

**3rd INTERNATIONAL SCIENTIFIC CONFERENCE
“INTELLIGENT INFORMATION TECHNOLOGIES
FOR INDUSTRY”**

ITI 2018

SEPTEMBER 17-21, 2018, SOCHI, RUSSIA

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Monday, September 17 (Zhemchuzhina, Morskoy hall)

09:30 – 16:00	Registration in Hotel “Zhemchuzhina”
16:00 – 16:30	Opening Session. Prof. Kovalev, Prof. Snasel
16:30 – 20:00	Plenary Talks. Chairs: Prof. Sergey Kovalev, Prof. Vaclav Snasel
16:30 – 17:00	Connected Vehicle Analytics and Smart Mobility Oleg Gusikhin, Ford Global Data, Insight and Analytics (GDI&A) Organization, USA
17:00 – 17:35	Semantic Approaches to Interpretation Assessment of Fuzzy Temporal Systems Modeling Process Dynamics Prof. Sergey M. Kovalev, Rostov State Transport University, Russia
17:35 – 18:10	Enterprise Total Agentification as a Way to Industry 4.0: Forming Artificial Societies via Goal-Resource Networks Assoc. Prof. Valery B. Tarassov, Bauman Moscow State Technical University, Russia
18:10 – 18:40	New Approaches to Discrete Modeling of Natural Neural Networks Oleg P. Kuznetsov, Ludmila Yu. Zhilyakova, Nikolay Bazenkov, Boris Boldyshev and Sergey Kulivets, Trapeznikov Institute of Control Sciences of RAS, Russia

Tuesday, September 18 (Zhemchuzhina, Cinema and Concert hall)

09:00 –09:30	Use Emotional Information to Control Performance of Wideband Mobile Communication Prof. Vadim L. Stefanuk, Institute for Information Transmission Problems and Peoples' Friendship Russian University, Russia
09:30 – 11:00	Session 1. Data Mining and Knowledge Discovery in Intelligent Information and Control Systems. Chairs: Prof. Alexander V. Smirnov, Prof. Vadim L. Stefanuk <ol style="list-style-type: none">1. Alexander Smirnov, Tatiana Levashova, Nikolay Shilov and Andrew Ponomarev. Human-Computer Cloud for Decision Support: Main Ontological Models and Dynamic Resource Network Configuration2. Alexander Smirnov, Nikolay Shilov, Oleg Gusikhin. Context-Dependent Guided Tours: Approach and Technological Framework3. Alexander Zhozhikashvily, Vadim Stefanuk. Retention to Describe Knowledge of Complex Character and its Formalization in Category Theory4. Alexey Petrovsky. Proximity of Multi-Attribute Objects in Multiset Metric Spaces5. Boris Palyukh, Vladimir Ivanov, Alexander Sotnikov. Evidence Theory for Complex Engineering System Analyses6. Denis Zavarzin, Tatyana Afanaseva. Analysis of Software Development Process in Respect to Anomaly Detection7. Anna Klimenko, Eduard Melnik. A Model of Multiagent Information and Control System Distributed Data Storage8. Stanislav Belyakov, Marina Savelyeva, Igor Rozenberg. Representation and Use of Knowledge for the Reconfiguration of the Mechanical Transport System9. Andrey Kostoglotov, Sergey Lazarenko, Anton Penkov, Igor Kirillov, Olga Manaenkova. Synthesis of Adaptive Algorithms for Estimating the Parameters of Angular Position Based on the Combined Maximum Principle10. Andrey Kostoglotov, Sergey Lazarenko, Igor Pugachev, Alexey Yachmenov. Synthesis of Intelligent Discrete Algorithms for Estimation with Model Adaptation Based on the Combined Maximum Principle
11:00-11:20	Coffee Break
11:20 – 12:20	Session 3. Fuzzy Graphs, Fuzzy Networks and Fuzzy Inference for Planning and Cognitive Modelling Chairs: Prof. Viktor M. Kureichik, Prof. Sergey M. Kovalev <ol style="list-style-type: none">1. Tatiana Afanasieva, Vlad Moiseev. Assessing the Software Developer's Quality Using Fuzzy Estimates2. Karolina Janosova, Michal Prauzek, Jaromir Konecny, Monika Borova, Martin Stankus. A Fuzzy Control Method for Priority Driven Embedded Device

