



# IntelITSIS

## Programme of the 2nd International Workshop on Intelligent Information Technologies & Systems of Information Security (IntelITSIS-2021)

**Khmelnytskyi, Ukraine, March 24 – 26, 2021**

### Time regarding the Kyiv

Countries which represent authors	Time in countries regarding the time of Ukraine
Egypt	The same
Czech Republic	- 1
Austria	- 1
Turkey	+ 1
Kazakhstan	+ 4
Morocco	- 1
Slovak Republic	- 1
Poland	- 1
United Kingdom	- 2
United States	- 7
Estonia	The same
Greece	The same

## Timetable of the Workshop

Time (Kyiv)	March 24 <sup>th</sup> 2021	March 25 <sup>th</sup> 2021	March 26 <sup>th</sup> 2021
9.00		Section Session 1 Intelligent Information Technologies	Section Session 2 Systems of Information Security
11.00		Coffee Break	Coffee Break
11.30		Section Session 2 Systems of Information Security	Section Session 1 Intelligent Information Technologies
13.00		Lunch	Lunch
14.00	<b>Plenary Session</b> Welcome Secure and Intelligent World	Section Session 1 Intelligent Information Technologies	Section Session 1 Intelligent Information Technologies
15.45	Coffee Break	Coffee Break	Coffee Break
16.00	<b>Plenary Session</b> Secure and Intelligent World	Section Session 2 Systems of Information Security	<b>Plenary Session</b> Awards and Close Ceremony

### **Presentation timing:**

Invited speakers – 25 minutes + 5 minutes Q&A;

Session talks – 7-10 minutes + 3-5 minutes Q&A.

Each session includes additional 10 minutes for discussion.

### **Testing of Connection:**

March 24<sup>th</sup>, 2021, 13.45-14.00 (1.45 PM – 02.00 PM)

March 25<sup>th</sup>, 2021, 08.45-09.00 (8.45 AM – 09.00 AM)

March 26<sup>th</sup>, 2021, 08.45-09.00 (8.45 AM – 09.00 AM)

### **Zoom links:**

Plenary session	<a href="https://us02web.zoom.us/j/74952395521?pwd=Z1g0a01XN3RR000MGxibDdEWjh1UT09">https://us02web.zoom.us/j/74952395521?pwd=Z1g0a01XN3RR000MGxibDdEWjh1UT09</a> Meeting ID: 749 5239 5521 Password: 123456
Session 1 Intelligent Information Technologies	<a href="https://us02web.zoom.us/j/74952395521?pwd=Z1g0a01XN3RR000MGxibDdEWjh1UT09">https://us02web.zoom.us/j/74952395521?pwd=Z1g0a01XN3RR000MGxibDdEWjh1UT09</a> Meeting ID: 749 5239 5521 Password: 123456
Session 2 Systems of Information Security	<a href="https://us02web.zoom.us/j/74952395521?pwd=Z1g0a01XN3RR000MGxibDdEWjh1UT09">https://us02web.zoom.us/j/74952395521?pwd=Z1g0a01XN3RR000MGxibDdEWjh1UT09</a> Meeting ID: 749 5239 5521 Password: 123456

