdk

Michel Vasquez, Sylvain Bouscier, Yannick Vimont, Saïd Hanafi, Philippe Michelon

### 3 - Inequalities and target objectives in metaheuristics for mixed binary program

Fred Glover, Saïd Hanafi

*Paper moved from session WD-17*

### 4 - The layout design of a semiconductor fab with spine and perimeter interbay guide paths

Ying-Chin Ho, Ta-Wei Liao

## ■ MG-05

### 1 - Structure similarity consensus as a measure of quality in protein structure prediction

Pawel Widera, Daniel Barthel, Jonathan Garibaldi, Natalio Krasnogor

### 2 - Cancer profiles by affinity propagation

Daniele Soria, Federico Ambroggi, Patrizia Boracchi, Jonathan Garibaldi, Elia Biganzoli

*Cancellation*

### A comparison of simulated annealing strategies for consensus clustering of microarray data

Enrico Glaab, Natalio Krasnogor, Jonathan Garibaldi

### 4 - Case control analysis for snps data

Linda Fiaschi

## ■ MG-19

### 1 - Tuning genetic algorithms by using simulation optimization techniques

Helcio Vieira Junior, Karl Heinz Kienitz, Mischel Carmen N. Belderrain

### 2 - Index tracking with genetic algorithms

Peter Rossbach, Denis Karlow

### 3 - A hybrid simulated annealing/genetic algorithm method for the global optimization of mixed-integer nonlinear programming problems with applications to industrial design

Fattaneh Cauley, Stephen Cauley, Linda Wang

### 4 - A genetic algorithm for the complex-constrained assembly line balancing problem

Aliye Ayca Supciller, Latif Salum

*Paper added to session*

### 5 - A problem-specific and effective metaheuristic for flexibility design

Michael Schneider, BISOR, University of Kaiserslautern, Erwin-Schrödinger-Straße, Geb. 42-420, Kaiserslautern, 67653, Kaiserslautern, Germany, schneider@bisor.de, Jörn Grahl, David Francas

Matching uncertain demand with capacities is notoriously hard. Operations managers can use mix-flexible resources to shift excess demands to unused capacities. To find the optimal configuration of a mix-flexible production network, a flexibility design problem (FDP) is solved. Existing literature on FDPs provides qualitative structural insights, but work on solution methods is rare. We contribute the first metaheuristic which integrates these structural insights and is specifically tailored to solve FDPs.

### MG-43

#### 1 - Cognitive perspectives on future scenarios related to climate change: a cross-cultural turkish-german study

Annette Hohenberger

#### 2 - Risk-based assessment and management of total petroleum hydrocarbon contamination

Aisha Bello-Dambatta, Akbar Javadi

#### 3 - Dynamic simulation of trb1 region : projections and scenarios

Hasan Soyler

*Cancellation*

#### Multiple criteria evaluation of transportation modes used in turkey

Banu Soylu, Kezban Bulut

### MG-44

#### 1 - A decomposition approach for stochastic dynamic programming models of reservoir networks

Thomas Archibald

#### 2 - The value of a domestic photovoltaic power station

John Boland

*Cancellation*

#### Stochastic control of river systems

Julia Piantadosi

#### 4 - Addressing variability in renewable and decentralised energy systems

Simon Dunstall, Andreas Ernst, Rodolfo Garcia-Flores, Gaurav Singh, Rene Weiskircher

