The 14th International Symposium on Operations Research in Slovenia - SOR'17

Bled, Slovenia, September 27 – 29, 2017
http://sor17.fov.uni-mb.si/

SOR'17 programme

2017−09−13

Slovenian Society INFORMATIKA
Section for Operational Research

University of Maribor
Faculty of Organizational Sciences

Partnership for
Advance Computing in Europe

Wednesday September 27, 2017	**Thursday** September 28, 2017	**Friday** September 29, 2017
8.15 – Registration	8.15 – Registration	8.15 – Registration
9.00 – 9.45 Opening ceremony	9.00 – 9.50 **Plenary lecture:** **(PL3) Ulrike Leopold-Wildburger** University of Graz, Austria	9.00 – 9.50 **Plenary lecture:** **(PL5) Serge Bogaerts** PRACE, Belgium
9.50 – 10.40 **Plenary lecture:** **(PL1) Matjaž Perc** University of Maribor, Slovenia	10.00 – 11.00 Parallel sessions: **(SS1) AMSR + (S5) ML + (S6) MP&O**	10.00 – 11.15 Parallel sessions: **(SS2) HPC&BD + (SS6) MRP&RSAIE + (SS2) GORT**
10.45 – 11.15 Coffee break	11.00 – 11.30 Coffee break	11.15 – 11.45 Coffee break
11.15 – 12.45 Parallel sessions: **(SS4) MCDM-S&A + (S2) E&HR + (S4) LTG&A**	11.30 – 12.30 Parallel sessions: **(SS1) AMSR + (S6) MP&O + (S8) ORP**	11.45 – 12.45 Parallel sessions: **(S3) F&I + (S7) MCDM + (SS8) OESGI**
12.45 – 13.55 Lunch break	12.30 – 13.45 Lunch break	
14.00 – 14.50 **Plenary lecture:** **(PL2) Luc Van Wassenhove** INSEAD Humanitarian Research Group, France	13.50 – 14.40 **Plenary lecture:** **(PL4) Marijana Zekić-Sušac** J. J. Strossmayer University of Osijek, Croatia	13.00 – 13.30 Closing ceremony
15.30 – 22.30 Excursion with dinner	14.45 – 16.00 Parallel sessions: **(SS3) L + (SS5) MO + (S1) EMS**	
	16.00 – 16.30 Coffee break	
	16.30 – 17.45 Parallel sessions: **(SS7) SO&CA + (S1) EMS**	
	18.00 – 19.00 Social event	

Plenary lectures: 40 minutes for presentation plus 10 minutes for discussion.
Contributed presentations: 14 minutes all together for presentation and for discussion.

Wednesday
September 27, 2017

8.15 – Registration

9.00 – 9.45 Opening ceremony (Hall I)

9.50 – 10.40 **Plenary lecture** (Hall I, Chair: Mirjana Kljajić Borštnar)
PL1 – **Matjaž Perc:** Transitions towards Cooperation in Human Societies

10.45 – 11.15 Coffee break

11.15 – 12.45 Parallel sessions:

(SS4) Chairs: Marko Bohanec, Mirjana Kljajić Borštnar, Vladislav Rajković **MCDM – Software and Applications** (Hall I)	**(S2)** Chair: Marijana Zekić-Sušac **Environment and Human Resources** (Hall II)	**(S4)** Chair: Janez Žerovnik **Location and Transport, Graphs and their Applications** (Hall III)
SS4.1 - Marko Bohanec: Multi-Criteria Dex Models: An Overview and Analysis SS4.2 - Borut Čampelj, Igor Karnet, Andrej Brodnik, Eva Jereb and Uroš Rajkovič: Decision Support Modelling for Efficient Implementation of Ict in Schools SS4.3 - Gencer Erdogan, Atle Refsdal, Bjørn Nygård, Bernt Kvam Randeberg and Ole Petter Rosland: Experiences from Developing an Algorithm to Support Risk-Based Decisions for Offshore Installations SS4.4 - Dorota Górecka: Using Bipolar Mix in the Process of Selecting Projects Applying for Co-Financing from the European Union SS4.5 - Nikola Kadoić, Nina Begičević Ređep and Blaženka Divjak: Decision Making with the Analytic Network Process SS4.6 - Iván Ligardo-Herrera, Tomás Gómez-Navarro and Hannia Gonzalez-Urango: Assessing Stakeholders' Influence on the Responsibility of Research Projects: Application of Analytic Network Process	S2.1 - Josip Arnerić and Lana Kordić: Contribution of Private Sector to the Effectiveness of Health Care Provision S2.2 - Renata Kožul Blaževski and Jelena Vidović:Contribution of Private Sector to the Effectiveness of Health Care Provision S2.3 - Lorena Mihelač and Janez Povh: Predicting the Acceptability of Music with Entropy of Harmony S2.4 - Phillips Edomwonyi Obasohan: Rural and Urban Disparities in Full Routine Immunization Coverage for Under-5 Children in Nigeria: A Markov Chain Analysis S2.5 - Snježana Pivac, Željana Aljinović Barać and Ivana Tadić: Empirical Evidence(S) of Human Capital Investments and National Welfare in EU Countries S2.6 - Sukran Seker: An Occupational Risk Assessment Method for Fiber Optic Cable Installation	S4.1 - Sarah Fores: Bus Driver Scheduling – How the Problem has Changed with Improvements in Computing S4.2 - Helena Gaspars-Wieloch: Innovative Projects Scheduling with Non-Renewable Resources on the Basis of Decision Project Graphs S4.3 - Marta Janáčková and Alžbeta Szendreyová: Estimation of the Effective Number of Centers with Regard to the Distances in Municipalities S4.4 - Morapitiye Sunil: Operational Research Model for Crew Scheduling and Application S4.5 - Polona Pavlovčič Prešeren: Evaluation of the Influence of Different Parameters in GNSS Static Positioning S4.6 - Aleksander Vesel: Dynamic Algorithm for Distance Constrained Labelings of Graphs

12.45 – 13.55 Lunch break

Wednesday
September 27, 2017

14.00 – 14.50 **Plenary lecture** (Hall I, Chair: Vladislav Rajković)

PL2 - **Luk N. Van Wassenhove:** Humanitarian Operations: Past Achievements, Future Challenges and Research Opportunities

15.30 – 22.30 **Excursion with dinner**

Guided tour to the Planica Nordic Centre (http://www.planica.si/en), and dinner at the Guesthouse Martin (http://www.julijana.info/en/guest-house-martin) in Kranjska gora.

Thursday
September 28, 2017

8.15 – Registration

9.00 – 9.50 **Plenary lecture** (Hall I, Chair: Lidija Zadnik Stirn)

PL3 - **Ulrike Leopold-Wildburger**: Operations Research and Behavioral Economics

10.00 – 11.00 Parallel sessions:

(S5) Chair: Mirjana Kljajič Borštnar **Machine Learning** (Hall I)	**(SS1)** Chair: Blagica Novkovska **AMSR of the WBC in the Times of Economic Crisis** (Hall II)	**(S6)** Chair: Zrinka Lukać **Mathematical Programming and Optimization** (Hall III)
S5.1 - Marko Bohanec, Mirjana Kljajič Borštnar and Marko Robnik-Šikonja: Sample Size for Assessment of New Feature Relevance in a Given Problem S5.2 - Adela Has and Marijana Zekić-Sušac: Modelling Energy Efficiency of Public Buildings by Neural Networks and Its Economic Implications S5.3 - Eloy Hontoria, Danijel Kovačić and Wim Van Grembergen: It Security Governance and Management Best Practices: Assesing Their Maturity in a Large Spanish Company S5.4 - Engin Pekel, Muhammet Gul and Erkan Celik: Forecasting Daily Patient Visits in an Emergency Department by GA-ANN Hybrid Approach	SS1.1 - Anita Čeh Časni: A Note on Housing Wealth Effect in Selected Western Balkan Countries SS1.2 - Ksenija Dumičić, Emina Resić and Jasmina Mangafić: Inter-Industry Differences in Capital Structure: The Evidence from Bosnia and Herzegovina SS1.3 - Sasho Kjosev and Blagica Novkovska: Social Accounting Matrix - Methodological Basis for Sustainable Development Goals Analysis in the Western Balkans Countries SS1.4 - Helena Nikolic: What Affects the Export Performance of Croatia in Eastern Europe?	S6.1 - Zoran Babić, Tunjo Perić and Branka Marasović: Production Planning in the Bakery Via De Novo Programming Approach S6.2 - Elif Garajová, Milan Hladík and Miroslav Rada: The Effects of Transformations on the Optimal Set in Interval Linear Programming S6.3 - Tatiana V. Gruzdeva and Alexander S. Strekalovsky: Global Optimization for Sum-of-Ratios Problem Using D.C. Programming S6.4 - Tibor Illés, Adrienn Csizmadia and Zsolt Csizmadia:Finiteness of the Quadratic Primal Simplex Method when s-Monotone Index Selection Rules are Applied