## Plenary Session Schedule

Plenary sessions	Invited presentations
Welcome Secure and Intelligent World  <b>March 24<sup>th</sup> 2021</b> <b>14.00-17.00</b>  Moderators: Tetiana Hovorushchenko, Sergii Lysenko	<b>14.00-14.20</b> <i>Greetings from the IntelITSIS Organizers:</i> <b>Professor Tetiana Hovorushchenko</b> , Khmelnytskyi National University, Ukraine (General Chair of the Workshop) <b>Professor Oleg Syniuk</b> , Vice-Rector of Khmelnytskyi National University, Ukraine <b>DrSc Sergii Lysenko</b> , Khmelnytskyi National University, Ukraine (International Program Committee Chair)  <b>14.20-14.30</b> <i>Trends of the IntelITSIS-2021</i> <b>Professor Tetiana Hovorushchenko</b> , Khmelnytskyi National University, Ukraine  <b>14.30-15.10</b> <i>HealthSupervisor: Mobile Application for Round-the-Clock Remote Monitoring of the Human Functional State</i> <b>Professor Anatoliy Melnyk</b> , The John Paul II Catholic University of Lublin, Poland, Intron Ltd, Ukraine; Yurii Morozov, Bohdan Havano, Petro Hupalo, Intron Ltd, Ukraine  <b>15.10-15.45</b> <i>A High-Level View of Cybersecurity</i> <b>Professor George Markowsky</b> , Missouri University of Science and Technology, USA  <b>15.45 – 16.00</b> <i>Coffee Break</i>  <b>16.00-16.30</b> <i>Intelligent System for Building Separation on a Semantically Segmented Map</i> <b>Professor Volodymyr Hnatushenko</b> , Dnipro University of Technology, Ukraine; Vadym Zhernovyi, Oles Honchar Dnipro National University, Ukraine; Dr Iryna Udovyk, Dnipro University of Technology, Ukraine; Olga Shevtsova, Dnipro University of Technology, Ukraine  <b>16.30-17.00</b> <i>Intelligent Information Technology for Providing Human Resources to Projects in a Multi-Project Environment</i> Dr Nataliia Dotsenko, O.M. Beketov National University of Urban Economy in Kharkiv, Ukraine; <b>Dr Dmytro Chumachenko</b> , National Aerospace University "Kharkiv Aviation Institute", Ukraine; Dr Yuliia Husieva, O.M. Beketov National University of Urban Economy in Kharkiv, Ukraine;

	<p>Dr Iryna Kadykova, O.M. Beketov National University of Urban Economy in Kharkiv, Ukraine;          Professor Igor Chumachenko, O.M. Beketov National University of Urban Economy in Kharkiv, Ukraine</p>
<p>Awards and Close Ceremony  <b>March 26<sup>th</sup> 2021</b>  <b>16.00-16.30</b>          Moderators:          Tetiana Hovorushchenko,          Sergii Lysenko</p>	<p><b>16.00-16.30</b>  <i>Awards and Close Ceremony</i></p>

## Section Sessions Schedule

Section Sessions	Presentations
<b>Section Session 1</b> <b>Intelligent Information Technologies</b> <b>March 25<sup>th</sup> 2021</b> <b>09.00-11.00</b>  <b>Moderators:</b> Tetiana Hovorushchenko, Yelyzaveta Hnatchuk, Olga Pavlova	<p>Serhii Leoshchenko, Andrii Oliinyk, Sergey Subbotin and Vadym Shkarupylo  <i>Using the Actor-Critic method for population diversity in neuroevolutionary synthesis</i></p> <p>Anastasiia Deineko, Yevgeniy Bodyanskiy, Oleksandr Hontsa and Oleksandr Zeleniy  <i>Convolutional hyper basis function neural network and its online learning in the image recognition task</i></p> <p>Kateryna Yalova, Kseniia Yashyna and Iryna Ivanochko  <i>Neural Approach for Named Entity Recognition</i></p> <p>Bohdan Durnyak, Mikola Lutskiv, Petro Shepita, Danylo Hunko and Nataliia Savina  <i>Formation of Linear Characteristic of Normalized Raster Transformation for Rhombic Elements</i></p> <p>Bohdan Durnyak, Mikola Lutskiv, Petro Shepita, Roman Karpyn and Nataliia Savina  <i>Determination of the Optical Density of Two-Parameter Tone Transfer for a Short Printing System of the Sixth Dimension</i></p> <p>Sergii Babichev, Mykhailo Yasinskyi, Lyudmyla Yasinska-Damri, Yurii Ratushniak and Volodymyr Lytvynenko  <i>Current State of the Problem of Gene Expression Data Processing and Extraction to Solve the Reverse Engineering Tasks in the Field of Bioinformatics</i></p> <p>Yuliya Sikirda, Tetiana Shmelova, Vyacheslav Kharchenko and Mykola Kasatkin  <i>Intelligent System for Supporting Collaborative Decision Making by the Pilot/Air Traffic Controller in Flight Emergencies</i></p> <p>Andrii Safonyk, Maksym Mishchanchuk and Volodymyr Lytvynenko  <i>Intelligent information system for the determination of iron in coagulants based on a neural network</i></p> <p>Svitlana Petrasova and Nina Khairova  <i>Information Technology for Extraction of Coherent Text Fragments from Scientometric Databases</i></p>
<b>Section Session 1</b> <b>Intelligent Information Technologies</b> <b>March 25<sup>th</sup> 2021</b> <b>14.00-15.45</b>	<p>Mykola Skyba, Tetiana Hovorushchenko, Valeriy Martynyuk, Olexander Zasornov and Olga Pavlova  <i>Intelligent Solar Tracking System as a Prospect for Developing the Alternative Energetics in Ukraine</i></p>