## Tuesday

### TA-37

#### 1 - An interactive probabilistic multi-criteria sorting algorithm

Aslı Gül Buğdacı, Murat Koksalan

#### 2 - Robustness in multi-objective optimization based on a user perspective

Peter Lindroth, Christoffer Cromvik

#### 3 - Combined dematel technique with vikor method for improving environment watershed plan stragy

Yi-Chun Chen

#### 4 - Characterization of solutions in multiobjective programming under weak invexity

Hachem Slimani, Mohammed Said Radjef

*Cancellation*

#### Evaluation and enhancement of the best environment watershed plan using a novel hybrid MCDM model

Yi-Chun Chen, Gwo-Hshiung Tzeng

### TC-38

*Cancellation*

#### A heuristic algorithm for optimizing frequencies in a transit network

Ricardo Garcia, Eusebio Angulo Sánchez-Herrera

#### 2 - A hierarchical approach for water system planning

Carmen Galé, Herminia I. Calvete, Pedro Mateo

#### 3 - Optimization methods with convex and concave support functions in bilevel programming

Oleg Khamisov

#### 4 - Piecewise linear and piecewise quadratic finite-element approximation of hemivariational inequalities

Nina Ovcharova

### TC-44

*Paper added to session*

#### 1 - Policy making when models disagree

Bernard Sinclair-Desgagné, International Business, HEC Montréal, 3000 Chemin de la Côte Sainte-Catherine, H3T2A7, Montréal, QuÃ©bec, bsd@hec.ca, Pauline Barrieu

This paper proposes a general way to craft public policy when there is no consensual account of the situation of interest. The design builds on a dual extension of the traditional theory of economic policy. It does not require a representative policymaker's utility function (as in the literature on ambiguity), a reference model (as in robust control theory) or some prior probability distribution over the set of supplied scenarios (as in the Bayesian model-averaging approach). The obtained policies are shown to be robust and simple in a precise and intuitive sense.

#### 2 - A stochastic game approach to the optimal timing of regional climate policies

Olivier Bahn, Laurent Drouet, Alain Haurie, Roland Malhamé, Julien Thénié

#### 3 - The endogenous price dynamics of emission permits in the presence of technology change

Marc Chesney, Luca Taschini

#### 4 - Integrating behavioral pattern uncertainties in techno-economic energy and environmental planning models

Gustave Nguene, Emmanuel Fragniere, Roman Kanala, Denis Lavigne, Francesco Moresino

#### 5 - The simulation and optimization of technology to address climate change

Gary Howorth

### TD-03

#### 1 - Optimal placement, activity scheduling and routing in wireless sensor networks

I. Kuban Altinel, Yavuz Turkogullari, Necati Aras

#### 2 - Deterministic deployment of wireless sensor networks

Charl Ras, Doreen Thomas, Marcus Brazil

*Cancellation*

#### Evaluating energy efficiency of heuristic base station movement strategies in wireless sensor networks with mobile base stations

Kadir Ertogral, Muhammed Rasit Yildiz

### TD-25

#### 1 - Population normalized balanced contributions property and the per-capita Shapley value

Takumi Kongo

#### 2 - Axiomatization and implementation of discounted Shapley values

Rene van den Brink, Yukihiko Funaki

### 3 - A coalition formation value for games in partition function form

*Yukihiko Funaki, Michel Grabisch*

*Paper added to session*

### 4 - Computing values and power indices in cooperative land division

*Marco Dall'Aglio, Dipartimento di Scienze, Università d'Annunzio, Viale Pindaro, 42, 65127, Pescara, Italy, marco.dallaglio@unich.it, Camilla Di Luca*

Several agents attend the apportionment of a completely divisible good (such as a piece of land). Modes of cooperation in this framework have been defined in Dall'Aglio, Branzei and Tijs (2009). Known methods for computing the values and power indices of the resulting games are known only for some special cases. Here we propose an easy-to compute approximation from below for the cooperative games in question, which can be used for any specification of the preferences of the players. The approximation is based on a geometric model for fair division introduced by Legut (1988).

## ■ TD-29

### 1 - Energy commodities market correlations and cointegration

*Cristina Bencivenga, Rita D'Ecclesia, Giulia Sargenti*

### 2 - A new index for electricity spot markets

*Silvana Stefani, Paolo Falbo*

*Cancellation*

### Dynamics of CO2 prices and implications for optimal producer policies

*Silvana Stefani, Paolo Falbo, Daniele Felletti*

## ■ TE-26

*Cancellation*

### K<sub>2</sub>-bipartite distance hereditary graphs

*Slimani Souad, Méziane Aïder*

### 2 - Planar graphs without short cycles OR close triangles are three-colourable.

*Aleksey Glebov*

### 3 - Decomposing planar graphs into degenerate subgraphs

*Dolgor Zambalava, Aleksey Glebov*

## ■ TE-45

*Paper added to session*

### 1 - Organizational structure and ethical behavior in a military organization. implications from a simulation study.

*Bent Erik Bakken, St. Georges vei 4, 0280 OSLO, 0280 OSLO, Norway, Oslo, beerikba@online.no*

