

# International Conference on Data Science and Intelligent Analysis of Information

Venue:  
Scientific and Technical Library  
of Igor Sikorsky KPI

Program

**June 4**

14:00 – 14:30	<b>Registration</b> Floor 3
14:30 – 14:45	<b>Opening</b> Reading Room 4 (Belka)
14:45 – 15:30	<b>Keynote Talk:</b> <b>Vladik Kreinovich</b> <i>Bounded Rationality in Decision Making Under Uncertainty: Towards Optimal Granularity</i> Reading Room 4 (Belka)
15:30 – 15:45	<b>Coffee Break and Networking</b> Floor 3
15:45 – 16:30	<b>Keynote Talk:</b> <b>Janusz Kacprzyk</b> <i>Towards More Realistic, Human-Centric Decision Making Via Some Multiagent Paradigms</i> Reading Room 4 (Belka)

## June 5

9:30 – 9:45	<b>Registration</b> Floor 3	
9:45 – 10:30	<b>Keynote Talk:</b> <b>Vadim Stefanuk</b> <i>Fuzzy Set Theory is not Fuzzy</i> Reading Room 4 (Belka)	
10:30 – 10:45	<b>Coffee Break and Networking</b> Floor 3	
10:45 – 11:45	<b>Session 1</b> <i>Machine Learning:          Novel Methods and Applications.</i> <b>Part I</b> Chair: Viktor Smorodin Reading Room 1	<b>Session 2</b> <i>Knowledge Engineering Methods. Ontology          Engineering. Intelligent Educational Systems.</i> <b>Part I</b> Chair: Nikolay Borgest Reading Room 2
11:45 – 12:00	<b>Networking</b> Floor 3	
12:00 – 13:00	<b>Session 1</b> <i>Machine Learning:          Novel Methods and Applications.</i> <b>Part II</b> Chair: Viktor Smorodin Reading Room 1	<b>Session 2</b> <i>Knowledge Engineering Methods. Ontology          Engineering. Intelligent Educational Systems.</i> <b>Part II</b> Chair: Nikolay Borgest Reading Room 2

13:00 – 14:00	<b>Lunch</b>	
14:00 – 14:45	<b>Keynote Talk:</b> <b>Ashok Deshpande</b> <i>Application of Zadeh Deshpande Formalism in Educational Data Mining</i> Reading Room 4 (Belka)	
14:45 – 15:00	<b>Coffee Break and Networking</b> Floor 3	
15:00 – 15:50	<b>Session 3</b> <i>Novel Methods in Probability and Statistics</i> Chair: Yuriy Kondratenko Reading Room 1	<b>Session 4</b> <i>Applications of Data Science to Economics. Applied Data Science Systems.</i> <b>Part I</b> Chair: Maksym Obrizan Reading Room 2
15:50 – 16:00	<b>Networking</b> Floor 3	
16:00 – 17:00	<b>Session 5</b> <i>Data Analysis Using Fuzzy Mathematics, Soft Computing, Computing with Words</i> Chair: Dan Tavrov Reading Room 1	<b>Session 4</b> <i>Applications of Data Science to Economics. Applied Data Science Systems.</i> <b>Part II</b> Chair: Maksym Obrizan Reading Room 2

## June 6

9:45 – 10:30	<p><b>Keynote Talk:</b>  <b>Nikhil R. Pal</b>  <i>Making Neural Networks Smart Enough to Say Don't Know —  The Open World Classification Problem</i>  Reading Room 4 (Belka)</p>	
10:30 – 10:45	<p><b>Coffee Break and Networking</b>  Floor 3</p>	
10:45 – 11:45	<p><b>Session 6</b>  <i>Intelligent Search and Information  Analysis in Local and Global Networks.</i>  <b>Part I</b>  Chair: Dmytro Lande  Reading Room 1</p>	<p><b>Session 7</b>  <i>Novel Theoretical and Practical Applications of  Data Science.</i>  <b>Part I</b>  Chair: Alexander Fridman  Reading Room 2</p>
11:45 – 12:00	<p><b>Networking</b>  Floor 3</p>	
12:00 – 13:00	<p><b>Session 6</b>  <i>Intelligent Search and Information  Analysis in Local and Global Networks.</i>  <b>Part II</b>  Chair: Dmytro Lande  Reading Room 1</p>	<p><b>Session 7</b>  <i>Novel Theoretical and Practical Applications of  Data Science.</i>  <b>Part II</b>  Chair: Alexander Fridman  Reading Room 2</p>
13:00 – 14:00	<p><b>Lunch</b></p>	

