



**TARAS SHEVCHENKO NATIONAL UNIVERSITY OF KYIV
(FACULTY OF INFORMATION TECHNOLOGY, FACULTY OF COMPUTER SCIENCE AND
CYBERNETICS)**

**NATIONAL TECHNICAL UNIVERSITY OF UKRAINE "IGOR SIKORSKY KYIV POLYTECHNIC
INSTITUTE"**

**VIKTOR GLUSHKOV INSTITUTE OF CYBERNETICS OF THE NAS OF UKRAINE
INSTITUTE OF INFORMATION TECHNOLOGY AND LEARNING TOOLS OF THE NAES OF
UKRAINE**

**INSTITUTE FOR INFORMATION RECORDING OF THE NAS OF UKRAINE
INSTITUTE OF SOFTWARE SYSTEMS OF THE NAS OF UKRAINE
THE COUNCIL OF YOUNG SCIENTISTS OF THE FACULTY OF COMPUTER SCIENCE AND
CYBERNETICS AND THE FACULTY OF INFORMATION TECHNOLOGY OF TARAS
SHEVCHENKO NATIONAL UNIVERSITY OF KYIV**

PROGRAM

VIII International conference



IT&I



Information Technology and Implementation

December 01-03, 2021, Kyiv

The conference is planned to be held as video conference using the Zoom platform on 1 December, 2021 at **10 a.m.**

Link: <https://zoom.us/j/4263476258?pwd=SVNYOTZwL1luREVwWmlyWVhZS3RGUT09>
Code: 177837

Contact details

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PROGRAM COMMITTEE



General Chairs

- **Prof. Anatoly Anisimov**, Taras Shevchenko National University of Kyiv, Ukraine
- **Prof. Vitaliy Snytyuk**, Taras Shevchenko National University of Kyiv, Ukraine

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- **Prof. Aldrich Chris**, Western Australian School of Mines, Australia
- **Prof. Andreas Pester**, Fachhochschule Kärnten, Austria
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- **Prof. Oleksandr Marchenko**, Taras Shevchenko National University of Kyiv, Ukraine
- **Prof. Sándor Bozóki**, Computer and Automation Research Institute Hungarian Academy of Sciences, Hungary
- **Prof. Vitaliy Tsyganok**, Institute for Information Recording of NAS of Ukraine, Ukraine
- **Prof. Vladimir Vovk**, Royal Holloway, University of London, United Kingdom



ORGANIZING COMMITTEE



Organizing committee

Anatoly Anisimov	–	Correspondent-member of National Academy of Sciences of Ukraine, Doctor of Physical and Mathematical Sciences, Professor, Dean of the Faculty of Computer Sciences and Cybernetics.
Vitaliy Snytyuk	–	Doctor of Technical Sciences, Professor, Dean of the Faculty of Information Technology.
Anatolii Pashko	–	Doctor of Physical and Mathematical Sciences, Professor, Professor of the Department of Theoretical Cybernetics of the Faculty of Computer Sciences and Cybernetics.
Kateryna Kolesnikova	–	Doctor of Technical Sciences, Professor, Professor of the Department of Technologies Management of the Faculty of Information Technology.
Mykola Nikitchenko	–	Doctor of Physical and Mathematical Sciences, Professor, Head of the Department of Theory and Technology of Programming of the Faculty of Computer Sciences and Cybernetics.
Nataliia Lukova-Chuiko	–	Doctor of Technical Sciences, Professor, Head of the Department of Cybersecurity and Information Protection of the Faculty of Information Technology.
Oleh Ilarionov	–	Candidate of Technical Sciences, Associate Professor, Head of the Department of Intelligent Technologies of the Faculty of Information Technology.
Oleksandr Marchenko	–	Doctor of Physical and Mathematical Sciences, Professor, Professor of the Department of Mathematical Informatics of the Faculty of Computer Sciences and Cybernetics.