Organizations frequently try to resolve ethical challenges by modifying their structures. However, such changes are typically not developed taking probable feedback mechanisms into account. Drawing from e.g. Schein and Argyris (1984), Kunsch et al (2009) and Serman (2000), we build a system dynamics simulation model to perform policy analysis with respect to fruitful avenues for improving individual and organizational ethics. Results indicate that simply increasing officer servicing time, might be more beneficial than elaborate incentive, control and punishment schemes.

### 2 - Computer supported ethical decision making

*Iordanis Kavathatzopoulos, Mikael Laaksoharju*

### 3 - How OR can better contribute to ethics in sustainable development

*Jean-Pierre Brans, Pierre Kunsch*

## ■ TF-07

*Paper added to session*

### 1 - Boarding and alighting in frequency-based transit assignment

*Normen Rochau, Software Transportation Planning, PTV AG, Stumpfstrasse 1, 76131, Karlsruhe, Germany, normen.rochau@ptv.de, Steffen Wecke*

The paper compares several models of route choice in frequency-based assignment in terms of their assumptions on passenger information, and choice set structure. Numerical results show that route splits differ significantly under different assumptions, so for practical applications the selection of the most suitable choice model is important and none of the models is a good approximation for all possible assumptions. We demonstrate that, in terms of expected cost, the decision about when to alight (or where to continue the journey) is just as important as the decision on which line to board.

### 2 - A systemic analysis of congestion in a transit network

*Fabien Leurent*

### 3 - On congestion phenomena in static models of traffic assignment to transit networks

*Fabien Leurent*

### 4 - Schedule-based dynamic assignment models for congested urban transit networks

*Umberto Crisalli, Agostino Nuzzolo, Luca Rosati*

## ■ TF-28

### 1 - Listing, facing and pricing in consumer goods industry

*Alexander Hübner, Heinrich Kuhn*

### 2 - Perishable inventory control under handling and storage constraints

*Rob Broekmeulen*

### 3 - Identifying the cooperative advertising multi-player game-solution in supply chain using genetic algorithms

*Chen Chie-Bein, Yuanchau Liour, Lin Chin-Tsai, Chun Hsien, Yang-Chieh Chin*

*Paper added to session*

### 4 - Channel coordination in a two-period newsboy problem

*Cao Linh, Industrial and Management Engineering, Postech, San 31, Hyoja, 790-784, Pohang, linhcao@postech.ac.kr, Yushin Hong*

We study channel coordination between a retailer and a wholesaler in a two-period newsboy problem. At the end of first period, demand declines due to introduction of new products, and the retailer can keep leftover inventory or salvage them. Our objective is how to determine the optimal order quantity and wholesale price at each period to maximize channel's profit. We propose a flexible hybrid coordination mechanism and obtain how the wholesale price and revenue sharing ratio are related to achieve sustainable channel coordination and a win-win outcome.

## ■ TG-16

### 1 - Multicriteria capacitated redistricting problem

*Paulo Morelato França, Laura Assis, Fábio Usberti, Vinícius Garcia*

*Cancellation*

### A multi-objective vertex covering obnoxious facility location problem on a plane

*Utpal Bhattacharya*

New session:

## ■ TG-17

Tuesday 17:40-18:25

Rheinaue

### Mathematical Programming Problems in Machine Learning 2

Cluster: Mathematical Programming

Invited session

Chair: *Adriana Gnudi*

Chair: *Igor Konnov*

Chair: *Elisabetta Allevi*

Chair: *Annabella Astorino*

- 1 - A convergent hybrid decomposition algorithm model using second order information for svm training**  
*Laura Palagi*, Dipartimento di informatica e Sistemistica, Universita' di Roma, Via Ariosto, 25, 00185, Roma, Italy, palagi@dis.uniroma1.it, *Stefano Lucidi*, *Risi Arnaldo*, *Marco Sciadrone*

Training of SVMs requires to solve a huge linearly constrained convex quadratic problem. We propose an hybrid algorithm decomposition model, which operates only on a small subset of variables selected using second order information, and which includes a caching technique to store the columns of the Hessian matrix. Convergence properties of the general scheme are proved and numerical experiments of simple implementations are reported.