14:00 – 16:00	<b>Business Panel</b> ICO in the World: Today and Tomorrow <b>Speakers: TBA</b> Reading Room 4 (Belka)
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## June 7

9:00 – 17:00	Departure
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**Session 1.** *Machine Learning: Novel Methods and Applications*

**June 5**

**Part I: 10:45 – 11:45**

**Part II: 12:00 – 13:00**

Reading Room 1

**Chair:** Viktor Smorodin

Viacheslav Dudar  
Vladimir Semenov

Use of Symmetric Kernels for Convolutional Neural Networks

Berik Akhmetov  
Ihor Tereikovskiy  
Liudmyla Tereikovska  
Asselkhan Adranova  
Zhibek Alibiyeva

Neural Network User Authentication by Geometry of the Auricle

Borys Tymchenko  
Svitlana Antoshchuk

Race from Pixels: Evolving Neural Network Controller for Vision-Based Car Driving

Viktor Smorodin  
Vladislav Prokhorenko

Application of Neuro-Controller Models for Adaptive Control

Yaroslav Vyklyuk  
Milan Radovanović,  
Volodymyr Pasichnyk  
Nataliia Kunanets  
Sydor Petro

Forecasting of Forest Fires in Portugal Using Parallel Calculations and Machine Learning

Lyubov Chabak  
Vladimir Semenov  
Yana Vedel

A New Non-Euclidean Proximal Method for Equilibrium Problems

**Session 2.** *Knowledge Engineering Methods. Ontology Engineering. Intelligent Educational Systems*

**June 5**

**Part I: 10:45 – 11:45**

**Part II: 12:00 – 13:00**

Reading Room 2

**Chair:** Nikolay Borgest

Vyacheslav Shebanin  
Igor Atamanyuk  
Yuriy Kondratenko  
Yuriy Volosyuk

Development of the Mathematical Model of the Informational Resource of a Distance Learning System

Tetiana Hryhorova  
Oleksandr Moskalenko

Use of Information Technologies to Improve Access to Information in E-Learning Systems

Maksim Korovin  
Nikolay Borgest

Multi-Agent Approach Towards Creating an Adaptive Learning Environment

Liubov Oleshchenko  
Daria Bilohub  
Vasyl Yurchyshyn

Internet Data Analysis to Evaluate the Optimal Placement of New Facilities

Anatolii Getman  
Volodymyr Karasiuk  
Yevhen Hetman  
Oleg Shynkarov

Ontological Representation of Legal Information and an Idea of Crowdsourcing for Its Filling

Viktoriya Ruvinskaya  
Alexandra Moldavskaya

Methods for Automated Generation of Scripts Hierarchies from Examples and Diagnosis of Behavior

**Session 3.** *Novel Methods in Probability and Statistics*

**June 5**

**15:00 – 15:50**

Reading Room 1

**Chair:** Yuriy Kondratenko

Igor Atamanyuk  
Vyacheslav Shebanin  
Yuriy Kondratenko  
Valerii Havrysh  
Yuriy Volosyuk

Method of an Optimal Nonlinear Extrapolation of a Noisy Random Sequence on the Basis of the Apparatus of Canonical Expansions

Galyna Kriukova  
Mykola Glybovets

Regularization of Hidden Markov Models Embedded into Reproducing Kernel Hilbert Space

Viktor Smorodin  
Elena Sukach

Application of Probabilistic-Algebraic Simulation for Processing and Analysis of Large Amounts of Data



**Session 4.** *Applications of Data Science to Economics. Applied Data Science Systems*

**June 5**

**Part I: 15:00 – 15:50**

**Part II: 16:00 – 17:00**

Reading Room 2

**Chair:** Maksym Obrizan

Maksym Obrizan  
Karine Torosyan  
Norberto Pignatti

Tobacco Spending in Georgia: Machine Learning Approach

Valentyna Sinichenko  
Anton Shmihel  
Ivan Zhuk

Explaining Wages in Ukraine: Experience or Education?

