

## **OR50 Annual Conference**

### **AGRICULTURE AND NATURAL RESOURCES**

#### **The terminal location problem in a cooperative forest fuel supply network**

*Peter Rauch, BOKU University of Natural Resources and Applied Life Sciences*

#### **Spatial Distribution of Efficiency and Sustainability in the Agrarian Sector**

*Carlos R. Garcia-Alonso, ETEA, University of Cordoba, SPAIN.*

#### **A Branch-and-Price Algorithm for Harvest Scheduling subject to Maximum Area Restrictions**

*Isabel Martins\*, Miguel Constantino\*\*, Filipe Alvelos\*\*\* \*Centro de Investigação Operacional, Departamento de Matemática, Instituto Superior de Agronomia, \*\*Centro de Investigação Operacional, Departamento de Estatística e Investigação Operacional, Universidade de Lisboa, \*\*\*Centro Algoritmi, Departamento de Produção e Sistemas, Universidade do Minho*

#### **Delivering Products in an Agribusiness Company: An Application Case**

*Javier Faulin, Esteban de Paz de Paz, Jesús M. Pintor, Fernando Lera, Public University of Navarre*

#### **A review of the practice and achievements from 50 years of applying OR to agricultural systems in Britain**

*Eric Audsley, Cranfield University*

#### **Predicting farmer decision behaviour, taking a planning models beyond profit maximisation!**

*Daniel Sandars\*, Eric Audsley\*\* \*Cranfield University, \*\*Cranfield University*

#### **Agricultural value chains, operations research and complexity**

*Andrew Higgins\*, Craig Miller\*\*, Ainsley Archer\*\*, Tu Ton\*\*, Cameron Fletcher\*\*, Ryan McAllister\*\* \*CSIRO Sustainable Ecosystems, \*\*CSIRO*

#### **Assessing options for genotypic adaptation to climate change using crop and climate models and germplasm analysis**

*Andrew Challinor, University of Leeds*

#### **Convergence Of Markov Chain And Its Derived Application In Livestock Herd Management Models**

*Sara Verónica Rodríguez Sánchez, Lluís Miquel Plà Aragones, Dep. Mathematics, University of Lleida*

#### **Tabu Search based scheduling of log-trucks**

*Patrick Hirsch, BOKU - University of Natural Resources and Applied Life Sciences, Vienna - Institute of Production and Logistics*

#### **Defining a viable cropping systems: energy analysis**

*Cairistiona (Kairsty) Topp\*, Marko Debeljak\*\*, Geoff Squire\*\*\* \*SAC, \*\*Jozef Stefan Institute, Department of Knowledge and Technologies, Jamova 39, Ljubljana SI- 1000, Slovenia, \*\*\*SCRI*

#### **Optimization of piglet production with a stochastic dynamic programming model**

*Jarkko Niemi, Agrifood Research Finland (MTT), Economic Research*

#### **OR Models in Agricultural Economics and Agricultural Management – A Review**

*Tahir Rehman, University of Reading*

#### **Using a discrete stochastic programming model to estimate climate change effects on crop-livestock systems in semi -arid areas.**

*Mohamed Bendaoud, Mike Rivington, Macaulay Institute*

### **Optimal replacement policies for dairy cows based on daily yield measurements**

*Lars Relund Nielsen, University of Aarhus, Dept. of Genetics and Biotechnology*

### **Incorporating price variability in a climate change adaptation model**

*Stephen Ramsden\*, James Gibbons\*\* \*University of Nottingham, \*\*University of Bangor*

### **Open meeting of the EURO working group on OR in Agriculture and Forest Management**

*Lluís Plà\*, Daniel Sandars\*\*, Lars Relund Nielsen\*\*\* \*University of Lleida, \*\*Cranfield University, \*\*\*University of Aarhus*

### **Duopsony game theory application in pulpwood market in Iran**

*Soleiman Mohammadi Limaei, Department of Forestry, Faculty of Natural Resources, University of Guilan, Somehsara, Iran*

## **ANALYTIC HIERARCHY PROCESS**

### **ANP Applied to smart metering Project Selection**

*MURAD HABIB\*, RAZA KHAN\*, Javaid L. Piracha\*\* \*PEL LAHORE, \*\*UET LAHORE*

### **Towards fifty years of the Analytic Hierarchy Process**

*Alessio Ishizaka, Ashraf Labib, University of Portsmouth*

### **How to design survey questionnaire: an application of weighting method**

*Yuji Sato, Graduate School of Policy Science, Mie Chukyo University*

### **Public and stakeholder preferences towards aquaculture development in Scotland: an AHP application**

*David Whitmarsh, Maria Giovanna Palmieri, University of Portsmouth*

### **Analytic Hierarchy Process Decision Model for Assessing Healthcare Information and Communication Technology Provision: User Perception**

*Astrid Oddershede\*, Rolando Carrasco\*\* \*Industrial Engineering Department, University of Santiago of Chile, Santiago, Chile, \*\*Electrical, Electronic & Computer Engineering Department, Newcastle University, Newcastle Upon Tyne, UK.*

### **Applying AHP for Selection of Network Technologies in Electric Power Utility Systems**

*Takao OHYA, Kokushikan University*

### **Homogeneity and choice aggregation in the Analytic Hierarchy Process**

*Sibs von Solms, Mondi, South Africa Division*

### **An Investigation of Saaty's Consistency Ratio with respect to Alternative Scales in AHP**

*Silvia Raškovič; Reinhold Decker, Martin Meißner, Bielefeld University, Department of Business Administration and Economics*