## ■ TG-20

- 1 - Does AHP help us make a choice? - an experimental evaluation**  
*Alessio Ishizaka*  
*Paper moved from session WA-22*
- 2 - A quantitative method for administrative audit**  
*Yuji Sato*

## ■ TG-21

- 1 - Fuzzy MCDM approach for selecting the best environment-watershed plan**  
*Yi-Chun Chen*, *Gwo-Hshiung Tzeng*  
*Paper added to session*
- 2 - A novel ANP based MCDM framework for industrial cluster based technological college ic curriculum re-design**  
*Chi-Yo Huang*, Department of Industrial Education, National Taiwan Normal University, No. 162, He-Ping East Road I, 106, Taipei, Taiwan, cyhuang66@ntnu.edu.tw, *Gwo-Hshiung Tzeng*

Universities located within a cluster are the major source of an industrial cluster's competitive advantages. However, significant human resource competency gaps exist, especially in the Taiwanese IC industry. To enhance the competitiveness of IC clusters, the authors optimized an IC curricula architecture by an ANP based novel MCDM method consisting of DELATEL, GRA and VIKOR. The analytic framework can be used to enhance the competitiveness of IC clusters.

*Cancellation*

**Combined dematel technique with a novel MCDM model for bridges improvement**

*Gwo-Hshiung Tzeng*, *Yi-Chun Chen*

*Paper moved to session TA-37*

**Evaluation and enhancement of the best environment watershed plan using a novel hybrid MCDM model**

*Yi-Chun Chen*, *Gwo-Hshiung Tzeng*

## ■ TG-28

- 1 - Optimal bundling for single-period inventory problem**  
*Gregory Gurevich*, *Baruch Keren*, *Yuval Cohen*, *Yossi Hadad*
- 2 - Optimal order and production policies in a vmi**  
*Deniz Kubali*, *Onur Kaya*, *E. Lerzan Ormeci*  
*Paper moved to session TF-28*
- Channel coordination in a two-period newsboy problem**  
*Cao Linh*, *Yushin Hong*

## ■ TG-33

- 1 - A multicriteria model for the design and arrangement of vehicle's maintenance and repair centers: the case of athens municipality**  
*Athanasios Spyridakos*, *Panagiotis Kyriazopoulos*, *Lazaros Vryzidis*, *Maria Litsardaki*, *Maria Litsardaki*  
*Paper added to session*
- 2 - Fuzzy causal networks application in evaluating tobacco control: case of australia**  
*Sonja Petrovic-Lazarevic*, Management, Monash University, 3145, Caulfield East, Victoria, Australia, sonja.petrovic-lazarevic@buseco.monash.edu.au, *Jian Ying Zhang*, *Ron Borland*, *Chung-Hsing Yeh*, *Sue Bedingfield*, *Ken Coghill*, *David Young*

The paper explores the application of fuzzy causal network to evaluating tobacco control policy by the warning labels on smokers' quitting behaviours. Fuzzy causal network overcomes limitations of linear regression analysis' applications by dealing with non-linear data. Based on The International Tobacco Control Policy Evaluation Survey data, fuzzy causal network application has demonstrated that the impact of warning labels that have moved from moderately large text-based warnings to larger graphic warnings in Australia influenced smokers to switch from bad to good quitting behaviour.