11.00 – 11.30 Coffee break

11.30 – 12.30 Parallel sessions:

(S8) Chair: Lidija Zadnik Stirn **OR Perspectives: Where we have been, where we can go** (Hall I)	**(SS1)** Chair: Ksenija Dumičić **AMSR of the WBC in the Times of Economic Crisis** (Hall II)	**(S6)** Chair: Tibor Illés **Mathematical Programming and Optimization** (Hall III)
S8.1 - Drago Bokal: Optimizing Enjoyment of Mathematics and OR Education with Introducing Psychological Concepts Flow and Grit Using Simulation-based Model of Emotional States of Learning S8.2 - Jakob Krarup: EURO – Per Aspera ad Astra S8.3 - Blanka Škrabić Perić, Zdravka Aljinović and Hrvoje Mamić: Importance of Higher Education and Investment in Higher Education in Cesee Countries	SS1.5 - Blagica Novkovska and Ksenija Dumicic: Modelling of Temporal Patterns of Hidden Economy in Connection with Energy Consumption SS1.6 - Irena Palić: The Analysis of Domestic Balassa-Samuelson Effect in Croatia: Evidence from Long Run Model SS1.7 - Vanja Šimićević, Mirjana Pejić-Bach and Ana Aleksić: Antecedents of Entrepreneurial Behavior: Study of Slovenian and Croatian Economics and Business Students SS1.8 - Berislav Žmuk: Impact of Pictures on Response Rates in Business Web Surveys: Croatian Case	S6.5 - Jana Novotná, Milan Hladík and Tomáš Masařík: Duality Gap in Interval Linear Programming S6.6 - Andrei Orlov: Finding the Nash Equlibria in Randomly Generated Hexamatrix Games S6.7 - Petra Renáta Rigó, Zsolt Darvay and Tibor Illés: Infeasible Interior-point Algorithms for Linear Optimization Problems S6.8 - Alexander S. Strekalovsky: Global Optimality Conditions for Problem with D.C. Equality and Inequality Constraints

12.30 – 13.45 Lunch break

13.50 – 14.40 **Plenary lecture** (Hall I, Chair: Janez Žerovnik)

PL4 - **Marijana Zekić-Sušac:** Machine Learning in Energy Consumption Management

14.45 – 16.00 Parallel sessions:

(SS3) Chair: Roman Gumzej **Logistics** (Hall I)	**(S1)** Chair: Vesna Čančer **Econometric Models and Statistics** (Hall II)	**(SS5)** Chairs: V. Vukašinović, J. Šilc: **Metaheuristic Optimization** (Hall III)
SS3.1 - Peter Czimmermann, Michal Koháni and Luboš Buzna: The Design of Charging Infrastructure for Electric Vehicles and its Properties SS3.2 - Roman Gumzej and Bojan Rosi: An SD-based DST for Solving a Volumes Problem SS3.3 - Jaroslav Janáček and Lýdia Gábrišová: Collective Fairness in Emergency System Designing SS3.4 - Eren Özceylan, Süleyman Mete and Zeynel Abidin Çil: Optimizing the Location-Allocation Problem of Bike Sharing Stations: A Case Study in Gaziantep University Campus SS3.5 - Engin Pekel and Selin Soner Kara: The Future Customer Demand in Location-Routing Problem	S1.1 - Jani Bekő and Alenka Kavkler: Purchasing Power Parity in Central and Eastern European Countries: An Analysis Based on Nonlinear Rolling KSS Unit Root Test S1.2 - Ufuk Bolukbas and Ali Fuat Guneri: Technology Competency Assessment of Enterprises by Using Different Types of Clustering S1.3 - Samo Drobne and Mitja Lakner: Concept of SM -Measure to Compare Hierarchical Clusterings S1.4 - Gregory Gurevich, Yossi Hadad and Baruch Keren: Forecasting Accuracy and Change Point Detection S1.5 - Saša Jakšić and Nataša Erjavec: What Drives Croatian Regional Export?	SS5.1 - Hemmak Allaoua: Fast Multi Descent for Earliness Tardiness Scheduling Problem SS5.2 - Valmir Ferreira da Cruz and Fabio Henrique Pereira: Study of Initial Guess Influence on the Quality of Solutions on Binary Genetic Algorithm in Job Shop Scheduling Problem SS5.3 - Alev Taskin Gumus, Erkan Celik and Furkan Ömerustaoğlu: An ANN and GA Approach for Demand Forecasting and Routing for Cash Management SS5.4 - Mehmet Ulaş Koyuncuoğlu and Leyla Demir: A Variable Neighbourhood Search Based Heuristic for Buffer Allocation Problem in Production Lines SS5.5 - Tea Vizinger, Tomaž Kokolj and Janez Žerovnik: A Robust Optimization Approach for Better Planing of a Retail Supply Chain Product Flow