Oleksii Bychkov	–	Doctor of Technical Sciences, Professor, Head of the Department of Program Systems and Technology of the Faculty of Information Technology.
Serhii Toliupa	–	Doctor of Technical Sciences, Professor, Professor of the Department of Cybersecurity and Information Protection of the Faculty of Information Technology.
Taras Panchenko	–	Candidate of Physical and Mathematical Sciences, Associate Professor, Associate Professor of the Department of Theory and Technology of Programming of the Faculty of Computer Sciences and Cybernetics.
Valentyna Pleskach	–	Doctor of Economics, Candidate of Technical Sciences, Professor, Head of the Department of Applied Information Systems of the Faculty of Information Technology.
Viktor Morozov	–	Candidate of Technical Sciences, Professor, Head of the Department of Technologies Management of the Faculty of Information Technology.
Volodymyr Zaslavsky	–	Doctor of Technical Sciences, Professor, Professor of the Department of Mathematical Informatics of the Faculty of Computer Sciences and Cybernetics.
Iurii Krak	–	Correspondent-member of National Academy of Sciences of Ukraine, Doctor of Physical and Mathematical Sciences, Professor, Head of the Department of Theoretical Cybernetics of the Faculty of Computer Sciences and Cybernetics.
Yurii Samokhvalov	–	Doctor of Technical Sciences, Professor, Professor of the Department of Intelligent Technologies of the Faculty of Information Technology.
Yurii Kravchenko	–	Doctor of Technical Sciences, Professor, Head of the Department of Network and Internet Technologies of the Faculty of Information Technology.

Secretariat

Anastasiia Dubnytska	–	(specialist, FIT, Taras Shevchenko KNU)
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Yuliia Shevchuk	–	(PhD in Physical and Mathematical Sciences, Head of the council of young scientists, FCSC, Taras Shevchenko KNU)



CONFERENCE TIMETABLE



Wednesday, December 01, 2021

Plenary sessions

Link: <https://zoom.us/j/4263476258?pwd=SVNYOTZwL1luREVvWmlyWVhZS3RGUT09>
Code: 177837

9:30 – 10:00	Registration of conference participants
10:00 – 10:15	Opening of the Conference
10:20 – 13:00	Plenary sessions
11:40 – 12:00	Break
14:00 – 18:00	Parallel sessions

Section 1. Artificial Intelligence Technologies

Link: <https://zoom.us/j/4263476258?pwd=SVNYOTZwL1luREVvWmlyWVhZS3RGUT09>
Passcode: 177837

Section 2. Cyberspace Protection Technologies

Link: <https://zoom.us/j/2921506465?pwd=OFBjMXovL0dYTk9WdzNjdHFyT29zUT09>
Passcode: 240108

Section 3. Data Analytics &

Section 4. Digital Project Management Technologies

Link:

<https://us02web.zoom.us/j/87848843627?pwd=V3NPY01WcERTOW5wSGsxL0dRR2N3dz09>
Passcode: 230648

Section 5. E-commerce, E-government and E-learning Technologies

Link: <https://zoom.us/j/97292656716?pwd=eWtYRnRnQrWnJjRFF0RjB4MGVkrnYydz09>
Passcode: 266121

Section 6. Mathematical Foundations of Information Technology

Link: <https://zoom.us/j/4263476258?pwd=SVNYOTZwL1luREVvWmlyWVhZS3RGUT09>
Passcode: 177837