<p>Moderators: Tetiana Hovorushchenko, Yelyzaveta Hnatchuk, Olga Pavlova</p>	<p>Tetiana Hovorushchenko, Yelyzaveta Hnatchuk, Alla Herts and Oksana Onyshko <i>Intelligent Information Technology for Supporting the Medical Decision-Making Considering the Legal Basis</i></p> <p>Ivan Lopatto, Mykyta Lebiga, Yurii Forkun and Artem Boyarchuk <i>Method for Determining the Informativeness of the Software Requirements Specifications</i></p> <p>Yelyzaveta Hnatchuk, Olga Pavlova and Krystyna Havrylyuk <i>Method of Forecasting the Characteristics and Evaluating the Implementation Success of IT Projects Based on Requirements Analysis</i></p> <p>Yaroslav Hnatchuk, Alina Hnatchuk, Maryan Pityn, Ivan Hlukhov and Olga Cherednichenko <i>Intelligent Decision Support Agent Based on Fuzzy Logic in Athletes' Adaptive E-Learning Systems</i></p> <p>El Bouhissi Houda, Micipsa Adel, Anis Ketam and Abdel-Badeeh Salem <i>Towards an Efficient Knowledge-based Recommendation System</i></p> <p>Vyacheslav Repeta, Valeriy Zhydetskyy, Ihor Liakh and Olga Cherednichenko <i>Modeling with Fuzzy Logic the Migration Capacity of UV-ink Components as a Factor of Potentially Harmful Pollution of Packaging</i></p> <p>Sergey Ivanov, Nataliia Maksyshko and Mykola Ivanov <i>Neural network forecasting using Big data</i></p>
<p>Section Session 1 Intelligent Information Technologies</p> <p><b>March 26<sup>th</sup> 2021</b> <b>11.30-13.00</b></p> <p>Moderators: Tetiana Hovorushchenko, Yelyzaveta Hnatchuk, Olga Pavlova</p>	<p>Tetiana Neskorodieva and Eugene Fedorov <i>Method for Automatic Processing of Audit Content Based On Bidirectional Neural Network Mapping</i></p> <p>Eduard Manziuk, Alexander Barmak, Iurii Krak, Olexander Mazurets and Tetiana Skrypnyk <i>Formal Model of Trustworthy Artificial Intelligence Based On Standardization</i></p> <p>Petro Kravets, Vasyl Lytvyn, Yevhen Burov, Oksana Oborska, Victoria Vysotska and Lyudmyla Dzyubyk <i>Stochastic Game Model of Data Clustering</i></p> <p>Iurii Krak, Alexander Barmak and Pavlo Radiuk <i>Detection of Early Pneumonia on Individual CT Scans with Dilated Convolutions</i></p> <p>Nickolay Rudnichenko, Vladimir Vychuzhanin, Natalia Shibaeva, Svetlana Antoshchuk and Petrov Igor <i>Intellectual Information System for Supporting Text Data Rephrasing Processes Based on Deep Learning</i></p>