	<ol style="list-style-type: none"> 3. Sergey Kovalev, Andrey Sukhanov, Alexander Shabelnikov. Interpretability of Fuzzy Temporal Models 4. Michael Vinkov, Igor Fominykh, Sergey Romanchuk. Control of the Cognitive Process in Hard Real-Time Environment in the Context of the Expanded Stepping Theories of Active Logic 5. Viktor Kureichik, Evgeniya Gerasimenko. Method of the Maximum Dynamic Flow Finding in the Fuzzy Graph with Gains 6. Boris Lebedev, Oleg Lebedev, Ekaterina Lebedeva. Hybrid Bioinspired Algorithm of 1.5 Dimensional Bin-Packing 7. Vang Le, Vaclav Snasel. Community Detection in Online Social Network Using Graph Embedding and Hierarchical Clustering 8. Vadim Shakhnov, Lyudmila Zinchenko, Vadim Kazakov, Andrei Glushko, Vadim Makarchuk, Elena Rezhikova. Cognitive Visualization of Carbon Nanotubes Structures 9. Natalia Egorova, Yana Sorokina. Decision Making Model for Outsourcing by Analysis of Hierarchies of T. Saaty Under Fuzzy Environment
<p style="text-align: center;">12:20-13:00</p>	<p>Session 10. Applied Systems Chairs: Prof. Andrey Chernov, Oleg Gusikhin</p> <ol style="list-style-type: none"> 1. Natalya Filatova, Konstantin Sidorov, Pavel Shemaev, Igor Rebrun, Natalya Bodrina. Analyzing Video Information by Monitoring Bioelectric Signals 2. Alexander Basan, Elena Basan, Oleg Makarevich. Method of Detecting and Blocking an Attacker in a Group of Mobile Robots 3. Petr Skobelev, Ekaterina Pantelej, Nikolay Gusev, George Voshchuk, Alexander Zhelonkin. Automated Field Monitoring by a Group of Light Aircraft-Type UAVs 4. Zdenek Slanina, Filip Krupa, Jakub Nemcik, Daniel Minarik. Visualization of Hydrogen Fuell Cells Laboratory 5. Alexander Afanasyev, Anatoliy Gladkikh, Nikolay Voit, Sergey Kirillov. Processing of Conceptual Diagrammatic Models Based on Automation Graphical Grammar 6. Inna Nurutdinova, Liubov Dimitrova. Intelligent System for Assessing Organization's Possibilities to Achieve Sustained Success 7. Anatoly Korobeynikov, Vladimir Polyakov, Antonina Komarova, Alexander Menshchikov. The Application of MATLAB for the Primary Processing of Seismic Event Data 8. Pavel Kolpakhchyan, Vitezslav Styskala, Alexey Shaikhiev, Alexander Kochin, Margarita Podbereznyaya. Grid-Tie Inverter Intellectual Control for the Autonomous Energy Supply System Based on Micro-Gas Turbine 9. Sergey Listopad. Hybrid Intelligent Multi-Agent System Model for Solving of Complex Transport-Logistic Problem 10. Donat Ivanov. Decentralized Planning of Intelligent Mobile Robot's Behavior in a Group with Limited Communications 11. Alexander Zuenko. Matrix-Like Structures for Representation and Processing of Constraints over Finite Domains