### **An Empirical Comparison of Choice-Based Conjoint Analysis and the Analytic Hierarchy Process for Measuring Consumer Preferences**

*Martin Meißner, Reinhold Decker, Bielefeld University, Department of Business Administration and Economics*

### **The most preferable project management system for small and medium enterprises**

*Tom Feglar, Tomas Feglar*

### **Tutorial on the Use of Comparison Core - the web-based AHP Application**

*Stewart Williams, Martin Slaughter, Hartley McMaster Ltd*

### **Tangible compensation of intangible item evaluation using AHP/ANP**

*Grzegorz Ginda, Mirosław Dytczak, Opole University of Technology*

### **Parallel application of MCDA methods for evaluation of regional development strategy components**

*Grzegorz Ginda, Mirosław Dytczak, Opole University of Technology*

### **MCDA support for planning of regional development strategy in case of uncertain changes in surrounding environment**

*Grzegorz Ginda, Mirosław Dytczak, Opole University of Technology*

### **Strategic Project Selection through Incorporation of Stakeholder Preferences Using the Analytical Hierarchy Process**

*Ashraf Labib, University of Portsmouth*

### **SniperScale in AHP online data collection - Effects of graphical support on the response behaviour of participants in AHP on-line studies**

*Holger Lütters, webAHP GmbH Switzerland*

### **Evaluating Weapon System Using Analytic Network Process**

*emel kizilkaya aydoğan\*, cevriye gencer\*, saim ayturk\*\* \*gazi university, \*\*defence sciences*

### **Case Study – Using AHP for the Screening of R&D Projects in Oil Company**

*Marcus Vinicius Schornbaum Coelho\*, Roberto Camanho\*\*, Olivia Silva Zink\* \*Petrobras, \*\*Decision Systems - Tecnologia do Conhecimento*

### **From initial Risk assessments to an Integrated Decision-Making Process**

*Elena BEAUCHAMP-AKATOVA, Delft University of Technology, Safety Science Group, the Netherlands*

### **Identification of Interval Probabilities by Interval AHP**

*Tomoe Entani, Kochi University*

### **Systematic Ranking of Building Seismic Retrofit Requirement with Different Scenarios**

*Kemal Burak Hanoglu\*, Asli Pelin Gurgun\*\* \*Orient Research Consulting Engineers, \*\*Sidera Consulting*

### **Challenges in designing, developing and implementing a window-based Analytical Hierarchy Process (AHP) software.**

*Norita Ahmad, Yadh Afrit, Penn State University*

### **Transition From Product Centred Strategy To Knowledge Intensive Business Service Concept. Ahp Case Studies In Internet Connection Delivery Process**

*Rayko Toshev\*, Josu Takala\*, Anssi Laatikainen\*, Vaiva Stanisauskaite\*\* \*University of Vaasa, \*\*Kaunas University of Technology*

### **AHP in Strategic Planning: The Case of Shipping Investment**

*Metin Celik\*, Y. Ilker Topcu\*\* \*Department of Maritime Transportation & Management Engineering, Istanbul Technical University, Tuzla 34940, Istanbul, Turkey, \*\*Department of Industrial Engineering, Istanbul Technical University,*

### **Safety Management in the context of installing the anti-missile shield**

*Wiktor Adamus\*, Anna Greda\*\* \*Jagiellonian University, \*\*Warsaw University & Jagiellonian University*

**Application of Analytical Hierarchy Process for determining Organisation Core Competences**

*Khalid Hafeez\*, Essmail Essmail\*\*, Kiran Fernandes\*\*\* \*Management School, University of York, \*\*Sheffield Hallam University, \*\*\*York Management School, University of York*

**An integer linear programming model for the multi-criteria transshipment problem**

*William Ho, Aston Business School, Aston University*

**Determination of priorities for composite boards and paper making factories location, Case of the study: Iran Khuzestan province**

*Majid Azizi, University of Tehran*

**Determination of major non development criteria for Iranian particle board industry by applying AHP**

*Majid Azizi, University of Tehran*

**ASSET MANAGEMENT**

**Regulation and innovation in the UK water industry**

*John Bridgeman, University of Birmingham*

**Condition modelling when sampling has been spread out over time**

*Andrew Brint, Sheffield University*

**Modelling Customer Priority within Whole Life Cost Modelling of Highway Capital Renewal**

*Hannah Rakoff, Transport for London*

**COMBINATORIAL OPTIMISATION**

**Facet Inequalities of the Fixed Charge Transportation Problem**

*Yogesh Agarwal\*, Yash Aneja\*\* \*I.I.M. Lucknow, \*\*University of Windsor, Canada*

**An LP-based metaheuristic procedure for the K-sequential generalized assignment problem**

*John Wilson, Alan French, Loughborough University*

**Graphs of Transportation Polytopes**

*Francisco Santos\*, Edward D. Kim\*\*, Shmuel Onn\*\*\*, Jesus A. de Loera\*\* \*Universidad de Cantabria, \*\*University of California Davis, \*\*\*Technion - Israel Institute of Technology*

**A combined Frank-Wolfe algorithm for solving the traffic assignment problem**

*Rachid Ouafi\*, Saïda Arrache\*\* \*Operational Research Department, University of Sciences and Technologies Houari Boumedién, Algeria. \*\*Mathematics Department, University Saad Dahleb, Blida, Algeria*

**Cut, Round and Fix. A heuristic for the 0-1 Multidimensional Knapsack Problem**

*Konstantinos Kaparis\*, Adam Letchford\*\*, Mike Wright\*\* \*University of Southampton, \*\*Lancaster University*