	<p>Oleksiy Kozlov  <i>Optimal Selection of Membership Functions Types for Fuzzy Control and Decision Making Systems</i></p> <p>Vsevolod Senkivskyy, Iryna Pikh, Sergii Babichev, Alona Kudriashova and Nataliia Senkivska  <i>Modeling of Alternatives and Defining the Best Options for Websites Design</i></p>
<p>Section Session 1  Intelligent Information Technologies</p> <p><b>March 26<sup>th</sup> 2021</b>  <b>14.00-15.45</b></p> <p>Moderators:</p>	<p>Bohdan Kovalskyi, Myroslava Dubnevych and Tetyana Holubnyk  <i>Information model for determining the significance of factors influencing the level of digital noise in photographic images</i></p>
<p>Tetiana Hovorushchenko,  Yelyzaveta Hnatchuk,  Olga Pavlova</p>	<p>Bohdan Yeremenko, Yuliia Riabchun, Vitalii Ploskiy, Daoud Mezzane, Iryna Aznaurian and Natalia Kryvinska  <i>Intelligent information technologies implementation to the process of professional self-identification</i></p>
	<p>Serhiy V. Balovskyak, Mariana D. Borch, Michal Gregus, Hrystyna S. Odaiska, Nataliya F. Serpak  <i>Automatic processing of digital X-ray medical images by bilateral filtration method</i></p>
	<p>Valerii Lovkin, Andrii Oliinyk and Yurii Lukashenko  <i>Air Pollution Prediction as a Source for Decision Making Framework in Medical Diagnosis</i></p>
	<p>Orest Khamula, Oleksandr Tymchenko, Svitlana Vasiuta, Olha Sosnovska and Nataliia Kunanets  <i>Synthesis and Research of a Model of Factors of Infographics Compositional Design with Elements of Visual Communication</i></p>
	<p>Yuriy Turbal, Mariana Turbal, Andriy Bomba, Abd Alkaleg Hsen Driwi and Nataliia Kunanets  <i>Modification of the "piramidal" algorithm of the small time series forecasting</i></p>
	<p>Roman Gramyak, Hrystyna Lipyannina-Goncharenko, Anatoliy Sachenko, Taras Lendyuk and Diana Zahorodnia  <i>Intelligent Method of a Competitive Product Choosing based on the Emotional Coloring Feedbacks</i></p>
	<p>Maryna Zharikova, Volodymyr Sherstjuk and Bohdan Sakovych  <i>Decision-support system for spatially distributed multi-hazard risk analysis</i></p>

Section Sessions	Presentations
<p>Section Session 2 Systems of Information Security</p> <p><b>March 25<sup>th</sup> 2021</b> <b>11.30-13.00</b></p> <p>Moderators: Oleh Savenko, Sergii Lysenko, Andrii Nicheporuk</p>	<p>Ihor Pilkevych, Oleg Boychenko, Nadiia Lobanchykova, Tetiana Vakaliuk and Serhiy Semerikov <i>Method of Assessing the Influence of Personnel Competence on Institutional Information Security</i></p> <p>Oleg Bisikalo, Olesia Boivan, Oksana Kovtun, Viacheslav Kovtun and Nina Khairova <i>Precision automated phonetic analysis of speech signals for information technology of text-dependent authentication of a person by voice</i></p> <p>Vyacheslav Gorev, Alexander Gusev and Valerii Korniienko <i>Fractional Gaussian noise traffic prediction based on the Walsh functions</i></p> <p>Sergii Lysenko, Kira Bobrovnikova, Piotr Gaj and Tomas Sochor <i>Resilient Computer Systems Development for Cyberattacks Resistance</i></p> <p>Oleksandr Tymchenko, Bohdana Havrysh, Mariya Nazarkevych, Oleksandr O. Tymchenko and Orest Khamula <i>Architecture and Graphic Interface of the Simulator Personal Local Wireless Networks</i></p> <p>Gulmira Shakhmetova, Zhanat Saukhanova, Nur Izura Udzir, Altynbek Sharipbay and Nurgazy Saukhanov <i>Application of Pseudo-Memory Finite Automata for Information Encryption</i></p> <p>Stetsyuk Mykola, Stetsyuk Vasyl, Bohdan Savenko, Savenko Oleg and Maciej Dobrowolski <i>Implementation of Control by Parameters of Client Automated Workplaces of Specialized Information Systems for Neutralization Malware</i></p>
<p>Section Session 2 Systems of Information Security</p> <p><b>March 25<sup>th</sup> 2021</b> <b>16.00-17.45</b></p> <p>Moderators: Oleh Savenko, Sergii Lysenko, Andrii Nicheporuk</p>	<p>Sedat Akylek, Ramazan Koyutürk and Hakan Kutucu <i>GPU Implementation of Quantum Secure ABC Cryptosystem on Cuda</i></p> <p>Iryna Moiseienko, Ivanna Droniuk, Olena Gorina, Halina Mychailishyn and Kateryna Dubska <i>Automated Compressed Image Recovery Implementation for Video Surveillance Systems as Information Security Improvement</i></p> <p>Myroslava Bublyk, Victoria Vysotska, Lyubomyr Chyrun, Valentyna Panasyuk and Oksana Brodyak <i>Assessing Security Risks Method in E-Commerce System for IT Portfolio Management</i></p> <p>Anastasiia Nicheporuk, Andrii Nicheporuk, Anatoliy Sachenko, Oleg Sachenko and Andrii Kazantsev <i>A System for Detecting Anomalies and Identifying Smart Home Devices Using Collective Communication</i></p>