	12. Alexander Zuenko, Yirii Oleynik. Programming of Algorithms of Matrix-Represented Constraints Satisfaction by Means of Choco Library
13:00-14:00	Lunch
14:00-15:30	<p>Session 4. Evolutionary Modeling, Bionic Algorithms and Computational Intelligence.</p> <p>Chairs: Assoc. Prof. Pavel Kromer, Prof. Alexander Ereemeev</p> <ol style="list-style-type: none"> 1. Context-Dependent Guided Tours: Approach and Technological Framework 2. Paliukh Boris, Valeriy Kemaykin, Yuliya Kozlova. Forecasting of Results of Dynamic Interaction between Space Debris and Spacecrafts on the Basis of Soft Computing Methods 3. Monika Borova, Jaromir Konecny, Michal Prauzek, Karolina Janosova. A Fuzzy Evaluation of Quality for Color Vision Disorders Diagnostic 4. Alexander Ereemeev, Pavel Varshavskiy, Roman Alekhin. Improving the Efficiency of Solution Search Systems Based on Precedents 5. Ilya Hodashinsky, Konstantin Sarin, Artem Slezkin. Efficient Feature Selection Algorithm Based on Population Random Search with Adaptive Memory Strategies 6. Igor Kotenko, Igor Saenko, Sergey Ageev. Applying Fuzzy Computing Methods for On-Line Monitoring of New Generation Network Elements 7. Nadezhda Yarushkina, Gleb Guskov, Pavel Dudarin, Vladimir Stuchebnikov. An Approach to Intellectual Search and Architecture Analysis of Software Projects Based on Artificial Intelligence Methods 8. Sebastian Basterrech, Emmanuel Sam, Pavel Kromer. Recurrence Analysis of the Dynamics of the Echo State Network model 9. Gerald Plesniewicz. Query Answering over Some Extensions of Allen's Interval Logic 10. Andrei Kostoglotov, Vladimir Taran, Vladimir Trofimenko. Fuzzy Topological Approach to a Solid Control Task 11. Anton Romanov, Irina Perfilieva. Time Series Grouping Based on Fuzzy Sets and Fuzzy Sets Type 2 12. Vladimir Taran, Aleksey Shandybin, Elena Boyko. Using the Concept of Soft Computing to Solve the Problem of Electromagnetic Compatibility Control 13. Olga Vasileva, Vladimir Kiyayev. Generation of Efficient Cargo Operation Schedule at Seaport with the Use of Multiagent Technologies and Genetic Algorithms 14. Anastasia Voitsitskaya, Alexander Fedulov, Yaroslav Fedulov. Resource Managing Method for Parallel Computing Systems Using Fuzzy Data Preprocessing for Input Tasks Parameters
19:00	Official Dinner (Zhemchuzhina)

Wednesday, September 19 (Zhemchuzhina, Cinema and Concert hall)

<p>09:00 – 10:20</p>	<p>Session 6. Probabilistic Models, Algebraic Bayesian Networks and Information Protection Chairs: Prof. Igor V. Kotenko, Prof. Alexander L. Tulupyev</p> <ol style="list-style-type: none">1. Alexandr Berman, Olga Nikolaychuk, Alexandr Yurin. Computer-Aided Event Tree Synthesis on the Basis of Case-Based Reasoning2. Yury Iskanderov, Mikhail Pautov. Security of Information Processes in Supply Chains3. Ekaterina Malchevskaya, Nikita Kharitonov, Andrey Zolotin, Maxim Abramov. External Consistency Maintenance Algorithm for Chain and Stellate Structures of Algebraic Bayesian Networks: Statistical Experiments for Running Time Analysis4. Ilias Savvas, Georgia Garani. Perspectives of Fast Clustering Techniques5. Tomáš Janečko, Ivan Zelinka. Impact of Security Aspects at the IOTA protocol6. Liudmila Babenko, Ilya Pisarev. Cryptographic Protocol Security Verification of the Electronic Voting System Based on Blinded Intermediaries7. Alena Suvorova, Alexander Tulupyev. Learning Bayesian Network Structure for Risky Behavior Modelling8. Elena Kochegurova, Ekaterina Gorokhova, Elena Luneva. On Continuous User Authentication Via Hidden Free-Text Based Monitoring9. Aleksandra Toropova, Tatiana Tulupyeva. Synthesis and Learning of Socially Significant Behavior Model with Hidden Variables10. Marianna Polyakova, Sergey Sokolov, Anna Kolodenkova. Adaptation of the Nonlinear Stochastic Filter on the Basis of Irregular Exact Measurements
<p>10:20-11:00</p>	<p>Session 5. Cognitive Technologies on the Basis of Sensor and Neural Networks Chairs: Prof. Oleg Kuznetsov, Prof. Natalya Filatova</p> <ol style="list-style-type: none">1. Ladislav Zjavka, Stanislav Mišák. Post-Processing of Numerical Forecasts Using Polynomial Networks with the Operational Calculus PDE Substitution2. Alexey Ivanov, Dmitry Yudin. Visibility Loss Detection for Video Camera Using Deep Convolutional Neural Networks3. Tatiana Khorosheva, Marina Novoseltseva, Nazim Geidarov, Nikolay Krivosheev, Sergey Chernenko. Neural Network Control Interface of the Speaker Dependent Computer System «Deep Interactive Voice Assistant DIVA» to Help People with Speech Impairments4. Vadim Kuzmin, Aleksandr Panov. Hierarchical Reinforcement Learning with Options and United Neural Network Approximation5. Oleg Kuznetsov, Ludmila Zhilyakova, Nikolay Bazhenkov, Boris Boldyshev, Sergey Kulivets. New Approaches to Discrete Modeling of Natural Neural Networks