**Variable Neighbourhood Search for Solving Quadratic Mixed Integer Programs**

*Jasmina Lazic\*, Gautam Mitra\*\*, Nenad Mladenovic\*\* \*Brunel University, UK, \*\*Brunel University UK*

**Solving a manpower scheduling problem for airline catering using tabu search**

*Janny Leung, Sin Ho, The Chinese University of Hong Kong*

**FPT algorithm for the Hamiltonian circuit problem on unit disk graphs parameterized by the area**

*Hiro Ito, Masakazu Kadoshita, Kyoto University*

**Call Centre Tour Scheduling with Employee Preferences**

*Roger Knight, Celia Glass, Cass Business School, City University*

**Using graph theory to improve routing and wavelength assignment in optical networks**

*Arie Koster, Warwick Business School*

**COMMUNICATING OR**

**Engaging hearts and minds: a cross-organisational approach**

*Jo Smedley*

**The viable system model as a tool for guiding and communicating learning technology**

*Oleg Liber, JISC CETIS*

**Stock Price Reaction Following Large One-Day Price Changes: U.K. Evidence**

*Khelifa Mazouz, Bradford University*

**Communication challenges in very large organisations**

*Sue Merchant, Blue Link Consulting*

**CRIMINAL JUSTICE**

**Simulating the West Yorkshire Police custody process**

*David Fitzgerald, Paul Fowler, Project Leader*

**Quantifying the value-add of processes and work activities**

*Ian Seath, .*

**Fifty years of operational research and emergency response**

*Natalie Simpson, Philip Hancock, University at Buffalo (SUNY)*

**Evacuation Responsiveness by Government Organisations (ERGO): A Preparedness Toolkit for Europe**

*Duncan Shaw, Pat Tissington, Pavel Albores, Aston Business School*

**The development of a resource allocation model for a police force**

*Catherine Hessett, Catherine Hessett Consulting Limited*

**CUTTING AND PACKING**

**Mixing polyhedra with non divisible coefficients**

*Agostinho Agra\*, Miguel Constantino\*\* \*University of Aveiro, \*\*University of Lisbon*

**DATA MINING**

**Integrating Domain Knowledge into Data Mining: A Customer Focussed Analysis**

*Elen Lima, Christophe Mues, Bart Baesens, University of Southampton*

**Applying multiple classifier systems to consumer credit risk assessment**

*Steven Finlay, Lancaster University*

## **Data mining for corporate decision support: Advances in supervised classification**

*Stefan Lessmann*

## **Active learning for SVM rule extraction**

*David Martens\*, Bart Baesens\*\*, Tony Van Gestel\*\*\* \*K.U.Leuven, \*\*University of Southampton, \*\*\*Dexia Group*

## **Ant-based Classification of Faulty Software Systems**

*Raf Haesen, Manu De Backer, David Martens, Bart Baesens, Olivier Vandecruys, KULeuven*

## **DEA**

### **Benchmarking service delivery by local government in Northern Ireland: A Scoping Study**

*Jose Luis Iparraguirre, Economic Research Institute of Northern Ireland*

### **Productivity change in the Water Industry in England and Wales: Application of a Meta-Malmquist Index**

*Maria Silva Portela, Thanassoulis Emmanuel\*, Alan Horncastle\*\*, Tobias Maugg\*\* \*Aston Business School, \*\*Oxera*

### **An analysis of trends in the efficiency and productivity of the new British universities**

*Anthony Flegg, Department of Economics, Bristol Business School, University of the West of England*

### **Undesirable output slack-based data envelopment analysis measures of efficiency**

*Tom Weyman-Jones, Karligash Kenjegalieva, Loughborough University*

### **Performance assessment of retail firms in the People's Republic of China**

*Ramakrishnan Ramanathan, Yu Wantao, Nottingham University Business School*

### **The use of weight restrictions to reflect linkages between input and output variables in DEA models**

*Ana Camanho\*, Masoud Khalili\*\*, Maria Portela\*\*\* \*University of Porto, Portugal, \*\*Iran University of Science and Technology, \*\*\*Portuguese Catholic University*

### **Efficiency analysis accounting for non-discretionary factors**

*Ana Camanho\*, Maria Portela\*\*, Clara Vaz\*\*\* \*University of Porto, Portugal, \*\*Portuguese Catholic University, \*\*\*Instituto Politécnico de Bragança, Portugal*

### **Using Data Envelopment Analysis for performance appraisal: A literature review and research agenda**

*Sergio Santos\*, Carla Amado\*, Ana Paula Costa\*\* \*University of Algarve, \*\*Instituto Politécnico de Leiria*

### **Integrating Data Envelopment Analysis and the Balanced Scorecard**

*Carla Amado, Sérgio Santos, Pedro Marques, University of Algarve*

### **The regulators fault? On the effects of regulatory changes on profits, productivity and prices in the Dutch drinking water sector.**

*Kristof De Witte, University of Leuven (KU Leuven)*

### **Non-parametrically measuring scale and scope economies, with an application to the drinking water sector**

*Kristof De Witte, University of Leuven (KU Leuven)*

## **Use of DEA in conjunction with regression analysis to inform staffing in Care Homes in Scotland**

*Barbara Graham, Ronald Smith, NHS National Services Scotland*

### **DISCUSSION SESSIONS**

#### **Simulation Software: Evolution or Revolution?**

*Simon Taylor, School of Information Systems, Computing and Maths*

#### **Growth in world population and industrialization: what can OR do?**

*Paul Syms\*, John Morecroft\*\* \*(Private submission), \*\*London Business School*