Ruslan K. Chornei

On the Nash Equilibrium in Stochastic Games of Capital Accumulation on a Graph

Andrii Shelestov  
Leonid Shumilo  
Mykola Lavreniuk  
Vladimir Vasiliev  
Tatyana Bulanaya  
Igor Gomilko  
Andrii Kolotii  
Kyrylo Medianovskyi  
Sergii Skakun

Indoor and Outdoor Air Quality Monitoring on the Base of Intelligent Sensors for Smart City

Nataliia Kussul  
Mykola Lavreniuk  
Leonid Shumilo  
Andrii Kolotii  
Olena Rakoid  
Bohdan Yailymov  
Andrii Shelestov  
Vladimir Vasiliev

Assessment of Sustainable Development Goals Achieving With Use of NEXUS Approach in the Framework of GEOEssential ERA-PLANET Project

Vidyadhar Aski  
Sanjana Raghavendra  
Akhilesh Sharma

An Efficient Remote Disaster Management Technique Using IoT for Expeditious Medical Supplies to Affected Area: An Architectural Study and Implementation

**Session 5.** *Data Analysis Using Fuzzy Mathematics, Soft Computing, Computing with Words*

**June 5**

**16:00 – 17:00**

Reading Room 1

**Chair:** Dan Tavrov

Dan Tavrov  
Olena Temnikova  
Volodymyr Temnikov

Perceptual Computing Based Method for Assessing Functional State of Aviation  
Enterprise Employees

Yuriy Kondratenko  
Galyna Kondratenko  
Ievgen Sidenko

Multi-Criteria Decision Making and Soft Computing for the Selection of  
Specialized IoT Platform

Olga Kosheleva  
Vladik Kreinovich

How Intelligence Community Interprets Imprecise Evaluative Linguistic  
Expressions, and How to Justify This Empirical-Based Interpretation

Francisco Zapata  
Olga Kosheleva  
Vladik Kreinovich

How to Explain Empirical Distribution of Software Defects by Severity

**Session 6.** *Intelligent Search and Information Analysis in Local and Global Networks*

**June 6**

**Part I: 10:45 – 11:45**

**Part II: 12:00 – 13:00**

Reading Room 1

**Chair:** Dmytro Lande

Oleh Andriichuk  
Dmytro Lande  
Anastasiya Hraivoronska

Usage of Decision Support Systems in Information Operations Recognition

Dmytro Pavlov  
Oleg Chertov

How Click-Fraud Shapes Traffic: a Case Study

Dmytro Lande  
Andrei Snarskii  
Dmytro Manko

The Model of Words Cumulative Influence in a Text

Andriy Bomba  
Natalija Kunanets  
Volodymyr Pasichnyk  
Yuriy Turbal

Mathematical and Computer Models of Message Distribution in Social Networks Based on the Space Modification of Fermi-Pasta-Ulam Approach

Molly Renaud  
Rostyslav Korolov  
David Mendonça  
William Wallace

Social Network Structure as a Predictor of  
Social Behavior: The Case of Protest in the 2016  
US Presidential Election

Tetiana Hovorushchenko  
Olga Pavlova

Method of Activity of Ontology-Based Intelligent Agent for Evaluating Initial Stages of the Software Lifecycle

**Session 7.** *Novel Theoretical and Practical Applications of Data Science*

**June 6**

**Part I: 10:45 – 11:45**

**Part II: 12:00 – 13:00**

Reading Room 2

**Chair:** Alexander Fridman

Boris Kulik  
Alexander Fridman

Algebra of Clusterizable Relations

Maksym Sokhatskyi  
Pavlo Maslianko

Constructive Proofs of Heterogeneous Equalities in Cubical Type Theory

Victor Krasnobayev  
Alexandr Kuznetsov  
Sergey Koshman  
Sergey Moroz

Improved Method of Determining the Alternative Set of Numbers in Residue Number System

Vladyslav Hryhorenko  
Dmitry Klyushin

Multiblock ADMM with Nesterov Acceleration

Oleh M. Lytvyn  
Olesia Nechuiviter  
Iulia Pershyna  
Vitaliy Mezhuyev

Input Information in the Approximate Calculation of Two-Dimensional Integral from Highly Oscillating Functions (Irregular Case)

Oleh M. Lytvyn  
Oleh O. Lytvyn

A New Approach to Data Compression