



LITHUANIAN COMPUTER SOCIETY  
VILNIUS UNIVERSITY  
INSTITUTE OF DATA SCIENCE AND DIGITAL TECHNOLOGIES  
LITHUANIAN ACADEMY OF SCIENCES



11th International Workshop on  
**DATA ANALYSIS METHODS FOR  
SOFTWARE SYSTEMS**  
Program

**Druskininkai, Lithuania, Hotel “Europa Royale”**

<http://www.mii.lt/DAMSS>

**November 28 – 30, 2019**

<b>11<sup>00</sup>–13<sup>00</sup></b>	<b>Registration Info Desk</b>
<b>13<sup>00</sup>–13<sup>15</sup></b>	<b>Opening, Welcome and Introductory Remarks</b>
	<i>Gintautas Dzemyda</i> “Data Analysis Methods for Software Systems” (Vilnius University, Institute of Data Science and Digital Technologies)
<b>13<sup>15</sup>–14<sup>15</sup></b>	<b>Plenary Session</b>
	<i>Andrzej Czyzewski</i> “New Applications of Sound and Vision Engineering to Information and Communication Technology” (Gdansk University of Technology, Poland)
	<i>James M. Calvin</i> “Approximating the Minimum of a Smooth Gaussian Process” (New Jersey Institute of Technology, USA)
<b>14<sup>15</sup>–15<sup>30</sup></b>	<b>Coffee Poster Session (1), Discussions</b>
<b>15<sup>30</sup>–16<sup>30</sup></b>	<b>Plenary Session</b>
	<i>Pilar Martínez Ortigosa</i> “Global Optimization in Drug Discovery” (University of Almeria, Spain)
	<i>Tatjana Loncar-Turukalo</i> “Data-driven Approaches for Predictive and Preventive Medicine” (University of Novi Sad, Serbia)
<b>16<sup>30</sup>–17<sup>30</sup></b>	<b>Coffee Poster Session (2), Discussions</b>
<b>18<sup>00</sup>–19<sup>30</sup></b>	<b>Welcome Party</b>

## Poster Session (1), November 28

- **K. Bagdonas, A. Venčkauskas** “Localization Algorithm for Identification of Mobile Objects in an Ad-Hoc Internet of Things Network”
- **K. Bartkus, J. Markevičiūtė, S. Činčiūtė** “Functional Data Analysis of fNIRS Data”
- **L. Bikulčienė, T. Blažauskas, A. Žvironienė, K. Poderienė** “Mobile Platform for Fatigue and Workability Evaluation: Functional State Data Visualization”
- **V. Bulavas** “Fractal Dimensionality of Network Traffic as a Feature for Intrusion Detection”
- **D. Čeponis, N. Goranin** “Application of Deep Learning Methods in Host-Based Intrusion Detection Systems”
- **P. Danielius, S. Masteika** “Study of Blockchain-Based Smart Contract Application for Peer-to-Peer Electricity Exchange in Distributed Trading Network”
- **P. Dapkus** “A Study of Supervised Combined Neural-Network-Based Ultrasonic Method for Reconstruction of Spatial Distribution of Material Properties”
- **V. Dulskis, L. Sakalauskas** “Online Estimation of Parameters for Discrete-Time Independent Normal Random Variables Summation Process Observed with Noise”
- **L. Dovydaitis, K. Driaunys** “Overview of Identification of Phishing Email Messages”
- **E. Filatovas, F. Orts, G. Ortega, O. Kurasova, E. M. Garzón** “Acceleration of ISOMAP for Hyperspectral Image Classification on Multicore Processors and GPUs”
- **R. Gylys, J. Šiaulys** “State Space Representation of Lee-Carter Stochastic Mortality Model: Application to Modelling of Insurers’ Solvency Capital”

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- **Š. Grigaliūnas, J. Toldinas, B. Ložinskis** “Habits Attribution & Digital Evidence Object Tool with Fuzzy Logic for Cybercrime Investigation”
  - **A. Igumenov, R. Paulavičius, E. Filatov** “Experimental Investigation of Energy Consumption for Cryptocurrency Mining”
  - **G. Kasputytė, K. Lašas, R. Užupytė; T. Krilavičius** “Fraudulent Transaction Path Detection in Ethereum Blockchain”
  - **D. Vitkus, V. Gurčinas, Ž. Steckevičius, N. Goranin** “Development of an SME-oriented Information Security Risk Analysis Expert System Based on Automatically Formatted Knowledge Base”
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## Poster Session (2), November 28