#### **Global OR: Sustainability! Cometh the hour, cometh the Operational Researcher?**

*Daniel Sandars\*, Ian Fromer\*\*, Lluís Plà\*\*\*, García-Alonso Carlos R.\*\*\*\* \*Cranfield University, \*\*OR4Green, \*\*\*University of Lleida, \*\*\*\*University of Córdoba*

#### **Global OR: The fate of strategic applied OR; W(h)ither Agriculture, Horticulture, Forestry, Fisheries, etc! Or w(h)ither not?**

*Daniel Sandars\*, Lluís Plà\*\*, Javier Faulin\*\*\* \*Cranfield University, \*\*University of Lleida, \*\*\*Public University of Navarra*

### **ENERGY**

#### **A reduced gradient and adjoint formulation strategy for optimal control of energy consumption in water supply systems**

*Hwee See\*, Bogumil Ulanicki\*\* \*Atkins Limited, \*\*Water Software Systems, De Montfort University*

#### **Application of game theory in rewarding the uncoordinated cooperation among grid-connected wind farms**

*François Bouffard, University of Manchester*

#### **Unit commitment and dispatch in power systems with wind power using stochastic programming**

*Peter Meibom, Risø DTU*

#### **Intertemporal constraints and uncertainty - wind power in electricity markets**

*Karsten Neuhoff\*, Felix Muesgens\*\* \*University of Cambridge, \*\*EWI*

#### **Short-term hydro-power production planning by stochastic programming**

*Trine Krogh Kristoffersen, Risø National Laboratory for Sustainable Energy, Technical University of Denmark*

#### **Market behaviour with large amounts of intermittent generation**

*Richard Green, Nicholas Vasilakos, University of Birmingham*

#### **Supply functions for modelling electricity markets**

*Edward Anderson, University of Sydney*

### **FINANCE**

#### **Collection process and behavioral analysis through dynamic programming models**

*Adiel T. de Almeida Filho\*, Christophe Mues\*\*, Lyn Thomas\*\*\* \*Federal University of Pernambuco - UFPE, \*\*University of Southampton*

**Oil prices – Brownian motion or mean reversion? A study using a one year ahead density forecast criterion.**

*Nigel Meade, Imperial College London, Tanaka Business School*

**Higher Order and Recurrent Neural Architectures for Trading the EUR/USD Exchange Rate**

*Christian Dunis, Jason Laws, Georgios Sermpinis, Liverpool John Moores University*

**Multinational tax planning**

*John Beasley*

**Computational Models for the SSD Criterion of Portfolio Choice**

*Diana Roman, Brunel University*

**Robust Portfolio Selection: Analysis of Robustness**

*Christine Gregory, CARISMA, Brunel University, West London*

**Mixture distribution scenarios for investment decisions with downside risk**

*Leela Mitra, Xiaochen Sun, Diana Roman, Gautam Mitra, CARISMA Brunel University*

**Models for Decision Making and Evaluation for Asset and Liability**

*Katharina Schwaiger, Cormac Lucas, Gautam Mitra, CARISMA, Brunel University*

**Using exponentially weighted quantile regression to estimate value at risk and expected shortfall**

*James W. Taylor, Saïd Business School, University of Oxford*

**Correlation stress testing by quadratic semidefinite programming**

*Hou-Duo Qi, University of Southampton*

**FORECASTING**

**Estimating uncertainty in business planning regression forecasts – a practitioner’s perspective**

*Katherine Byrne, Border and Immigration Agency*

**Developments in mathematical forecasting over the past 50 years, with appraisal of some lines of development to improve usefulness for management decisions**

*John Croston, Independent Systems and Statistical Consultant*

**How should we cope with the demand process mis-specification issue? A two-level supply chain case**

*Takamichi Hosoda, Stephen Disney, Cardiff Business School, Cardiff University*

**Percentage least squares regression**

*Chris Tofallis, University of Hertfordshire Business School*

**Predicting the onset of civil war**

*James Kalil, Ollie Waghorn, DSTL (MOD)*

**HEALTHCARE**

**Monitoring and reporting surgical wound infections**

*Christos Vasilakis, Clinical Operational Research Unit, University College London*

### **Modelling Catchment Areas for Acute Providers**

*Simon Jones\**, *Gordon Hart\*\**, *Alex Bottle\*\*\**, *Mike Davies\*\*\*\** \*Dr Foster Intelligence and Kings College, London, \*\*Dr Foster Intelligence and Open University, \*\*\*Imperial College London, \*\*\*\*UCLH NHS Foundation Trust

### **Analysing and supporting decisions in health: comparison and evaluation of alternative analytical decision models**

*Francisco Pozo-Martin\**, *Zaid Chalabi\*\**, *Jack Dowie\*\*\** \*London School of Hygiene and Tropical Medicine, \*\*Senior Lecturer, LSHTM, \*\*\*Professor, LSHTM

### **Multi-location blood bank inventory control with transshipments and substitutions**

*Jan Christian Lang*, Technische Universitaet Darmstadt, Germany

### **Validating health economic models: An illustration of external validation of a coronary heart disease model for statins**

*Keith Cooper*, *Eleanor Bishop*, University of Southampton

### **The Elder Care Conundrum: Viewed through two lenses for ways forward.**

*Victoria Jane Mabin\**, *Kim Sommer\*\** \*Victoria University of Wellington, NZ, \*\*NAVSEA, Crane, Indiana