	<p>Lubomir Sikora, Rostislav Tkachuk, Natalia Lysa, Ivanna Dronyuk, Olga Fedevych and Romana Talanchuk  <i>Information-resource and cognitive concept of threat's influence identification on technogenic system based on the cause and category diagrams integration</i></p> <p>Paiuk Vadym, Kosenkov Volodymyr, Savenko Oleg, Nicheporuk Andrii and Geidarova Olena  <i>Application of Multifactor Analysis for the Purpose of Detecting Malicious Software Implants of the Software in Local Computer Networks</i></p> <p>Sergii Surkov and Oleksander Martinyuk  <i>Authentication and request processing model in high load modes for IoT components</i></p>
<p>Section Session 2          Systems of Information Security</p>	<p>Volodymyr Morkun, Natalia Morkun, Andrii Pilnyak, Oleksandra Serdiuk, Serhiy Semerikov and Irina Gaponenko  <i>Cyber-physical System for Increasing the Efficiency of the Iron Ore Desliming Process</i></p>
<p><b>March 26<sup>th</sup> 2021</b>  <b>09.00-11.00</b></p>	<p>Heorhii Zemlianko, Volodymyr Torianyk and Vyacheslav Kharchenko  <i>IMECA Based Assessment of Internet of Drones Systems Cyber Security Considering Radio Frequency Vulnerabilities</i></p>
<p>Moderators:          Oleh Savenko,          Sergii Lysenko,          Andrii Nicheporuk</p>	<p>Oleksandr Drozd, Olena Ivanova, Kostiantyn Zashcholkin, Vitaliy Romankevich and Julia Drozd  <i>Checkability Important for Fail-Safety of FPGA-based Components in Critical Systems</i></p>
	<p>Oleksandr Martynyuk, Lyudmila Sugak, Hanna Stepova, Victor Antoniuk and Igor Mileiko  <i>Models of Distributed Systems Testing Based on Energy Consumption in Behavior</i></p>
	<p>Viktor Melnyk  <i>Data Structures and Lookup Algorithms Investigation for the IEEE 802.15.4 Security Procedures Implementation</i></p>
	<p>Kira Bobrovnikova, Sergii Lysenko, Dmytro Denysiuk, Peter Popov and Andrii Goroshko  <i>Technique for IoT attacks detection based on the energy consumption analysis</i></p>
	<p>Kostiantyn Zashcholkin, Oleksandr Drozd, Olena Ivanova, Ruslan Shaporin and Mykola Kuznetsov  <i>An Approach to Stego-Container Organization in FPGA Systems for Approximate Data Processing</i></p>
	<p>Kashtalian Antonina and Tomas Sochor  <i>K-means Clustering of Honeynet Data with Unsupervised Representation Learning</i></p>

Mykhailo Kasianchuk, Ihor Yakymenko, Vasyl Yatskiv, Stepan Ivasiev and  
Andriy Sverstiuk  
*Same bit-size moduli formation of residue number system for application  
in asymmetric cryptography*