	<ol style="list-style-type: none"> 6. Maxim Sakharov, Anatoly Karpenko. Meta-Optimization of Mind Evolutionary Computation Algorithm Using Design of Experiments 7. Konstantin V. Sidorov, Natalya Filatova, Pavel Shemaev. An Interpreter of a Human Emotional State Based on a Neural-Like Hierarchical Structure 8. Victor Deryabin, Anatoly Sazonov. A Vessel's Dead Reckoning Position Estimation by Using of Neural Networks 9. Daniil Marshakov, Vasily Galushka, Vladimir Fathi, Denis Fathi. Evaluation of Neural Network Output Results Reliability in Pattern Recognition 10. Konstantin Sidorov, Natalya Filatova, Pavel Shemaev. A Neural-Like Hierarchical Structure in the Problem of Automatic Generation of Hypotheses of Rules for Classifying the Objects Specified by Sets of Fuzzy Features
11:00-11:30	Coffee Break
11:30-13:00	<p>Session 7. Pattern Recognition and Emotion Modeling Chairs: Prof. Vadim N. Vagin, Prof. Sergey Kovalev</p> <ol style="list-style-type: none"> 1. Anton Pronoza, Lidia Vitkova, Andrey Chechulin, Igor Kotenko. Visual Analysis of Information Dissemination Channels in Social Network for Protection Against Inappropriate Content 2. Vadim Vagin, Sergey Antipov, Marina Fomina, Oleg Morosin. The Problem of the Anomaly Detection in Time Series Collections for Dynamic Objects 3. Sergey Yarushev, Giovanni Pilato, Alexey Averkin. Prediction and Detection of User Emotions Based on Neuro-Fuzzy Neural Networks in Social Networks 4. Dmitry Yudin, Ekaterina Kapustina. Deep Learning in Vehicle Pose Recognition on Two-Dimensional Images 5. Nikolay Kirilenko, Igor Shcherban', Andrey Kostoglotov. Feature Extraction of High-Frequency Patterns with the a Priori Unknown Parameters in Noised Electrograms Using Spectral Entropy 6. Vladimir Rozaliev, Nikita Nikitin, Yulia Orlova, Alla Zaboлева-Zotova. Results of Using Neural Networks to Automatically Creation Musical Compositions Based on Color Image

Thursday, September 20 (Zhemchuzhina, Cinema and Concert hall)

