



# COMPUTER SCIENCE AND INFORMATION TECHNOLOGIES

23-26 September, 2020

Lviv, Ukraine

<http://csit.lp.edu.ua/>

[csit.conference@gmail.com](mailto:csit.conference@gmail.com)

XV<sup>th</sup> International Scientific and Technical Conference

## CONFERENCE PROGRAMME



*Advancing Technology  
for Humanity*

IEEE Ukraine Section

IEEE West Ukraine

AP/ED/MTT/CPMT/SSC Societies

Joint Chapter



Ministry of  
Education and  
Science of Ukraine



National Academy of Sciences of  
Ukraine



Lviv Polytechnic  
National University



Institute of Computer Science and Information  
Technologies



Politechnika Łódzka



Kharkiv National University of Radio Electronics



Western Scientific Center of the National Academy  
of Sciences of Ukraine and of Ministry of  
Education and Science of Ukraine



Karpenko Physico-Mechanical Institute  
of the National Academy of Sciences of Ukraine

23-26 September, 2020, Lviv, Ukraine

## General CSIT 2020 Timetable

September 23	
9.30–10.00	Conference opening
10.00–15.00	Plenary session CSIT + IWIM+ IWPM+IWIMDKKE +IWCMITS
15.30–18.15	International workshop on Inductive modeling
September 24	
10.00–14.00	International workshop on Project Management
10.00–13.10	International Workshop on Computational Methods and Information Transformation Systems
14.00–16.50	Session 1 (Intelligent management technologies)
14.00–17.00	Session 2( Artificial intelligence)
September 25	
10.00–14.20	Session 3 (Mathematical modeling)
10.00–13.30	International Workshop on Information Modeling. Data and Knowledge Engineering
15.00–17.00	Session 4 (Applied Linguistics)
15.00–17.00	Session 5 (Big data and Data sciences)
September 26	
10.00–12.40	Session 6 (Software engineering)
13.00 – 13.30	Final session

### TIME FOR PRESENTATIONS

Paper presentation at the plenary session – 30 min.

Paper presentation at the regular session – 5 min.

Discussion, questions – 5 min.



#### Organized by:

IEEE Ukraine Section

IEEE West Ukraine AP/ED/MTT/CPMT/SSC Societies Joint Chapter

Lviv Polytechnic National University

National Academy of Sciences of Ukraine

Institute of Computer Science and Information Technologies

Technical University of Lodz, Lodz, Poland

Kharkiv National University of Radio Electronics, Kharkiv, Ukraine

International research and training center for information technologies and systems

Western Scientific Center of the National Academy of Sciences of Ukraine and of Ministry of Education and Science of Ukraine

Karpenko Physico-Mechanical Institute of the National Academy of Sciences of Ukraine