- 3 - A diet planning model for malaysian schools using linear programming**  
*Suliadi Firdaus Sufahani*

## Wednesday

### ■ WA-22

- 1 - An application of AHP for inventory classification**  
*Demet Bayraktar*, *Dilay Çelebi*  
*Paper added to session*
- 2 - "can AHP be used in highly political organization? the case of energy and mineral resources department in indonesia"**  
*Ebi Junaidi*, Economics, Faculty of Economics University of Indonesia, Gedung Dekanat FEUI, Lt. 1, Kampus baru UI Depok, 16424, Depok, Indonesia, ebijunaidi@gmail.com, *Tjahjanto Budisatrio*  
 Indonesia's Department of Energy and Mineral Resources has been the national most blamed institution during energy crisis. At one hand, the Department had to choose programs (i.e. budget allocation) supporting Indonesia's National Development Plan. ON the other hand, they should also overcome issues that might damage current government popularity. Under inefficient long bureaucracy and bureaucrat-business bias, AHP could minimize distortion on budget location and helping decision maker cope with nation goal and objective that had been setup by people assembly
- 3 - Performance management in healthcare industry: an analytic hierarchy process model for assessing physician performance**  
*Murat Albayrakoglu*, *Tuba Cullazoglu*, *Isik Gonenc*  
*Paper moved to session TG-20*
- A quantitative method for administrative audit**  
*Yuji Sato*

### ■ WA-27

**1 - Queuing network analysis of a distribution center***Liqiang Liu, Ivo Adan**Paper added to session***2 - A facility design approach to improve revenue management of public storage warehouses***Yeming Gong, Versijdenstraat 6, 3033TK, Rotterdam, 3033tk, Rotterdam, Netherlands, gongyeming@hotmail.com, René de Koster*

Inspired by communication with the largest public storage warehouse company Shurgard-Public Storage and matured during our visits to 53 warehouses in America, Europe, and Asia, this paper proposes a new facility design to improve revenue management. Our experiments show new facility design can significantly improve the expected revenue of public storage warehouses. This is the first to apply revenue management theory as a methodological foundation to facility design.

**3 - The order-picking problem in a rectangular warehouse with turn costs***Melih Çelik, Haldun Sural***4 - Modeling goals and deadlines for enhancing worker performance***José Antonio Larco, Kees Jan Roodbergen, René de Koster, Jan Dul***■ WA-32****1 - The stable distributions, their parameter estimation, and financial application***Vadym Omelchenko***2 - Asymptotic expansions for the first four moments of the sparre anderson surplus process***Rovshen Aliyev, Vafa Jafarova***3 - The non-monotonic effect of financing constraints on investment***Stefan Hirth, Marc Viswanatha**Paper moved to session MA-41***Modeling uncertainties for the magnitude of droughts and biological processes***Laureano Fernando Escudero, Eva-Maria Ortega***■ WA-38****1 - Robust simulation-optimization through taguchi's approach and metamodels***Gabriella Dellino, Jack Kleijnen, Carlo Meloni***2 - Multicriteria optimization for the performance of solid roket motor***Elcin Kartal, Inci Batmaz, Gulser Koksak***3 - Constrained optimization in simulation using kriging metamodeling***Inneke Van Nieuwenhuysse, Jack Kleijnen, Wim van Beers**Paper added to session***4 - Forecast of possible forest fires in turkey by simulation method***Ceren Erdin Gündođdu, Yıldız Teknik Uni. IIBF Isletme Bölümü, Barbaros Bulvarı, Besiktas, 34330, Istanbul, Turkey, ceren\_erdin@yahoo.com*

Forest fires have an important role in the global warming. It is a well-known fact that nearly 30% of carbon dioxide released to the atmosphere is caused by the forest fires throughout the world. In this research, forecasts with regard to the forest fires to occur in future will be carried out by simulation method, considering the reasons of starting the forest fires in our country, its numeric distribution by the regions, dimensions and the other factors. A suitable environment will be prepared for the forest operators to decide in planning the necessary actions in line with the results obtained.