- **J. Arsenjeva, V. Medvedev, G. Dzemyda** “Multisensor Data Fusion for Data Analysis”
- **B. Čiapas, P. Treigys** “Expanding Convolutional Networks with SIFT Features to Classify Images Better”
- **A. Kolesau** “Receptive Field in Neural Network Keyword Spotting Models”
- **R. Kunickaitė, T. Krilavičius** “Application of Neural Networks for Cyber Attacks Detection”
- **K. Lašas, J. Uus, T. Krilavičius** “Dynamic Car Rental Pricing”
- **A. Lopata, I. Veitaitė** “Transformation Algorithms of UML Models Generation Process. UML Dynamic Models Generation Examples”
- **J. Mandravickaitė, T. Krilavičius** “Document Classification to Domains of Use: Lithuanian Case”
- **J. J. Moreno, D. Podkopaev, J. Miroforidis, E. Filatovas, I. Kaliszewski, E. M. Garzón** “High Performance Computing Techniques for IMRT Plan Optimization”
- **R. Puronaitė, R. Bėrontas, D. Dzekunskas, J. Trinkūnas** “Detection of Suspicious Activities for Patient Privacy and Security Management Using Electronic Health Record Access-Log Data”
- **J. Ruseckas, G. Molis, A. Mackutė-Varoneckienė, T. Krilavičius** “Applications of AI for 5G Spectrum Sensing”
- **P. Romov** “Player Recognition by Cursor Movement in Computer Game”
- **T. Ruzgas, J. Arnastauskaitė** “Accuracy of Nonparametric Density Estimation for Univariate Gaussian Mixture Models and Application on Municipal Solid Waste”
- **T. Ruzgas, L. Kizauskiene, J. Arnastauskaitė** “Tax Fraud Reduction Using Analytics in an East European Country”

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- **L. Sakalauskas, N. Urbonaitė** “Application of Vector Fractal Brownian Field Model for Data Extrapolation and Kriging”
  - **V. Sakalauskas, D. Krikščiūnienė** “Evaluating the Cause-Effect Relationship for Likert Scale Items”
  - **D. Servaitė, M. Zdanavičiūtė, R. Užupytė, T. Krilavičius** “Creditworthiness Estimation from Aggregated Bank Account Transactions Data”
  - **R. Toliušis, O. Kurasova, J. Bernatavičienė** “Eye Blood Vessel Segmentation Using Convolutional Neural Networks”
  - **J. Venskus, P. Treigys, J. Bernatavičienė, J. Markevičiūtė** “Detecting Maritime Traffic Anomalies with Long-Short Term Memory Recurrent Neural Network”
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<p><b>9<sup>00</sup>–10<sup>00</sup></b></p>	<p><b>Plenary Session</b></p> <p><i>Helen Karatza</i> “Scheduling Complex Applications in Cloud Systems – Challenges and Research Directions” (Aristotle University of Thessaloniki, Greece)</p> <p><i>Álvaro Rocha</i> “Maturity Models for Medical Informatics Management – A Data Analytics Maturity Model” (University of Coimbra, Portugal)</p>
<p><b>10<sup>00</sup>–11<sup>00</sup></b></p>	<p><b>Parallel Plenary Sessions</b></p> <p><b><u>Section 1 (Data Cognition and Visualisation)</u></b></p> <ol style="list-style-type: none"> <li>1. <i>G. Dzemyda, M. Sabaliauskas</i> “New Ideas for Multidimensional Scaling”</li> <li>2. <i>G. A. Melnik</i> “Data Analysis Methods from the Perspective of Experimental Sciences”</li> <li>3. <i>D. Kriksciuniene, V. Sakalauskas, D. Luksaite</i> “Cognitive Mapping Principle for Advanced Survey Analysis”</li> </ol> <p><b><u>Section 2 (Applications in Medicine)</u></b></p> <ol style="list-style-type: none"> <li>1. <i>A. Kriščiukaitis, A. Rodrigues, A. Petrėnas, V. Marozas</i> “Signal Processing Methods Based on Multivariate Analysis for Wearable Devices Detecting Life-Threatening Health Conditions in Hemodialysis Patients”</li> <li>2. <i>V. Abromavičius, A. Serackis</i> “Sepsis Prediction Model Based on Vital Signs Related Features”</li> <li>3. <i>J. Šalkevičius, R. Damaševičius</i> “Adapting Virtual Environments Based on Patients’ Anxiety During Virtual Reality Exposure Therapy”</li> </ol>

### **Section 3 (Optimisation)**

1. **I. Kaliszewski**, *J. Miroforidis* “Gearing-up Cooperative Multiobjective Optimization”
2. **A. Lančinskas**, *J. Žilinskas, P. Fernandez, B. Pelegrin* “Ranking-based Discrete Optimization Algorithm for Asymmetric Competitive Facility Location”
3. **T. Vysockis**, *O. Vasilecas* “Verification of the Method for Multi-Objective Business Process Resource Optimization”

11<sup>00</sup>–11<sup>20</sup>

**Coffee**

11<sup>20</sup>–12<sup>20</sup>

**Parallel Plenary Sessions**

### **Section 4 (Signal Processing)**

1. **A. Kurowski**, **B. Kostek** “A Method of Automatic Design of an Acoustic Diffuser Based on a Genetic Algorithm” (Gdansk University of Technology, Poland)
2. **G. Tamulevičius**, *G. Korvel, J. Bernatavičienė, P. Treigys* “The Impact of Data Augmentation Based on White Noise for Noise-Robust CNN-Based Speech Recognition”
3. **V. Kaminskas**, **E. Ščiglinskas** “Predictor-based Self-Tuning Control of Emotion Signals as Response to a Dynamic Virtual 3D Face”

