

**2020 IEEE Second International Conference  
on System Analysis & Intelligent Computing (SAIC'2020)**

# **CONFERENCE PROGRAM**

**05-09 October, 2020  
Kyiv, Ukraine**

# CONFERENCE SCHEDULE

06.10.2020	
10:00 – 10:30	Opening Ceremony
11:00 – 13:00	Oral Sessions (Track 1)
13:00 – 14:00	Lunch Break
14:00 – 17:30	Oral Sessions (Track 1, Track 3)
07.10.2020	
10:00 – 13:00	Oral Sessions (Track 1, Track 2)
13:00 – 14:00	Lunch Break
14:00 – 17:30	Oral Sessions (Track 1, Track 2)
08.10.2020	
10:00 – 13:00	Oral Sessions (Track 1, Track 4)
13:00 – 14:00	Lunch Break
14:00 – 17:30	Oral Sessions (Track 1)

The conference will take place on-line using [ZOOM](#) platform. The links for joining will be published on the [SAIC website](#) and sent to participants before the beginning of the conference.

Authors are expected to make oral reports using their presentations. Durations for the reports are as follows:

- presentation up to 20 minutes;
- discussion up to 10 minutes.

The presentations will be recorded.

**06.10.2020**

**OPENING CEREMONY**

(10:00 – 10:30)

**ORAL SESSIONS**

(11:00 – 13:00)

**TRACK 1: System Analysis of Complex Systems**

**Section head** N.D. Pankratova

**Scientific Secretary** Y.A. Ptukha

1	<b>Michael Zgurovsky, Kostiantyn Yefremov and Maria Perestyuk</b>	Foresight COVID-19: Impact on Economy and Society – European Context
2	<b>Oleksandr Trofimchuk</b>	The Features of Application of the Integrated Approach to Forecasting Ecology-Economic Processes
3	<b>Violetta Volkova, Galina Gorelova and Nataliya Pankratova</b>	The Development of the Cyberphysical System Concept on Base of the Interdisciplinary Theories
4	<b>Alexander Kutsenko, Svitlana Kovalenko, Sergii Kovalenko, Leonid Kashcheiev, Olena Mikhnova and Igor Chaly</b>	A Fuzzy Logic Based Decision Support System for E-tourist Attractiveness Assessment

**LUNCH BREAK**

(13:00 – 14:00)

**ORAL SESSIONS**

(14:00 – 17:00)

**TRACK 1: System Analysis of Complex Systems**

**Section head** A.G. Malishevsky

**Scientific Secretary** Y.A. Ptukha

1	<b>Vadym Mukhin, Yaroslav Kornaga, Maxim Bazaliy, Valerii Zavgorodnii, Ivan Krysak and Oleg Mukhin</b>	Obfuscation Code Technics Based on Neural Networks Mechanism
2	<b>Andriy Makarchuk, Inna Kal'chuk, Yurii Kharkevych and Alla Yakovleva</b>	The Usage of Interpolation Polynomials in the Studying of Data Transmission in Networks

3	<b>Yoshio Matsuki and Petro Bidyuk</b>	Theory and Simulation of Artificial Antigravity
4	<b>Mariam Dedabrishvili</b>	Effective Ways to Overcome Classification Limitations for Activities of Daily Livings (ADLs)
5	<b>Artur Samvelyan, Roman Shaptala and Gennadiy Kyselov</b>	Exploratory Data Analysis of Kyiv City Petitions
6	<b>Alexey Lopatin</b>	A Modified Version of Solows Economic Growth Model with Successive Using Composite S-Curves for Technological Progress Implementation
7	<b>Iurii Kaliukh, Ivan Syvko, Krystyna Chorna, Viktor Shokarev, Ievgen Shokarev and Andrii Shokarev</b>	Assessment of Residual Service Life for the Residential Buildings under Systematical Industrial Explosions
<b>TRACK 3: Intelligent Computing Technologies</b>		
<b>Section head</b> A.I. Petrenko		
<b>Scientific Secretary</b> G.D.Kiselev		
1	<b>Sergiy Pogorilyy and Artem Kramov</b>	Coherence Evaluation Method Based on Analyses of Phrases Graph
2	<b>Alexander Kutsenko, Sergey Kovalenko, Vladimir Tovazhnyanskyy and Svitlana Kovalenko</b>	Synthesis of a Mathematical Model of Thermal Processes of Buildings. Systems Approach
3	<b>Andriy Dudnik, Lyudmyla Kuzmych, Olexander Trush, Tetyana Domkiv, Olga Leshchenko and Viktor Vyshnivskyy</b>	Smart Home Technology Network Construction Method and Device Interaction Organization Concept
4	<b>Sergii Saukh</b>	The Balance of Power Differentials and Its Application for the Analysis of Electric Power Systems
5	<b>Anatoliy Sergiyenko and Anastasia Serhienko</b>	Complexity Reduced IIR Filter Design for FPGA