16.00 – 16.30 Coffee break

16.30 – 17.45 Parallel sessions:

(SS7) Chair: Davorin Kofjač **Systems Optimization and Control with Applications** (Hall I)	**(S1)** Chair: Snježana Pivac **Econometric Models and Statistics** (Hall II)
SS7.1 - Anita Gudelj, Maja Krčum and Mirko Čorić: Multiobjective Optimization for Job Scheduling at Automated Container Terminals SS7.2 - Ľudmila Jánošíková, Peter Jankovič and Marek Kvet: Improving Emergency System Using Simulation and Optimization SS7.3 - Davorin Kofjač, Robert Rupnik and Alenka Brezavšček: Production Scheduling Optimization in the Steel Industry Using Genetic Algorithms SS7.4 - Črtomir Rozman, Tatjana Unuk, Karmen Pažek, Stanislav Tojnko and Mario Lešnik: Multi Criteria Asessment of Apple Cultivars SS7.5 - Maja Škurić and Vladislav Maraš: Solving a Passenger Ferry Fleet Assignment Problem	S1.6 - Vedran Kojić, Tihana Škrinjarić and Nidžara Osmanagić Bedenik: The Relationship between Sustainable Profit and Sustainable Business in Companies in Croatia S1.7 - Vedran Kojić and Zrinka Lukač: Technical Note: The Shape of the Macaulay's Duration as the Function of Coupon Bond Maturity Derived Without Derivatives S1.8 - Darja Rupnik Poklukar and Janez Žerovnik: On Definition of Sample Quartiles S1.9 - Nika Šimurina, Nataša Kurnoga and Blaženka Knežević: Cluster Analysis of the Post-Transition Countries of European Union According to the Income Inequality and Social Spending S1.10 - Živa Veingerl Čič, Simona Šarotar Žižek, Vesna Čančer: Nonlinear Connections in Structural Equation Modeling: The Case of Service Sector Companies in Slovenia

18.00 – 19.00 **Social event**
We will meet us at the hotel lobby and have a presentation by Bled Tourist Board. After the presentation we will taste the »kremšnita« (vanilla–custard–cream cake), one of the best known Slovenian desserts that is coming from Bled (http://www.bled.si/en/what-to-see/symbols-of-bled/cream-cake).

Friday
September 29, 2017

8.15 – Registration

9.00 – 9.50 Plenary lecture (Hall I, Chair: Janez Povh)

PL5 - **Serge Bogaerts**: PRACE, the Research Infrastructure Supporting Science and Industry through Provision of High Performance Computing Resources

10.00 – 11.15 Parallel sessions:

(SS2) Chair: Janez Povh **High-Performance Computing and Big Data** (Hall I)	**(SS6)** Chair: D. Battini, M. Bogataj **MRP and Related Systems Approach to Industrial Engineering and Services** (Hall II)	**(SS2)** Chair: Drago Bokal **General OR Topics** (Hall III)
SS2.1 - Mircea Simionica and Janez Povh: A Parallel Implementation of the Boundary Point Method SS2.2 - Martin Golasowski, Kateřina Slaninová, Jiří Ševčík, Vít Ptošek and David Vojtek: Server-Side Navigation Service Benchmarking Tool SS2.3 - Ekaterina Grakova, Radim Sojka, Jan Martinovič, Kateřina Slaninová and Jan Vargovský: Comparison of Parallel Versions of ALNS, ACO and Branch and Cut Algorithms for Vehicle Routing Problem SS2.4 - Klemen Kenda and Dunja Mladenić: Autonomous On-Line Outlier Detection Framework for Streaming Sensor Data	SS6.1 - Danijel Kovačić: 50 Years of the MRP Theory SS6.2 - R. W. Grubbström: MRP Theory SS6.3 - Daria Battini, Martina Calzavara, Fabio Sgarbossa and Alessandro Persona: MRP Theory Supporting Trade-Off between Investments in Collaborative Robots and Production in Foreign Countries for a Water Pumps Supply Chain SS6.4 - David Bogataj and Marija Bogataj: Age Management of Human Resources SS6.5 - Valerija Rogelj and Marta Kavšek: Contributions to the Long-Term Care Insurance Fund for Workers Who Hold Physically Demanding and Labour-Intensive Jobs in Supply Chains SS6.6 - Domen Hudoklin: Measurement of Temperature and Humidity for Further Development of Smart Cold Supply Chains	SS2.5 - Drago Bokal and Anja Goričan: Operations Research as the Bridge over Technological Valley of Death SS2.6 - Igor Đukanović: Reductions of Group Symmetric Semidefinite Programs SS2.7 - Anja Goričan, Amadeja Bratuša and Drago Bokal: Knowledge Transfer Ontology of Photovoltaic Electricity Production Forecasting SS2.8 - Baruch Keren and Yossi Hadad: Setting the Optimal Parking Price Using Queuing Models

11.15 – 11.45 Coffee break

11.45 – 12.45 Parallel sessions:

(S7) Chair: Mirjana Pejić-Bach **Multiple Criteria Decision Making** (Hall I)	**(S3)** Chair: Marija Bogataj **Finance and Investments** (Hall II)	**(SS8)** Chair: Janez Povh **Students Section** (Hall III)
S7.1 - Vesna Čančer, Mirjana Pejić Bach and Jovana Zoroja: Complementary Usage of Multi-Criteria Decision Making and System Dynamics: Case Study of Human Resource Management S7.2 - Hannia Gonzalez-Urango and Mónica García-Melón: A Combined Social Network Analysis - Analytic Network Process Approach to Evaluate Sustainable Tourist Strategies S7.3 - Petra Grošelj and Lidija Zadnik Stirn: Consensus Model for Group Decision Problems with Interval Weights S7.4 - Domen Ocepek and Vladislav Rajkovič: Multilayer Evaluation Model for Project Team Competencies	S3.1 - Zdravka Aljinović and Andrea Trgo: Does CVaR Overcome VaR on the Croatian Stock Market S3.2 - Draženka Čizmić: Classifications in the System of National Accounts S3.3 - Mirjana Čižmešija, Petar Sorić and Marina Matošec: Zagreb Stock Exchange and the (A)Symmetric Effects of News S3.4 - Elza Jurun, Nada Ratković and Ivana Matić: Periodic Average National Reference Rate as a New Financial Standard S3.5 - I. P. Krommyda, K. Skouri and A. G. Lagodimos: An EOQ Model with Partial Backorders under Financial Constraints and Market Tolerance	SS8.1 - Fraud detection among subsidized student meals SS8.2 - Planning of sales territories and delivery routes SS8.3 - Optimization of retail supply chain of a product under stochastic demand SS8.4 - Predicting the quantity of meat sold

13.00 – 13.30 Closing ceremony (Hall I)

Program Committee:

L. Zadnik Stirn, University of Ljubljana, Biotechnical Faculty, Ljubljana, Slovenia, Chair
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M. Bogataj, The Mediterranean Institute for Advanced Studies, Šempeter pri Gorici, Slovenia
M. Bohanec, Jožef Stefan Institute, Department of Knowledge Technologies, Ljubljana, Slovenia
D. Bokal, University of Maribor, Faculty of Natural Sciences and Mathematics, Maribor, Slovenia
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J. Žerovnik, University of Ljubljana, Faculty of Mechanical Engineering, Ljubljana, Slovenia

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