### **Radiotherapy Scheduling For Cancer Treatments Using Metaheuristic**

*Mohammad Morshed\**, *Dobrija Petrovic\*\**, *Colin Reeves\*\*\**, *Olivier Haas\*\*\*\** \*Research Assistant, \*\*Reader in Optimisation and Control, \*\*\*Professor, \*\*\*\*Reader in Applied Control Systems

### **Temporal relation between A&E department performance and location of treatment and proportion of majors and minors**

*Alex Bottle*, Imperial College London

### **Modelling trauma hip fracture hospital activities**

*Cheryl Voake*, *Jeff Griffiths*, *Janet Williams*, Cardiff University

### **Eliciting beliefs to inform parameters within a decision analytic model**

*Laura Bojke*, University of York

### **Dimensioning hospital wards using the Erlang loss model**

*Arnoud de Bruin\**, *Rene Bekker\*\**, *Lillian van Zanten\**, *Ger Koole\*\** \*VU University Medical Center, \*\*VU University Amsterdam, Faculty of Sciences

### **Endobronchial ultrasound-guided transbronchial needle aspiration (EBUS) versus mediastinoscopy for the histological confirmation of mediastinal lymph node proliferation in non-small cell lung cancer (NSCLC): preliminary results of a decision analysis using the Analytic Hierarchy Process (AHP)**

*Francisco Pozo-Martin\**, *Eduardo de Miguel Poch\*\**, *Francisco Pozo-Rodriguez\*\** \*London School of Hygiene and Tropical Medicine, \*\*Servicio de Neumología, Ciber de Enfermedades Respiratorias, Hospital 12 de Octubre,

## **INFORMATION SYSTEMS**

### **A Study on the Traffic IC-Card Operation System Analysis**

*Donghun Yoon*, Keio University of Japan

### **An Informative Fifty Years? I S Reviewed.**

*John Ryan*

**The use of Structural Equation Modelling to investigate factors related to workforce productivity**

*Mike Elliott, Business Modelling Specialist within the Openreach company*

**Optimal ways of disrupting a supply system with multiple attacks**

*Chaya Losada, University of Kent*

**Enabling conversations in IS practice**

*Jose-Rodrigo Cordoba-Pachon*

**LOCATION PROBLEMS**

**Protection of facilities against random numbers of attacks.**

*Federico Liberatore, Paola Scaparra, University of Kent - Kent Business School*

**Competitive location on networks when the customer behaviour is threshold-sensitive**

*Santos-Peñate Dolores R., University of Las Palmas de Gran Canaria (Spain)*

**Location of efficient and equitable health facilities: a case study in Yorkshire**

*Honora Smith\*, Paul Harper\*\*, Chris Potts\* \*University of Southampton, \*\*Cardiff University*

**LOGISTICS**

**A Model for the Vehicle Routing with Time Windows and Loading Problem**

*Ana Moura\*, José Fernando Oliveira\*\*, Maria Antónia Carravilla\*\* \*UA – Universidade de Aveiro, Portugal and INESC-Coimbra - Instituto de Engenharia de Sistemas e Computadores, Coimbra, Portugal, \*\*FEUP - Faculdade de Engenharia da Universidade do Porto, Portugal and INESC-Porto – Instituto de Engenharia de Sistemas e Computadores, Porto, Portugal*

**Optimal Load Balancing of Cargo Aircraft**

*Bohdan Kaluzny, R.H.A. David Shaw, Defence Research and Development Canada, Centre for Operational Research and Analysis*

**Multi commodity split pickup and split delivery problems**

*Bjorn Nygreen, Frank Hennig, Norwegian University of Science and Technology*

**Tank allocation problems in maritime bulk shipping**

*Lars Magnus Hvattum\*, Kjetil Fagerholt\*, Vinicius Armentano\*\* \*Norwegian University of Science and Technology, \*\*Universidade Estadual de Campinas*

**Evaluation of Lot-sizing Models in modern ERP Environments - A Literature Review**

*Marion Schulze, University of Central Lancashire*

**Progressive hedging innovations for a stochastic spare parts support enterprise problem**

*David Woodruff, UC Davis*

**Formulations and Branch-and-Cut Algorithms for the Generalized Vehicle Routing Problem**

*Tolga Bektas\*, Gunes Erdogan\*\*, Stefan Ropke\*\*\* \*University of Southampton, \*\*University of Montreal, \*\*\*Technical University of Denmark*

**Drivable routes: shortest paths in practice**

*Nik Pearson, Chris Potts, Julia Bennell, CORMSIS, University of Southampton*

## **The Benefits of Using Variable Travel Time Information to aid in Vehicle Scheduling**

*William Maden, Department of Transport and Logistics, University of Huddersfield*

## **ABC classifications and service levels**

*Ruud Teunter\*, Aris Syntetos\*\*, Mohamed Zied Babai\*\*\* \*Lancaster University Management School, \*\*Salford Business School*

## **Fleet deployment in liner shipping**

*Trond A. V. Johnsen, Norwegian Marine Technology Research Institute (MARINTEK)*

## **OR's contribution to logistics practice: a personal historical perspective**

*Graham Rand, Lancaster University Management School*

## **FRES Manpower Efficiency Study**

*Jonathan Richards*

## **MAINTENANCE & RELIABILITY**

### **The Risk Based Investment Challenge for UK Water Companies**

*Mike Bayliffe, Member Institute of Asset Management*

### **Hybrid intensity models for scheduling preventive maintenance of complex repairable systems**

*Dave Percy, University of Salford*

### **Mixed maintenance policies for mixed items**

*Philip Scarf\*, Cristiano Cavalcante\*\* \*University of Salford, \*\*University of Pernambuco, Brazil*