**Patronage:** Ministry of Education and Science of Ukraine

**Lviv, UKRAINE**

**23–26 September 2020**

---

**23-26 September, 2020, Lviv, Ukraine**

## INTERNATIONAL PROGRAM COMMITTEE

- Bobalo Yu.** Conference Honorary Chairman, Lviv Polytechnic National University, Ukraine
- Medykovskyy M.** Conference Executive Chairman, Lviv Polytechnic National University, Ukraine
- Stepashko V.** Chairman of International workshop on Inductive Modeling, International Research and Training Centre for Information Technologies and Systems of the NAS and MES of Ukraine
- Bushuyev S.** Co-chairman of International workshop on Project Management, Kiev National University of Construction and Architecture, President of Ukrainian Association of Project Management, Ukraine
- Kunanets N.** Co-chairwoman of International workshop on Project Management, Lviv Polytechnic National University, Ukraine
- Sergienko I.** Honorary Chairman of International workshop on Computational Methods and Information Transformation Systems in honor of prof. Bohdan Popov, Glushkov Institute of Cybernetics of NAS of Ukraine, Ukraine
- Vorobel R.** Executive Chairman of International workshop on Computational Methods and Information Transformation Systems in honor of prof. Bohdan Popov, Karpenko Physico-Mechanical Institute of NAS of Ukraine, Ukraine
- Pasichnyk V.** Chairman of International workshop on Inductive Modeling. Data and knowledge engineering, Lviv Polytechnic National University, Ukraine
- Pichkalyov Ie.** IEEE Ukraine
- Andriychuk M.** IEEE MTT/ED/AP/CPMT/SSC, West Ukraine Chapter, Ukraine
- Andrianov I.** RWTH Aachen University, Aachen, Germany
- Antonov P.** Technical University of Varna, Computer Communications, Bulgaria
- Arkhangelska A.** Palacky University in Olomouc, Czech Republic
- Auzinger W.** Vienna University of Technology, Wien, Austria
- Bazylevych R.** Lviv Polytechnic National University, Ukraine
- Berezsky O.** Ternopil national economic university, Ternopil, Ukraine
- Bidyuk P.** National Technical University of Ukraine "Kyiv Polytechnic Institute"
- Bisikalo O.** Vinnytsia National Technical University, Ukraine
- Camacho A.** Universidad Complutense de Madrid, Spain
- Cañizares P.** Universidad Complutense de Madrid, Spain
- Cardiff J.** Institute of Technology Tallaght (ITT), Ireland
- Čekerevac Z.** "Union - Nikola Tesla" University in Belgrade, Serbia
- Czachorski T.** Institute of Theoretical and Applied Informatics Polish Academy of Sciences, Poland
- Danel R.** University of South Bohemia České Budějovice, Czech Republic
- Danilova V.** Russian Presidential Academy of national economy and public administration
- Dupas R.** University of Bordeaux, France
- Fedasyuk D.** Lviv Polytechnic National University, Ukraine
- Filatov V.** Kharkiv National University of Radioelectronics, Ukraine
- Gelenbe E.** Electrical and Electronic Engineering at Imperial College, London, United Kingdom
- Gozhyj O.** Petro Mohyla Black Sea State University, Ukraine
- Gregus M.** Comenius University in Bratislava, Bratislava, Slovak Republic
- Hogaboam L.** Portland State University, USA
- Kachmarek M.** Technical University of Gdansk, Poland
- Korablyov M.** Kharkiv National University of Radioelectronics, Ukraine
- Kostrobyi P.** Lviv Polytechnic National University, Ukraine
- Krak Iu.** Taras Shevchenko National University of Kyiv, Ukraine
- Kryvinska N.** Vienna University of Technology, Austria
- Levchenko O.** Lviv Polytechnic National University, Ukraine
- Lipiński P.** Technical University of Lodz, Poland

**Lobur M.** Lviv Polytechnic National University, Ukraine  
**Lytvyn V.** Lviv Polytechnic National University, Ukraine  
**Marcus J.** Miami University, Oxford, Ohio  
**Montenegro S.** Julius-Maximilians University of Würzburg, Germany  
**Novak L.** University of Zilina, Slovakia  
**Pawlak F.** Silesian University of Technology, Gliwice, Poland  
**Poniszewska-Maranda A.** Technical University of Lodz, Poland  
**Prasad B.** Florida A&M University, Tallahassee, USA  
**Puchala D.** Lodz University of Technology, Poland  
**Rak J.** Technical University of Gdansk, Poland  
**Repka M.** University of South Bohemia České Budějovice, Czech Republic  
**Rimvydas Laužikas** Vilnius University, Lithuania  
**Rogowski Y.** Technical University of Lodz, Poland  
**Ruminski Ya.** Technical University of Gdansk, Poland  
**Scheller-Boltz D.** Universitat Innsbruck, Austria  
**Seifert C.** Passau University (PU), Germany  
**Setlak G.** Rzeszow University of Technology, Poland  
**Shakhovska N.** Lviv Polytechnic National University, Ukraine  
**Shyrokov V.** Ukrainian Language-Informational Centre, NASU, Ukraine  
**Sikora L.** Lviv Polytechnic National University, Ukraine  
**Spalek J.** University of Zilina, Slovakia  
**Telenyk S.** National Technical University of Ukraine "Kyiv Polytechnic Institute"  
**Tkachenko R.** Lviv Polytechnic National University, Lviv, Ukraine  
**Tsmots I.** Lviv Polytechnic National University, Ukraine  
**Vashchuk F.** University of Central Europe in Skalica  
**Yakovyna V.** Lviv Polytechnic National University, Ukraine  
**Yamazaki T.** Niigata University, Japan  
**Yarovi A.** Vinnytsia National Technical University, Ukraine  
**Yatsymirskyy M.** Lodz University of Technology, Poland  
**Yerokhin A.** Kharkiv National University of Radioelectronics, Ukraine  
**Yurish S.** Technical University of Catalonia, Barcelona, Spain  
**Zhuravchak L.** Lviv Polytechnic National University, Lviv, Ukraine  
**Zizka J.** Mendel University in Brno (MendelU), Czech Republic