<p>09:00 – 10:30</p>	<p>Session 8. Hybrid Expert Systems and Intelligent Decision Support Systems in Design and Engineering. Chairs: Prof. Alexander P. Ereemeev, Prof. Nadezhda G. Yarushkina</p> <ol style="list-style-type: none">1. Afanasyev Alexander, Nikolay Voit, Andrey Igonin. Intelligent Integrated System for Computer-Aided Design and Complex Technical Objects' Training2. Aleksey Bakhmut, Vladislav Koromyslichenko, Aleksey Krylov, Michael Okhtilev, Pavel Okhtilev, Boris Sokolov, Anton Ustinov, Alexander Zyanchurin. Methods of Conceptual Modeling of Intelligent Decision Support Systems for Managing Complex Objects at All Stages of Its Life Cycle3. Alexander Kozhukhov, Alexander Ereemeev. About the Integration of Learning and Decision-Making Models in Intelligent Systems of Real-Time4. Galina Rybina, Yuri Blokhin, Levon Tarakchyan. Intelligent planning and control of integrated expert system construction5. Simon Barkovskii, Larisa Tselykh, Alexander Tselykh. The Matrix Data Recognition Tool in the Input Files for the Computing Applications in an Expert System6. Anna Kolodenkova, Evgenia Muntyan, Vladimir Korobkin. Modern Approaches to Risk Situation Modeling in Creation of Complex Technical Systems7. Georgy Burdo. Automated Quality Management System in Mechanical Engineering8. Vladimir Vereskun, Maria Butakova, Andrey Chernov, Alexander Guda, Oleg Kartashov. Knowledge Representation Method for Intelligent Situation Awareness System Design9. Valery Dimitrov, Lyudmila Borisova, Inna Nurutdinova. Intelligent Support of Grain Harvester Technological Adjustment in the Field10. Leonid Gladkov, Nadezhda Gladkova, Sergey Leyba, Nikolay Strakhov. Development and Research of the Hybrid Approach to the Solution of Optimization Design Problems11. Yury Rogozov, Sergei Kucherov. The Concept of Methodological Framework for the Design of Information Systems
<p>10:30-11:30</p>	<p>Session 2. Ontological Modeling, Semantic Technologies and Knowledge Engineering Chairs: Prof. Viktor M. Kureychik, Prof. Anatoly P. Karpenko</p> <ol style="list-style-type: none">11. Vadim Moshkin, Aleksey Filippov, Nadezhda Yarushkina, Ivan Dyakov. The Approach to Extracting Semantic Trees From Texts to Build an Ontology From Wiki-Resources12. Nikolay Teslya, Igor Ryabchikov. Ontology-Based Semantic Models for Industrial IoT Components Representation13. Nikolai Vitiska, Vladimir Selyankin, Nikita Gulyaev. An Approach to Optimization of Ray-Tracing In Volume Visualization Based on Properties of Volume Elements

	<p>14. Petr Sosnin, Anna Kulikova. Discovering of Part-Whole Relations Used in Architectural Prototyping of Project Tasks</p> <p>15. Victoria Bova, Vladimir Kureichik, Sergey Scheglov, Liliya Kureichik. Multi-Level Ontological Model of Big Data Processing</p> <p>16. Alena Fedotova, Vadim Tabakov, Jens Bruening, Michael Ovsyannikov. Ontological Modeling for Industrial Enterprise Engineering</p> <p>17. Andrey Kostoglotov, Sergey Lazarenko, Zoya Lyashchenko, Alexander Agapov, Irina Pavlova. Designing The Knowledge Base for the Intelligent Inertial Regulator Based on Quasi-Optimal Synthesis of Controls Using the Combined Maximum Principle</p>
<p>11:30-12:00</p>	<p>Session 9. Intelligent and Fuzzy Railway Systems Chairs: Prof. Sergey M. Kovalev, Prof. Andrey V. Chernov</p> <ol style="list-style-type: none"> 1. Andrey Chernov, Ilias Savvas, Maria Butakova. Detection of Point Anomalies in Railway Intelligent Control System Using Fast Clustering Techniques 2. Anna Kolodenkova, Alexander Dolgiy. Diagnosing of Devices of Railway Automatic Equipment on the Basis of Methods of Diverse Data Fusion 3. Ivan Olgeyzer, Alexander Shabelnikov. Technical Aspects of the "Digital Station" Project 4. Alexandr Shabelnikov, Nikolai Lyabakh, Yakov Gibner. Evolutionary Development Modelling of the Intelligent Automation Systems for Wagon Marshalling Process from the Standpoint of Smooth Mapping Singularity Theory 5. Alexandr Shabelnikov, Nikolai Lyabakh, Natalia Malishevskaya. Multidimensional Linguistic Variables and Their Application for Resolving the Tasks of Marshaling Processes Automation 6. Maksim Kulagin, Valentina Sidorenko. Transport Workers Activities Analysis Using an Artificial Neural Network 7. Vera Ilicheva. Analysis of Options for Track Development of a Railway Station Using Graph Theory and Logic Modeling
<p>12:00-13:00</p>	<p>Closing Session</p>