### **Flowgraphs in reliability and finite automata -- how are they interrelated?**

*Attila Csenki, University of Bradford, UK*

### **The last 50 years of R&M in the Aero-Engine Sector**

*John Crocker*

### **Joint optimization of reliability and spare parts level**

*Kurtuluş Öner, Gudrun Kiesmüller, Geert-Jan van Houtum, Technische Universiteit Eindhoven*

### **A new partial pooling structure for spare parts networks**

*Geert-Jan van Houtum, Department of Technology Management, Eindhoven University of Technology*

### **Optimization of stock levels for service tool inventory**

*Ingrid Vliegen, Geert-Jan van Houtum, Technische Universiteit Eindhoven*

## **META-HEURISTICS**

### **GRASP Heuristics for the Capacitated Multi-source Weber Problem**

*Martino Luis, Said Salhi, Gábor Nagy, The Centre for Heuristic Optimisation, Kent Business School, University of Kent, UK*

### **A Variable Neighbourhood Search based Heuristic for the Multi-Depot Heterogeneous Fleet Vehicle Routing Problem**

*Arif Imran\*, Said Salhi\*, Niaz Wassan\*\*\* \*Centre for Heuristic Optimisation, Kent Business School, University of Kent Canterbury, \*\*Centre for Heuristic Optimisation, Kent Business School, University of Kent Canterbury*

### **A Heuristic Approach to Solve a Class of Competitive Discrete Facility Location Problem**

*Said Salhi\**, *Malick Ndiaye\*\**, *Arifusalam Shaikh\** *University of Kent*, *\*\*King Fahd University of Petroleum & Minerals*

### **A polynomial-time DNA Computing solution for the Bin Packing Problem**

*Nei Yoshihiro Soma*, *Carlos Alberto Alonso Sanches*, *CTA/ITA/IEC*

### **Probabilistic Use of Heuristic Moves in Multiobjective Genetic Local Search for Flowshop Scheduling**

*Hisao Ishibuchi*, *Yasuhiro Hitotsuyanagi*, *Noritaka Tsukamoto*, *Yusuke Nojima*, *Osaka Prefecture University*

### **Can Meta-Heuristics be Fine-Tuned based on Instance Characteristics? An Experimental Study on the Traveling Salesman Problem.**

*Jana Ries\**, *Patrick Beullens\*\** *University of Portsmouth, Dept. of Maths*, *\*\*University of Portsmouth, Dept of Maths*

### **Solving a medical student scheduling using GRASP and Exact Methods**

*Jonathan Thompson*, *Cardiff University*

### **A Hybrid Meta-Heuristic for the Mix Fleet Vehicle Routing Problem with Backhauls**

*Mutaz Hajarat\**, *Niaz Wassan\*\**, *Said Salhi\*\*\** *Centre for Heuristic Optimisation (CHO), Kent Business School, University of Kent*, *\*\*Lecturer in Management Science, Centre for Heuristic Optimisation (CHO), Kent Business School, University of Kent*, *\*\*\*Director, Centre for Heuristic Optimisation (CHO), Kent Business School, University of Kent*

## **MULTICRITERIA DECISION ANALYSIS**

### **Minimising effects of splitting bias by using weight stability interval in Multi-criteria Decision Analysis**

*Hui Wang\**, *Dongling Xu\*\**, *Simon French\*\*\** *Manchester Business School, The University of Manchester, Booth Street West, Manchester, M15 6PB, UK*, *\*\*Manchester Business School, University of Manchester, Booth Street East, Manchester, M15 6PB, UK*, *\*\*\*Manchester Business School, University of Manchester, Booth Street West, Manchester, M15 6PB, UK*

### **A different way of constructing league tables**

*Chris Tofallis*, *University of Hertfordshire Business School*

### **A Sequel to Problem Structuring – Preference Prediction**

*Ray Wyatt*, *University of Melbourne*

### **Finding Minority Schools of Thought within Brainstorming Groups**

*Fred Cameron*, *DRDC Centre for Operational Research and Analysis, Kingston, Ontario, Canada*

### **Using MCDA as part of an expert system to evaluate green heating options**

*Elizabeth Hundy*, *Guy Hundy*, *Aleph Zero Limited*

### **A multi-criteria decision analysis framework for assessing decision lifecycles**

*K. Papamichail*

### **Integrating MADA and Structured Elicitation of Decision Logic into Strategy Development: A Radioactive Waste Management Case Study**

*David Collier\**, *Mike Egan\*\**, *Mike James\*\*\**, *David Loudon\*\*\** *Golder Associates*, *\*\*Quintessa*, *\*\*\*Sellafield Ltd*

## **MULTIOBJECTIVE OPTIMISATION**

### **EMO in the Lab: Optimization in Synthetic- and Systems Biology**

*Joshua Knowles, School of Computer Science, University of Manchester, UK*

### **Multi-objective Optimisation on Computer Grids using Swarm Intelligence**

*Sanaz Mostaghim, University of Karlsruhe, Germany*

### **Fast Hypervolume-Based Multiobjective Search Using Monte Carlo Sampling**

*Eckart Zitzler, ETH Zurich, Switzerland*

### **Discrete time series prediction as a multicriteria decision making problem**

*Sándor Zoltán Németh\*, Anikó Ekárt\*\* \*University of Birmingham, \*\*Aston University*

### **Interval-valued Multiobjective Optimization**

*Juan Pablo Fernández Gutiérrez\*, María Eugenia Puerta Yepes\*\* \*Master Mathematic Applied Student's, \*\*Adviser Professor*