## PROGRAM COMMITTEE OF INTERNATIONAL WORKSHOP ON INDUCTIVE MODELING IWIM'2020

**Volodymyr Stepashko** (*Chairman*) **Serhiy Yefimenko** (*Secretary*)  
**Mikhail Alexandrov** Autonomous University of Barcelona, Spain  
**Tetiana Aksenova** Grenoble University, France  
**Yevgeniy Bodyanskiy** Kharkiv Technical University of Radio Electronics, Ukraine  
**Ales Bourek Masaryk** University in Brno, Czech Republic  
**Hamparsum Bozdogan** The University of Tennessee, USA  
**Angels Catena** Autonomous University of Barcelona, Spain  
**Miroslav Cepek Czech** Technical University, Czech Republic  
**He Changzheng** Sichuan University, Chengdu, China  
**Vera Danilova** Presidential Acad. of national economy and public admin., Russia  
**Mykola Dyvak** Ternopil National Economy University, Ukraine  
**John Elder** Elder Research, USA

**Tadashi Kondo** The University of Tokushima, Japan

**Pavel Kordík** Czech Technical University, Czech Republic

**Frank Lemke** KnowledgeMiner Software, Berlin, Germany

**Panos Liatsis** City University London, UK

**Volodymyr Lytvynenko** Kherson National Technical University, Ukraine

**Nader Nariman-zadeh** The University of Guilan, Iran

**Witold Pedrycz** University of Alberta, Canada

**Natalya Ponomareva** University of Wolverhampton, UK

**Paolo Rosso** Polytechnic University of Valencia, Spain

**Vadim Strijov** Computer Center of Russian Academy of Sciences, Russia

**Olena Vynokurova** Kharkiv Technical University of Radio Electronics, Ukraine

**Jan Zizka Mendel** University in Brno, Czech Republic

## **Committee of International Workshop on Computational Methods and Information Transformation Systems in honor of prof. Bohdan Popov**

**Ivan Sergienko** Workshop Honorary Chairman, Glushkov Institute of Cybernetics of NAS of Ukraine, Ukraine

**Roman Vorobel** Workshop Executive Chairman, Karpenko Physico-Mechanical Institute of NAS of Ukraine, Ukraine

**Zinoviy Nazarchuk** Karpenko Physico-Mechanical Institute of NAS of Ukraine, Ukraine

**Roman Kushnir** Institute for Applied Problems in Mechanics and Mathematics of NAS of Ukraine, Ukraine

**Yaroslav Pyanylo** Center of Mathematical Modelling, IAPMM NASU, Ukraine

**Viktor Berbyuk** Chalmers University of Technology, Sweden

**Andrii Bomba** National University of Water and Environmental Engineering, Ukraine

**Vitaliy Boyun** Glushkov Institute of Cybernetics of NAS of Ukraine, Ukraine

**Valeriy Dudykevych** Lviv Polytechnic National University, Ukraine

**Oleksandra Hotra** Lublin University of Technology, Poland

**Ihor Javorskyj** Telecommunication Institute of University of Technology and Life Science, Poland

**Volodymyr Khoma** Opole University of Technology, Poland

**Piotr Kisala** Lublin University of Technology, Poland

**Adam Krzyzak** Concordia University, Canada

**Petro Malachivskyy** Center of Mathematical Modelling, IAPMM NASU, Ukraine

**Pawel Maslanka** University of Lodz, Poland

**Borys Moncibovych** Center of Mathematical Modelling, IAPMM NASU, Ukraine

**Mykola Nedashkovskyy** Kazimierz Wielki University in Bydgoszcz, Poland

**Leszek Rutkowski** Czestochowa University of Technology, Poland

**Mykhaylo Yatsyrmirskyy** Lodz University of Technology, Poland

September 23

PLENARY SESSION, <https://us02web.zoom.us/j/83474352806>

Chairman: Prof. Yuriy Bobalo, Prof. Mykola Medykovskyy

Secretary: Tetiana Shestakevych

10:00 – 10:30	<b>Yannick Estève, France</b> Recent advances on end-to-end neural approaches for spoken language translation and emotion recognition from speech
10:30 – 11:00	<b>Rimvydas Laužikas, Lithuania</b> Digital effects based transformation: the societal approach
11:00 – 11:30	<b>Taras Kytsmey, Ukraine</b> Creating competitive advantage through continuous innovation of capabilities and services in the areas of technology and digital transformation.
11:30 – 12:00	<b>Tatsuya Yamazaki, Japan</b> Smart Sensing in Home and Farm Environments
12:00 – 12:30	<b>Liubchuk Leonid, Ukraine</b> Online ranking learning based on aggregated data
12:30 – 13:30	<b>Winfried Auzinger, Austria</b> A study of anomalies in GPS time series via polynomial filtering
13:00 – 13:30	<b>Yevgeniy Bodyanskiy, Ukraine</b> Multilayer radial-basis function network and its learning
13:30 – 14:00	<b>Ernesto Cuadros Vargas, Peru</b> ACM/IEEE-CS Computing Curricula 2020
14:00 – 14:30	<b>Oleh Berezsky, Ukraine</b> Metric methods in computer vision and pattern recognition
14:30 – 15:00	<b>Tommaso Fornaciari, Italy</b> Three methods for geolocation