**07.10.2020**

**ORAL SESSIONS**  
(10:00 – 13:00)

**TRACK 1: System Analysis of Complex Systems**

**Section head** V.Ye. Mukhin

**Scientific Secretary** Y.A. Ptukha

1	<b>Oleksandr Nakonechnyi, Anatoliiy Pashko, Andriy Sverstuik and Iuliia Shevchuk</b>	Statistical Simulation of the External Influence of the Information Spreading of the Population Models
2	<b>Oleksandr Nakonechnyi and Yuri Podlipenko</b>	Optimal Estimation of Unknown Right-Hand Sides of First Order Linear Systems of Periodic Ordinary Differential Equations from Indirect Noisy Observations of Their Solutions
3	<b>Elena Kiseleva, Olga Prytomanova and Oleksii Serhieiev</b>	An Algorithm for Solving the Optimal Set Partitioning Problem With Constraints on the Centers Location
4	<b>Yaroslav Chabanyuk, Anatolii Nikitin and Ulyana Khimka</b>	Asymptotics of Control Problem for the Impulse Perturbation Process under Stochastic Optimization Procedure and Levy Approximation Conditions
5	<b>Pavlo Kovalchuk, Roman Kovalenko, Volodymyr Kovalchuk, Olena Demchuk and Hanna Balykhina</b>	Scenario Analysis Method for Optimizing the Water Use Structure Management and the River Basins Rehabilitation
6	<b>Liudmyla Koliechkina and Alla Nahirna</b>	Mathematical Model on Set of Partial Permutations for the Optimization of Complex Information Systems

**TRACK 2: Computational Intelligence**

**Section head** Yuriy Zaychenko

**Scientific Secretary** Bohdan Chapaliuk

1	<b>Anriette Bishara and Mikheil Rukhaia</b>	Towards Unranked Fuzzy Theory
2	<b>Dmytro Lande and Oleh Dmytrenko</b>	Creating the Directed Weighted Network of Terms Based on Analysis of Text Corpora

3	<b>Anatoliy Sachenko, Konrad Grzeszczyk, Volodymyr Kochan, Orest Ivakhiv, Oleksandr Osolinskyi, Markiyan Nakonechnyi, Łukasz Kopania, Volodymyr Vyshnia, Stanislav Novosad, Orest Kochan</b>	The Method of Neural Network Control over the Process of Manufacturing Foil Solar Panels
4	<b>Maryam Naderan and Yuri Zaychenko</b>	Convolutional Autoencoder Application for Breast Cancer Classification
5	<b>Fedir Geche, Oksana Mulesa, Olena Melnyk and Veronika Smolanka</b>	Invariant Operations on Generalized Neurofunctions
6	<b>Anatolii Petrenko</b>	BreathMonitor: Sleep Apnea Mobile Detector
<b>LUNCH BREAK</b> (13:00 – 14:00)		
<b>ORAL SESSIONS</b> (14:00 – 17:30)		
<b>TRACK 1: System Analysis of Complex Systems</b>		
<b>Section head</b> I.O. Savchenko		
<b>Scientific Secretary</b> Y.A. Ptukha		
1	<b>Vyacheslav Gubarev, Viktor Romanenko and Yurii Miliavskyi</b>	Regularized Identification of Impulse Processes in Cognitive Maps with Structural Uncertainty
2	<b>Petro Bidyuk, Roman Manuilenko and Roman Pantyeyev</b>	Convergence Investigation of the Newton Method Used for Hyperbolic Equations Systems Solving
3	<b>Ivan Ostroumov and Nataliia Kuzmenko</b>	Interrogation Rate Measurements of Distance Measuring Equipment in Air Navigation System
4	<b>Oksana Pichugina</b>	Mathematical Modeling of Transport Logistics Problems
5	<b>Oksana Pichugina</b>	Diet-Menu Problem Modelling and Applications
6	<b>Igor Golinko and Iryna Galytska</b>	Digital Control Systems Tuning with Using Continuous Synthesis Methods
7	<b>Igor Redko, Petro Yahanov and Maksym Zylevich</b>	Concept-Monadic Model of Technological Environment of Programming

<b>TRACK 2: Computational Intelligence</b>		
<b>Section head</b>		Yuriy Zaychenko
<b>Scientific Secretary</b>		Bohdan Chapaliuk
1	<b>Oleksandr Makarenko</b>	Toward the Mentality Accounting in Social Systems Modeling
2	<b>Yevgeniy Bodyanskiy, Olena Boiko, Yuriy Zaychenko, Galib Hamidov and Anna Zelikman</b>	The Hybrid GMDH-Neo-fuzzy Neural Network in Forecasting Problems in Financial Sphere
3	<b>Helen Zaichenko</b>	Fuzzy Cooperative Games of Two Players Under Uncertainty Conditions
4	<b>Mykola Malyar, Mykola Robotyshyn and Maryana Sharkadi</b>	Churn Prediction Estimation Based on Machine Learning Methods
5	<b>Bohdan Chapaliuk and Yuriy Zaychenko</b>	Review of Semi-Supervised Learning Methods for Medical Computer-Aided Diagnosis Systems
6	<b>Nataliia Tmienova and Vitaliy Snytyuk</b>	Method of Deformed Stars for Global Optimization
7	<b>Volodymyr Havryliuk</b>	ANFIS Based Detecting of Signal Disturbances in Audio Frequency Track Circuits