Section 7. Network and Internet Technologies

Link: <https://us02web.zoom.us/j/85218612573>



CONFERENCE PROGRAMME



01

Wednesday

DECEMBER

OPENING OF THE CONFERENCE (10:00 – 10:15) Moderator V.Y. Snytyuk
Welcome speech (10:00 – 10:15):
Prof. Hanna Tolstanova , Taras Shevchenko National University of Kyiv, Ukraine
Prof. Anatoly Anisimov , Taras Shevchenko National University of Kyiv, Ukraine
Prof. Mykola Nikitchenko , Taras Shevchenko National University of Kyiv, Ukraine
Prof. Oleksandr Marchenko , Taras Shevchenko National University of Kyiv, Ukraine
Prof. Andreas Pester , British University, Egypt
Prof. Vitaliy Tsyganok , Institute for Information Recording of NAS of Ukraine, Ukraine
PLENARY SESSIONS
(10:20 – 11:40) Moderator M.S. Nikitchenko
https://zoom.us/j/4263476258?pwd=SVNYOTZwL1luREVwWmlyWVhZS3RGUT09 Code: 177837
(10:20 – 10:40)
Eugene Fedorov and Olga Nechyporenko. Forecast Method Based on the Time-Delay Mean Field Boltzmann Machine
(10:40 – 11:00)
Sergiy Gnatyuk. QKD-based Cyber Security in Modern Information and Communication Technologies
(11:00 – 11:20)
Galyna Chornous and Yana Fareniuk. Optimization of Portfolio Marketing Strategy Based on Data Science Technologies
(11:20 – 11:40)
Larysa Katerynych, Maksym Veres and Eduard Safarov. Transformer-based Model for Text Classification in Ukrainian
COFFEE BREAK (11:40 – 12:00)
PLENARY SESSIONS
(12:00 – 13:00) Moderator M.S. Nikitchenko
https://zoom.us/j/4263476258?pwd=SVNYOTZwL1luREVwWmlyWVhZS3RGUT09 Code: 177837
(12:00 – 12:20)
Oleksandr Pliushch, Yurii Kravchenko and Anatolii Rybydajlo. Studying Pulse-forming Networks with Help of Computer Simulation
(12:20 – 12:40)
Oleksii Bilyk and Iryna Vergunova. Information System for Meetings, Conferences and Trainings with Voting Possibility

(12:40 – 13:00) Oksana Mulesa, Oleksandr Mitsa, Tamara Radivilova, Igor Povkhan and Olena Melnyk. Development of a Method to Find the Location of a Logistics Hub		
LUNCH BREAK (13:00 – 14:00)		
PARALLEL SESSIONS (14:00 – 18:00)		
Tracks 1: Artificial Intelligence Technologies		
Link: https://us02web.zoom.us/j/84401005201?pwd=TE9ZOUtzY0g2aVovQXVFUjVTTFRoQT09 Passcode: 212329		
Head: Oleksandr Marchenko, Yurii Samokhvalov Secretary: Mykola Kiktev		
1.	(14:00 – 14:15) Serhii Vladov, Yurii Shmelov and Ruslan Yakovliev	Parameter Debugging (Regulation) Method of Helicopters Aircraft Engines in Flight Modes Using Neural Networks
2.	(14:15 – 14:30) Iryna Vergunova	The Neural Network Method for Solving an Evolutionary Partial Differential Equation in a Bounded Domain with a Piecewise Smooth Surface
3.	(14:30 – 14:45) Volodymyr Taranukha, Tetiana Horokhova and Yaroslav Linder	On semi-automatic creation of dataset for multi-document automatic summarization of news articles an forum threads
4.	(14:45 – 15:00) Oleksandr Marchenko and Mariam Isoieva	Automated bot detection based on coherence metric
5.	(15:00 – 15:15) Vasyl Tereshchenko and Yaroslav Tereshchenko	Optimizing Algorithms of Text Detection on Images for MD using structural approaches
COFFEE BREAK (15:15 – 15:30)		
6.	(15:30 – 15:45) Ihor Zavadskiy and Viktoriia Zavadska	Reverse Multi-Delimiter Codes in English and Ukrainian Natural Language Text Compression
7.	(15:45 – 16:00) Anastasiia Ivanytska, Liudmyla Zubyk, Yaroslav Zubyk and Dmitry Ivanov	Development of advertising models based on machine learning technologies
8.	(15:45 – 16:00) Serhii Kondratiuk, Iurii Krak, Vladislav Kuznetsov and Anatoliy Kulas	Three-dimensional convolutions and temporal data for sign language recognition
9.	(16:00 – 16:15) Maksym Ogurtsov	Review of Neural Networks Application in UAV Routing Problems
10.	(16:15 – 16:30) Julia Minaeva	The concept of nearest fuzzy sets (Kronecker proximity) and its application for data representation and decision making under uncertainty
11.	(16:30 – 16:45) Karyna Khorolska, Bohdan Bebesko, Alona Desiatko and Vitaliy Lazorenko	3D Models Classification with Use of Convolution Neural Network