**■ WC-27****1 - Shared stacking policy for stacking export containers at container yards***Amir Hossein Gharehgozli, Yugang Yu, René de Koster, Jan Tijmen Udding**Paper added to session***2 - Online disruption management of container terminal operations***Jan Tijmen Udding, Department of Mechanical Engineering, Eindhoven University of Technology, Den Dolech 2, P.O. Box 513, 5600 MB, Eindhoven, Netherlands, J.T.Udding@tue.nl, Maarten Hendriks*

We consider a container terminal operator that services a number of periodically calling vessels. However, vessels may arrive earlier or later than scheduled, call sizes may change and quay cranes may break down. The operator faces the problem of reacting on these disturbances. We propose a rolling horizon approach that takes forecasts on vessel arrivals and load compositions, and crane breakdowns into account for making the current operational decisions: the berth allocation, and the crane allocation. Results show that taking the forecasts into account yields significant cost reductions.

**3 - Improving warehouse performance by choosing proper storage and order picking systems***Manolo Mizzi, René de Koster***4 - Managing warehouse empty storage space***René de Koster, Yugang Yu***■ WC-31****1 - A question of profit***Hsin-Vonn Seow, Lai-Soon Lee***2 - Do novel algorithms pay off? a benchmark of data mining algorithms in management applications***Stefan Lessmann, Stefan Voss**Cancellation***Applying metacost to ensemble learners***Sebastian Schueller, Stefan Lessmann***4 - Maximum tolerance and maximum greatest tolerance of strict separating systems***Xavier Molinero, Josep Freixas***■ WC-38****1 - Pricing and hedging asian basket spread options***Michèle Vanmaele, Griselda Deelstra, Alexandre Petkovic***2 - A stochastic approach to the valuation of barrier options in heston's stochastic volatility model***Susanne Griebisch, Kay Frederik Pilz***3 - A robust regression Monte Carlo method for pricing high-dimensional american-style options***Christian Jonen**Paper added to session***4 - Dynamic limit order books in financial markets with liquidity risk***Jocelyne Bion-Nadal, Ecole Polytechnique, 91128, Palaiseau, France, bionnada@cmapx.polytechnique.fr*

We introduce in a model free setting an axiomatic approach of Time Consistent Pricing Procedure (TCPP) to assign to any financial position a dynamic limit order book. Arbitrage free and time consistency imply the existence of an equivalent probability measure  $R$  such that the ask price process associated with any financial instrument is a  $R$ -supermartingale admitting a cadlag version. The axiomatic of TCPP allows for the construction of dynamic pricing procedures extending the dynamics of reference assets and calibrated on the observed limit order books for a reference family of options.

**■ WD-17**

**1 - Scan chain optimization for integrated circuits testing: an operations research perspective**

*Zaourar Lilia, Yann Kieffer*

**2 - Automatizing the sharing of bist-blocks for low-power testing of embedded memories**

*Yann Kieffer, Zaourar Lilia, Jihane Alami-Chentoufi*

*Paper moved to session MG-01*

**The layout design of a semiconductor fab with spine and perimeter interbay guide paths**

*Ying-Chin Ho, Ta-Wei Liao*

■ **WD-31**

*Cancellation*

**Corba objects to implement ai agents**

*Yaici Malika*

**2 - Virtual web services**

*Hassina Talantikite, Djamil Aissani*

**3 - Towards conflict resolution in agent systems**

*Jair Minoro Abe, Fábio Romeu de Carvalho*

■ **WD-40**

*Paper added to session*

**1 - Approximate asymptotic methods for modelling complex dynamical systems**

*Lyudmila Kuzmina, Kazan Aviation Institute, Kazan State Technical University of A.N.Tupolev's name, Adamuck, 4-6, 420015, Kazan-15, Russian Federation,*

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This research is devoted to asymptotically approximate methods for modelling complex systems. It is based on the Lyapunov theory, and Chetayev stability postulate; it generalizes the concept of parametric stability and singularity, and provides a modelling method for complex systems, also in the presence of multiple sub-systems of different nature. It provides possibilities for complexity reduction, when studying the stability and general dynamics. Considering the stability postulate as a concept useful for the knowledge of nature open new avenues for simplified dynamical modelling.

**2 - Communications, fluid dynamics, and some fundamental issues in physics**

*Alfred Fettweis*