**08.10.2020**

**ORAL SESSIONS**  
(10:00 – 13:00)

**TRACK 1: System Analysis of Complex Systems**

**Section head** N.D. Pankratova

**Scientific Secretary** Y.A. Ptukha

1	<b>Michael Zgurovsky, Andriy Boldak, Dmitry Lande, Kostiantyn Yefremov and Maria Perestyuk</b>	Predictive Online Analysis of Social Transformations based on the Assessment of Dissimilarities between Government Actions and Society's Expectations
2	<b>Valery Gulyayev and Olena Andrusenko</b>	Deep Borehole Trajectory Optimization on the Basis of the Lagrange Problem Statement
3	<b>Viktor Gaydaychuk, Nataliya Shlyun, Lyudmyla Shevchuk and Oleksandr Kutsman</b>	Modelling Discontinuous Stress Fields in Multilayer Coatings Of Automobile Roads
4	<b>Olha Chernukha, Yurii Bilushchak and Bohdan Pakholok</b>	System Approach to Mathematical Description of Transport Processes with Chemical Reaction in Multiphase Multicomponent Body
5	<b>Hrygorii Hnatiienko, Volodymyr Kudin, Andriy Onyshchenko, Vitaliy Snytyuk and Alexander Kruhlov</b>	Greenhouse Gas Emission Determination Based on the Pseudo-Base Matrix Method for Environmental Pollution Quotas Between Countries Allocation Problem
6	<b>Oleg Barabash, Halyna Tverdenko, Valentyn Sobchuk, Andrii Musienko and Nataliia Lukova-Chuiko</b>	The Assessment of the Quality of Functional Stability of the Automated Control System with Hierarchic Structure
7	<b>Sergiy Syrota, Viacheslav Liskin and Sergii Kopychko</b>	Using Galois Connection to Hierarchical Classifying Chunks in Ontology-Based E-learning System



<b>TRACK 4: Data Science and Risk Management in Financial World</b>		
<b>Section head</b>		N.V.Kuznetsova
<b>Scientific Secretary</b>		L. B. Levenchuk
1	<b>Petro Bidyuk, Sergii Polozhaenko, Nataliia Kuznietsova and Liudmyla Levenchuk</b>	Probabilistic Data Analysis in Non-Stationary Processes Forecasting
2	<b>Lidiya Guryanova, Lyudmila Bogachkova, Olexandr Zyma, Mariia Novosel, Nataliya Poluektova and Vitalii Gvozdytskyi</b>	Models of Estimation and Analysis of a Systemic Risk in the Banking Sector
3	<b>Yurii Selin, Tatyana Shulkevych, Mykola Bohdanenko and Olena Zhdanova</b>	Information Technology of Data Mining and Forecasting of Nonlinear Non-Stationary Processes
4	<b>Nataliia Kuznietsova and Maryna Kuznietsova</b>	Data Mining Methods Application for Increasing the Data Storage Systems Fault-Tolerance
<b>LUNCH BREAK</b> (13:00 – 14:00)		
<b>ORAL SESSIONS</b> (14:00 – 17:30)		
<b>TRACK 1: System Analysis of Complex Systems</b>		
<b>Section head</b>		P.I. Bidyuk
<b>Scientific Secretary</b>		Y.A. Ptukha
1	<b>Illia Savchenko</b>	New Approach for Processing Cross-Consistency Matrix in Modified Morphological Analysis Method
2	<b>Hennadii Haiko, Illia Savchenko and Ivan Matviichuk</b>	A Morphological Analysis Method-Based Model of Assessing Territories for Underground Parking Lots
3	<b>Oleh Andriichuk, Vitaliy Tsyganok, Sergii Kadenko and Yaroslava Porplenko</b>	Experimental Research of Impact of Order of Pairwise Alternative Comparisons upon Credibility of Expert Session Results
4	<b>Alexey Malishevsky</b>	Applications of Fractal Analysis in Science, Technology, and Art: A Case Study on Geography of Ukraine

5	<b>Valerii Zhabin, Valentina Zhabina and Oleksandr Verba</b>	Asynchronous On-Line Float-Point Computations in Systems with Direct Connections between Computation Units
6	<b>Oleg Barabash, Halyna Shevchenko, Nataliia Dakhno, Yuriy Kravchenko and Olga Leshchenko</b>	Effectiveness of Targeting Informational Technology Application
7	<b>Ebru Aydındağ Bayrak and Pınar Kirci</b>	Fractal Analysis of Thyroid Ultrasound Image Data Evaluation
8	<b>Stanislav Tarasevych and Ivan Ostroumov</b>	A Light Statistical Method of Air Traffic Delays Prediction