## **NONLINEAR OPTIMIZATION**

### **Optimization of Truss Topology Design Problem with discrete bar areas using a branch and bound method**

*Adelaide Cerveira\*, Joaquim Gromicho\*\*, Fernando Bastos\*\*\* \*Universidade de Trás os Montes e Alto Douro, CIO, Portugal, \*\*Vrije Universiteit, Amsterdam & ORTEC, Gouda, The Netherlands,, \*\*\*CIO e DEIO, Faculdade de Ciências da Universidade de Lisboa*

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*Jan-J. Ruckmann, University of Birmingham*

### **Isolated calmness of solution mappings in convex semi-infinite optimization**

*Juan Parra\*, Marco A. López\*\*, María J. Cánovas\* \*Miguel Hernández University of Elche, \*\*University of Alicante*

### **Linear regularity, equiregularity, and intersection mappings for convex semi-infinite inequality systems**

*Juan Parra, Francisco J. Gómez\_Senent, María J. Cánovas, Miguel Hernández University of Elche*

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*Sebastian Lohse, TU Bergakademie Freiberg*

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*Marco A. López-Cerdá, Alicante University*

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*Michal Kocvara\*, Michael Stingl\*\* \*University of Birmingham, \*\*University of Erlangen*

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*Ralf Werner, Hypo Real Estate*

### **A new approach for solving semidefinite programs**

*Florian Jarre\*, Franz Rendl\*\* \*University of Duesseldorf, \*\*University of Klagenfurt*

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*Alain Bertrand Zemkoho, Stephan Dempe, Department of Mathematics and Computer Science, Technical University Bergakademie Freiberg, Freiberg, Germany*

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*Gerhard-Wilhelm Weber\*, Basak Akteke-Öztürk\*\*, Zafer-Korcan Görgülü\*\*\*, Erik Kropat\*\*\*\* \*Middle East Technical University, \*\*Middle East Technical University, Institute of Applied Mathematics, 06531 Ankara, Turkey, \*\*\*University of the Federal Armed Forces Munich, Department of Computer Science, 85577 Munich, Germany, \*\*\*\*University Erlangen-Nuremberg, Department of Mathematics, 91058 Erlangen, Germany*

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*Sven-Åke Gustafson, University of Stavanger*

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*Tibor Illés\*, Marianna Nagy\*\* \*Strathclyde University, Glasgow, UK, \*\*Eötvös Loránd University of Sciences, Budapest, Hungary*

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*Huifu Xu, University of Southampton*

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*HEZEKIAH OLADIMEJI\*, MOTUNRAYO OLADIMEJI\*\* \*REDEEMER'S UNIVERSITY, NIGERIA, \*\*UNIVERSITY COLLEGE HOSPITAL, NIGERIA*

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*Pamela Nolz, University of Vienna*

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*Zipporah Kiruthu\*, Waithaka Iraki\*\* \*University of Ghent, Belgium, \*\*University of Nairobi*

### **Capacity building in the Kenyan dairy industry**

*Zipporah Kiruthu\*, Waithaka Iraki\*\* \*University of Ghent, Belgium, PhD Student, \*\*University of Nairobi, School of Business, Kenya*

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*Juan Felipe Henao Piza, Ruth Davies, Alberto Franco, Warwick Business School, The University of Warwick*

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*S. Aime METCHEBON T. \*, Marc PIRLOT\*\*, Samuel YONKEU\*\*\*, Blaise SOME\* \*University of Ouagadougou, Burkina Faso, \*\*Faculty of Engineering, Mons, Belgium, \*\*\*International Institute for Water and Environmental Engineering, Ouagadougou, Burkina Faso*

### **Modelling demand for a community health facility in rural India**

*Paul Harper\*, Honora Smith\*\* \*Cardiff University, \*\*University of Southampton*

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*Gerhard-Wilhelm Weber\*, Süreyya Özö&#287;ür\*\*, Zafer-Korcan Görgülü\*\*\*, Erik Kropat\*\*\*\* \*Middle East Technical University, \*\*Middle East Technical University, Institute of Applied Mathematics, 06531 Ankara,*

Turkey, \*\*\*University of the Federal Armed Forces Munich, Department of Computer Science, 85577 Munich, Germany, \*\*\*\*University Erlangen-Nuremberg, Department of Mathematics, 91058 Erlangen, Germany

**Structuring problems, structuring people interactions**

*Eliseo Vilalta-Perdomo, Tecnologico de Monterrey, Campus Irapuato*

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*Miles Nicholls, Barbara Cargill, Trinity College, University of Melbourne*

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*Robert Dyson, Frances O'Brien\*, Rayner Nyabola\*\* \*University of Warwick, \*\*University of Warwick*

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*Camelia Ram, Gilberto Montibeller, London School of Economics and Political Science*

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*Jim Bryant*

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*Susan Howick, Colin Eden, University of Strathclyde*

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*Paul Syms, (Privately submitted paper)*

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*Max Moullin, Faculty of Organisation and Management, Sheffield Hallam University*

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*Dave Percy, University of Salford*

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*Mike Wright, Lancaster University*

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*Phil Scarf, University of Salford*

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*Rick Wilson\*, Peter Rosen\*\* \*Oklahoma State University, \*\*University of Evansville*

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*Gerard Sierksma, University of Groningen, Netherlands*

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**Exploration of optimal pacing strategy in sprint cycling based on a linear model**

*Kui Zhang, Phil Scarf, University of Salford*

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*Ashley Carreras, Parmjit Kaur, De Montfort University*

**Facilitated Decision Modelling: an overview**

*Alberto Franco\*, Gilberto Montibeller\*\* \*Warwick Business School, \*\*London School of Economics*