12.	(16:45 – 17:00) Oleh Pihnastyi and Olha Ivanovska	Improving the prediction quality for a multi-section transport conveyor model based on a neural network
13.	(17:00 – 17:15) Yuriy Zaychenko and Galib Hamidov	Hybrid GMDH Deep Learning Networks - State-of art and New prospective Trends
14.	(17:15 – 17:30) Maryna Antonevych, Vitaliy Snytyuk and Nataliia Tmienova	The method of fractal structuring as a method of global optimization
Tracks 2: Cyberspace Protection Technologies		
Link: https://zoom.us/j/2921506465?pwd=OFBjMXovL0dYTk9WdzNjdHFyT29zUT09 Passcode: 240108		
Head: Serhii Toliupa Secretary: Volodymyr Nakonechnyi		
1	(14:00 – 14:15) Serhii Toliupa, Ivan Parkhomenko and Viktoriia Antoniuk	Method for identification of critical information infrastructure objects of the state
2	(14:15 – 14:30) Andriy Fesenko, Gabit Omarov, Dzholdas Dzhuruntayev and Sanzhar Umbet	Alternative method of managing cryptocurrency wallets
3	(14:30 – 14:45) Roman Kvyetnyy, Yaroslav Ivanchuk, Andrii Yarovyj and Yurii Horobets	Algorithm for increasing the stability level of cryptosystems
4	(14:45 – 15:00) Volodymyr Nakonechnyi, Natalia Lukova-Chuiko, Anastasiia Petrenko and Anna Kyrylenko	The elimination of human factor and its effects in corrupting security
5	(15:00 – 15:15) Sergei Shtanenko, Yurii Samokhvalov, Serhii Toliupa and Oleksiy Silko	Increasing survivability of technological systems based on the technology of programmable logic device
COFFEE BREAK (15:15 – 15:30)		
6	(15:30 – 15:45) Tetiana Babenko, Andrii Bigdan and Hryhorii Hnatienko	Model for Determining Indicators of the Level of Complex System Protection
7	(15:30 – 15:45) Serhii Khmelevskiy, Ivan Tupitsya, Maksym Parkhomenko and Yan Borovensky	Model of transformation of the alphabet of the encoded data as a tool to provide the necessary level of video image quality in aeromonitoring systems

8	(15:45 – 16:00) Victoria Mironova, Mykola Pyroh and Iryna Harko	Information technology for forecasting and guaranteeing of software-hardware complexes information security indicators
Tracks 3: Data Analytics		Tracks 4: Digital Project Management Technologies
Link: https://us02web.zoom.us/j/87848843627?pwd=V3NPY01WcERTOW5wSGsxL0dRR2N3dz09 Passcode: 230648		
Head: Kateryna Kolesnikova, Volodymyr Zaslavsky Secretary: Olha Mezentseva		Section head: Viktor Morozov Secretary: Olha Mezentseva
1	(14:00 – 14:15) Galyna Chornous and Tetiana Lem	Product Valuation Modeling in Hybrid Recommendation Systems
2	(14:15 – 14:30) Yurii Kryvenchuk, Viktoriia Lakiza, Yuliia Bidak and Iryna Myskiv	Comparative Analysis of Basic Approaches to Implementing Model-Based Recommendation Systems Based on Implicit Information
3	(14:30 – 14:45) Sergiy Zagorodnyuk, Bohdan Sus, Oleksandr Bauzha and Taras Chaikivskyi	Applying the Neural Network Technologies for Cyclohexane Industrial Oxidation Data Analysis
4	(15:00 – 15:15) Bohdan Koval, Iulia Khlevna and Svitlana Shabatska	Development of heart disease diagnosis concept using machine learning
COFFEE BREAK (15:15 – 15:30)		
5	(15:30 – 15:45) Dariya Mochalova, Vladyslav Lavrynovych and Kateryna Kolesnikova	A Machine Learning Approach to the Atherosclerosis Prediction based on clinical data
6	(15:45 – 16:00) Hrygorii Hnatiienko, Volodymyr Domrachev, Volodymyr Saiko, Tatyana Semenenko and Violeta Tretynyk	Application of cluster analysis for condition assessment banks in ukraine
7	(16:00 – 16:15) Lyudmyla Kirichenko, Oksana Pichugina and Hlib Zinchenko	Clustering time series of complex dynamics by features
8	(16:15 – 16:30) Andrii Nikolaiev	Mathematical Word Problem Solution Evaluation via Data Preprocessing Approach
9	(16:30 – 16:45) Huan Zhou, Kateryna Kolesnikova, Viktor Morozov and Oleksandr Ryzhkov	Human Resource Management in international educational service
10	(16:45 – 17:00) Vira Liubchenko, Nataliia Komleva and Svitlana Zinovatna	Hierarchical Evaluation Methodology for Software Requirements Prioritization