### **Section 5 (Advanced Technologies)**

1. **R. Bieliauskas**, *E. Filatovas, R. Paulavičius* “Scalability of Proof-of-Work Blockchains Using Off-Chain Solutions”
2. **D. Kuizinienė**, *T. Krilavičius* “Application of Deep Learning for Credit Scoring”
3. **P. Vaitkevičius**, *V. Marcinkevičius* “Learning Phishing Websites URLs Using Long Short-Term Memory Network and Gated Recurrent Units”

	<p><b>Section 6 (Modelling)</b></p> <ol style="list-style-type: none"> <li>1. <i>Yu. Kharin</i> “Discrete-Valued Time Series Analysis: Models, Methods and Software”</li> <li>2. <i>S. Gudas, K. Noreika</i> “Aligning Agile Application Software Development with the Archimate Framework”</li> <li>3. <i>I. Belovas, M. Sabaliauskas</i> “On 3D Visualization of Properties and Structures Related to the Riemann Zeta-Function”</li> </ol>
12 <sup>20</sup> –12 <sup>40</sup>	<b>DAMSS 2019 Photo</b>
12 <sup>40</sup> –14 <sup>00</sup>	<b>Lunch</b>
14 <sup>00</sup> –15 <sup>00</sup>	<p><b>Plenary Session</b></p> <p><i>J. W. Owsiniński, J. Stańczak, S. Zadrozny, J. Kacprzyk</i> “Reverse Clustering, Classification and Extrapolation: Some Basic Interpretations” (Systems Research Institute, Polish Academy of Science)</p> <p><i>V. Arnicāne, J. Borzovs, A. K. Nesaule</i> “Do We Really Know How to Measure Software Quality?” (University of Latvia)</p>
15 <sup>00</sup> –16 <sup>00</sup>	<p><b>Plenary Session “Business and Science Together”</b></p> <p><i>J. Kapočiūtė-Dzikienė, K. Balodis, R. Skadiņš</i> “Towards Creation of the Deep Learning-Based Natural Language Understanding Module for the Lithuanian Chatbots”</p> <p><i>Round table discussion</i></p>
16 <sup>00</sup> –16 <sup>30</sup>	<b>Closing session</b>
16 <sup>30</sup> –18 <sup>00</sup>	<b>Coffee Poster Session (3) and Discussions</b>
19 <sup>00</sup> –21 <sup>00</sup>	<b>Dinner</b>

## Poster Session (3), November 29

- **R. Baronas, J. Kulys, L. Litvinas, L. Petkevičius, K. Petrauskas, A. Žilinskas** “Computational Modeling, Multi-Objective Optimization and Decision Visualization of Microbioreactor System”
- **M. Briedienė, T. Krilavičius** “Narrative Detection for Lithuanian Language”
- **G. Korvel, K. Kąkol, B. Kostek** “Evaluation of Lombard Speech Models in the Context of Speech Enhancement”
- **D. Mažeika, K. Dunovski** “Investigation of User Fatigue Based on Input Behavior”
- **J. Miliauskaite, D. Kalibatiene** “On Issues Related to Interval Type-2 Membership Function Development”
- **G. Navickas** “Lithuanian Speech Synthesis Using Deep Neural Networks”
- **R. Savukynas** “Connected Vehicle Reference Model for Security Risk Management in Internet of Things”
- **R. Paulavičius, S. Grigaitis, E. Filatovas** “A new collection of the blockchain platforms”
- **A. Petrovas, R. Baušys** “Game Scene Generation by Ventura Creativity Criteria Model”
- **M. Petkevičius, D. Vitkutė-Adžgauskienė, D. Amilevičius** “Domain Sensitivity Issues in Aspect Based Sentiment Analysis”
- **A. Skaudickas, G. Skaudickaite, D. Meskauskas, V. Veikutis** “Diagnostic Effectiveness of Thermography in the Trauma Presence on the Professional Basketball Players”
- **J. Skirelis, D. Navakauskas** “Network Configuration Impact on IoT Performance”
- **M. Stankevičius** “Machine Learning for Data Quality Monitoring and Data Certification in the CMS Experiment at the LHC (CERN)”

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- **A. Širaliov, O. Vasilecas** “Simulation-Based Multi-Objective Optimization Methods for Business Process Optimization”
  - **R. Štrimaitis, O. Kurasova, P. Stefanovič** “The N-Grams Based Text Similarity Detection Approach Using Self-Organizing Maps and Similarity Measures”
  - **L. Vabalas** “Evaluation of Fractal Dimension for Some Financial Time Series”
  - **J. Vaičiulytė, G. Tamulevičius** “Distortion-Based Audio Augmentation for Continuous Speech Recognition”
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10 <sup>00</sup> –12 <sup>00</sup>	<b>General Discussion and Concluding Remarks</b>
	<i>Round table discussion</i>

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