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*Gary Preece, Aston Business School*

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*Jim Bryant, Sheffield Hallam University*

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*Luiz Felipe Nasser-Carvalho, Alberto Franco, Warwick University*

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*Victoria Mabin, John Davies, Victoria University of Wellington, NZ*

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*Eliseo Vilalta-Perdomo, Tecnologico de Monterrey, Campus Irapuato*

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*Mari Jones, Jeff Griffiths, Janet Williams, Cardiff University*

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*Asma Bahurmoz\*, Nadia Al Amoudi\*\* \*King Abdulaziz University, \*\*Jeddah Chambre of Commerce*

#### **Application of Revenue Management technique in the Saudi service sector**

*Asma Bahurmoz\*, Nadia Alamoudi\*\*, Aisha Mogbeil\*\*\* \*King Abdulaziz University, \*\*Jeddha Chambre of Commerce, \*\*\*King Abdulaziz Hospital*

#### **Approximate Dynamic Programming Approach to Network Revenue Management with Customer Choice and Concave Approximation of the Value Function**

*Arne Karsten Strauss, Joern Meissner, Lancaster University Management School*

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*Claire McKenna, University of York*

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*Alexander Morton, Larry Phillips, London School of Economics*

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*Serap Ulusam Seçkiner, University of Gaziantep*

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*IMED KACEM, University of Technology of Troyes, France*

#### **Transporting Jobs through a Two-Machine Open Shop**

*Irina Lushchakova, Belarussian State University of Informatics and Radioelectronics*

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Johnson De-Graft Ankamah\*, Samuel Kwame Amponsah\*\*, Francis Tabbi Oduro\*\*\*ORSSA, and Mathematics Department, KNUST, Ghana, \*\*Mathematics Department, KNUST, Ghana

**An optimisation model for offshore supply vessel operations**

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**Radiology staff scheduling: a computer-assisted risk management model**

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**Parallel Machine Scheduling Problems using Hybrid Algorithms**

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**Scheduling / vehicle routing problem with multiple resources and time windows**

Susana Araújo, Eduarda Pinto Ferreira, ISEP – Polytechnic Institute of Engineering of Porto

**A Decision Support Model for the Dial-a-flight-problem:**

Kjetil Fagerholt, Norwegian University of Science and Technology

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**A Large-Scale Inventory Routing problem - Solution Approaches**

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**The pickup and delivery problem with time windows and split loads**

Henrik Andersson, Marielle Christiansen, Kjetil Fagerholt, Norwegian University of Science and Technology

**LNG inventory routing with pickup contracts**

Marielle Christiansen, Henrik Andersson, Roar Grønhaug, Norwegian University of Science and Technology

**Bee Colony Optimisation for Nurse Rostering**

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*Kathryn Hoad, Stewart Robinson, Ruth Davies, Warwick Business School*

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*David Haydon, QinetiQ/NITEworks*

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*Mitra Aflaki\*, Gelareh Farhadian\*\*, Hamid Foroughi\* \*Sharif University, Graduate school of Management and Economics, \*\*harif University, Graduate school of Management and Economics*

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*Paul R. Syms, Nicholas Stanbridge, Dstl LBSD, Fort Halstead*

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*Mazlina Abdul Majid\*, Uwe Aickelin\*\*, Peer-Olaf Siebers\*\*\* \*Mrs, \*\*Professor, \*\*\*Dr*

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*Ilker Topcu, Pinar Dursun, Istanbul Technical University*

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*Toshiya Kaihara, Kobe University*

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*Michinori Sakaguchi, Hiroshima Shudo University*

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*Chia-Shin Chung\**, *James Flynn\*\**, *Roelof Kuik\*\*\**, *Piotr Stalinski\*\*\*\** \*Cleveland State University, \*\*Cleveland State University, \*\*\*Erasmus University, \*\*\*\*Central Missouri State University

### **Dynamic supply network design: integrating inventory and transportation modelling**

*Peter McCullen\**, *Stephen Disney\*\** \*University of Brighton, \*\*Cardiff University

### **On the choice of supply chain strategy for consignment inventory**

*Takamichi Hosoda*, *Stephen Disney*, *Cardiff Business School*, *Cardiff University*

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*Shilei Yang\**, *Charles Munson\*\**, *Bintong Chen\*\** \*Southwestern University of Finance and Economics, \*\*Washington State University

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*Erland Hejn Nielsen*, *Aarhus School of Business*, *Aarhus University*, *Denmark*

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*Hartanto Wong\**, *Daniel Eyers\**, *Krassimir Dotchev\*\** \*Innovative Manufacturing Research Centre, Cardiff University, \*\*Manufacturing Engineering Centre, Cardiff University

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*Hamid Foroughi*, *Keyvan Vakili*, *Sharif University*, *Graduate School of management and economics*

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*Khalid Hafeez\**, *Lina Al-Qatawneh\*\**, *Biao Yang\*\*\** \*The York Management School, The university of York, \*\*Sheffield Hallam University, \*\*\*The York Management School, The University of York

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*David Ing, IBM Canada Ltd., and the Helsinki University of Technology*

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*Keyvan Vakili, Ehsan Fakhari Izadi, Hamid Foroughi, Sharif University, Graduate School of Management and Economics*

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*John Stephens, Monash University, Melbourne, Australia*

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**Implementing systems thinking in total quality management and organisation learning**

*Khalid Hafeez\*, Lynne Baxter\*, Hamdy Abdelmeguid\*\* \*the York School of Management, the University of York, \*\*Al Azhar University, Cairo Egypt*