**Tracks 5:
E-commerce, E-government and E-learning Technologies**

Link:

<https://zoom.us/j/97292656716?pwd=eWtYRnQrWnJjRFF0RjB4MGVkrNkYydz09>
Код доступа: 266121

Head: Valentyna Pleskach, Taras Panchenko

Secretary: Victoriia Mironova

1	(14:00 – 14:15) Valentyna Pleskach, Viktor Krasnoshchok, Mariia Melnyk, Svitlana Klymenko and Romanas Tumasonis	Current state and trends in the development of e-commerce software protection systems
2	(14:15 – 14:30) Andrii Kopp, Dmytro Orlovskiy and Sergey Orekhov	Towards an Approach to Organization of Decentralized Business Process Model Repository
3	(14:30 – 14:45) Julia Rogushina, Sergiy Priyma, Oksana Strokan and Anatoly Gladun	Use of Semantic Technologies for Validation of e-Learning Outcomes
4	(14:45 – 15:00) Viacheslav Zosimov, Oleksandra Bulgakova and Valeriy Pozdeev	Semantic Profile of Corporate Web Resources
5	(15:00 – 15:15) Viacheslav Liskin, Taras Olefirenko, Alexander Mytnyk and Sergiy Syrota	Ontologically-controlled e-learning systems as a means for developing conceptual thinking of the individual
COFFEE BREAK (15:15 – 15:30)		
6	(15:30 – 15:45) Tetyana Sergeyeva, Dorin Festeu, Sergiy Bronin and Natalya Turlakova	Student – training environment interaction: soft skills development within e-learning
7	(15:45 – 16:00) Alexey Kuttyrev, Dmitriy Khort and Nikolay Kiktev	Development of an information system for the identification of fruits in agricultural robotic complexes
8	(16:00 – 16:15) Ihor Ponomarenko, Igor Panasiuk, Volodymyr Pavlenko, Oleksandr Panasiuk and Oleg Kalmykov	Use of neural networks for pattern recognition in e-commerce
9.	(16:30 – 16:45) Oleksii Bilyk and Iryna Vergunova	Information System for Meetings, Conferences and Trainings with Voting Possibility

Tracks 6:
Mathematical Foundations of Information Technology

Link:

<https://zoom.us/j/4263476258?pwd=SVNYOTZwL1luREVwWmlyWVhZS3RGUT09>
Code: 177837

Head: Oleksii Bychkov, Mykola Nikitchenko
Secretary: Yelyzaveta Zhabska

1	(14:00 – 14:15) Dmitriy Klyushin and Kateryna Golubeva	Statistical and geometrical approaches to homogeneity testing
2	(14:15 – 14:30) Volodymyr Shymanskyi and Yaroslav Sokolovskyy	Variational Method for Solving the Viscoelastic Deformation Problem in Biomaterials with Fractal Structure
3	(14:30 – 14:45) Oleksiy Oletsky	Modeling Information Influences on the Base of Rectangular Stochastic Matrices in Chains of Reasoning with Possible Contradictions
4	(14:45 – 15:00) Oleksii Bychkov, Kateryna Merkulova, Yelyzaveta Zhabska and Oleh Stelmakh	Information Technology for Chest X-Ray Images Analysis
5	(15:00 – 15:15) Borys Kredentser, Dmytro Mogylevych, Iryna Kononova and Ihor Subach	Taking into Account a Priori Uncertainty in the Model of Maintenance of Objects with Time Redundancy
COFFEE BREAK (15:15 – 15:30)		
6	(15:30 – 15:45) George Dimitrov, Galina Panayotova, Vasyl Martsenyuk, Inna Dimitrova, Eugenia Kovatcheva, Boyan Jekov and Iva Kostadinova	Analysis and interpretation of empirical data obtained by BCI Epoch 14+
7	(15:45 – 16:00) Sergiy Prykhodko and Natalia Prykhodko	A Modified Technique for Constructing Nonlinear Regression Models Based on the Multivariate Normalizing Transformations
8	(16:00 – 16:15) Yaroslav Petrivskiy, Mykhailo Tymchuk, Volodymyr Petrivskiy and Viktor Shevchenko	Models and information technology implementation of contact interaction of the edge of a rock cutting tool with granular rocks modeling
9	(16:15 – 16:30) Oleksii Bychkov, Evgen Gurko, Khusainov Denys, Andriy Shatyko, Bedrich Puza and Veronika Novotna	Construction of a Mathematical Model of the Heart Muscle

10	(16:30 – 16:45) Leonid Hulianytskyi, Vyacheslav Korolyov and Oleksandr Khodzinskyi	Solving the problem of vehicle routing on modern quantum-classical cloud services
11.	(16:45 – 17:00) Serhii Denysov and Vladimir Semenov	Theoretical bound of the complexity of some extragradient-type algorithms for variational inequalities in Banach spaces
12.	(17:00 – 17:15) Vasyl Martsenyuk, Marcin Bernas, Aleksandra Klos- Witkowska and Tomasz Gancarczyk	On Parallel Processing of Machine Learning Based On Big Data and Voronoi Tessellation

Tracks 7:
Network and Internet Technologies

Link:

<https://us02web.zoom.us/j/85218612573>

Head: Yurii Kravchenko

Secretary: Andriy Dudnik

1	(14:00 – 14:15) Yurii Kravchenko, Olga Leshchenko, Nataliia Dakhno and Maksym Radko	Comparative evaluation of a universities' websites quality
2	(14:15 – 14:30) Oleksandr Turovsky, Valerii Kozlovskyi, Yuliia Boiko and Vitaliy Klobukov	Substantiation of information technology on improving the accuracy of the signal synchronization received by the radio technical system
3	(14:30 – 14:45) Yaroslav Hladkyi, Myroslava Gladka, Mykola Kostikov and Rostyslav Lisnevskyi	An IoT Solution: A Fitness Trainer
4	(14:45 – 15:00) Kyryl Nikolchev, Yurii Ahafonov, Olena Starkova and Kostiantyn Herasymenko	Method of routing functions virtualization in the modern networks
5	(15:00 – 15:15) Andriy Dudnik, Biljana Presnall, Maksym Tyshchenko and Olexander Trush	Methods of determining the influence of physical obstructions on the parameters of the signal of wireless networks
COFFEE BREAK (15:15 – 15:30)		
6	(15:30 – 15:45) Illia Kovalenko, Yevhen Stepanenko and Mykola Masesov	Methods for increasing the lifetime of wireless sensor networks with excessive number of nodes

7	(15:45 – 16:00) Oleksiy Mavrenkov, Oleksiy Kononov, Viktor Yerko and Andriy Zirka	The Model for Justification of the Structure of Special Purpose Telecommunications System
8	(16:00 – 16:15) Vojtěch Novák, Lukáš Kovář, Michal Stočes and Martin Havránek	IoT and GIS data platform solutions in agricultural
9	(16:15 – 16:30) Taras Lendiel, Nikolay Kiktev and Natalia Pasichnyk	Internet of things control system for the electrical complex of the phytotron
10	(16:30 – 16:45) Jakub Štěpán Novák, Jan Masner, Petr Benda and Alexandr Vasilenko	Driving adoption of agricultural IoT solutions through product design