September 23

15.30–18.00 <https://us02web.zoom.us/j/83474352806>

## International workshop on Inductive modeling

Chairman: Prof. Volodymyr Stepashko

15.30 – 15.45	Vitalii Babenko, Olena Nosovets. Calculating the Personalized Treatment Strategy by Genetic Algorithm Using Optimal Complexity Models
15.45 – 16.00	Anna Boldyreva, Mikhail Alexandrov, Olexiy Koshulko, Svetlana Popova. Start of Epidemy in a City: Short-Term Forecast of Covid-19 with GMDH-Based Algorithms and Official Medical Statistics
16.00 – 16.15	Nikolay Kikteev, Anastasiia Balaniuk, Volodymyr Osypenko, Nataliya Shkorpela. Input Data Clustering for the Efficient Operation of Renewable Energy Sources in a Distributed Information System
16.15 – 16.30	Pavel Mogilev, Anna Boldyreva, Mikhail Alexandrov, John Cardiff. GMDH-based Models for Mid-term Forecast of Cryptocurrencies (on example of Waves)
16.30 – 16.45	Olha Moroz, Volodymyr Stepashko. Case Study of the Ukraine Covid Epidemy Process Using Combinatorial-Genetic Method
16.45 – 17.00	Ievgen Nastenko, Olena Nosovets, Vitalii Babenko, Marina Dyba, Vitalii Maksymenko, Boris Tarasiuk, Vladyslav Kruhlyi, Vitalij Umanets, Irina Dykan, Volodymyr Pavlov, Volodymyr Soloduschenko. Liver Pathological States Identification in Diffuse Diseases with Self-Organization Models Based on Ultrasound Images Texture Features
17.00 – 17.15	Andriy Pavlov, Halyna Pidnebesna, Volodymyr Stepashko. Ontology-Based Approach to Construction of Intelligent Interface for Inductive Modeling Tools

17.15 – 17.30	Volodymyr Stepashko. Asymptotic Properties of a Class of Criteria for Best Model Selection
17.30 – 17.45	Ihor Surovtsev, Olena Tokova, Yevgeniya Savchenko, Kateryna Sirenko. Filtering-based Estimating the Cast Iron Quality Using Recognition of Cooling Curves
17.45 – 18.00	Serhiy Yefimenko. Probabilistic Forecasting of Wind Power Generation Based on Pinball Loss Optimization
18.00 – 18.15	Viacheslav Zosimov, Oleksandra Bulgakova. Application of Personalized Ranking Models Based on Expert Evaluations for Sorting Goods on E-commerce Web Resources

## International workshop on Project management

<https://us02web.zoom.us/j/83474352806>

<b>September 24</b>	<b>10<sup>00</sup>-14<sup>00</sup></b>
---------------------	--

**Chairman: Prof. Nataliia Kunanets, Prof Serhij Bushuev**

10.00 – 10.10	Varvara Piterska, Anatoliy Shakhov, Oleh Loginov and Liliia Lohinova. The Method of Human Resources Management of Educational Projects of Institution of Higher Education
10.10 – 10.20	Oleh Veres, Pavlo Ilchuk, Olha Kots, Ihor Rishnyak and Halyna Rishnyak. Choosing a Means of Implementing an Information System to Minimize the Risks of Personnel Management
10.20 – 10.30	Dmytro Kobylkin and Oleh Zachko. Structural Models of Safety-Oriented Management of Infrastructure Projects Decomposition
10.30 – 10.40	Sergey Bushuyev, Natalia Bushuyeva, Victoria Bushuieva and Denis Bushuiev. The Complementary Technique in Emotional Infection of the Virtual Project Team
10.40 – 10.50	Sergey Bushuyev, Alla Bondar, Natalia Bushuyeva and Svitlana Onyshchenko. Modelling of Creation Organisational Energy-Entropy
10.50 – 11.00	Sergey Bushuyev, Denis Bushuiev and Victoria Bushuieva. Interaction Multilayer Model of Emotional Infection with the Earn Value Method in the Project Management Process
11.00 – 11.10	Anatoliy Tryhuba, Vitaliy Boyarchuk, Inna Tryhuba, Oksana Ftoma, Vasyl Tymochko and Sergii Bondarchuk. Model of Assessment of the Risk of Investing in the Projects of Production of Biofuel Raw Materials
11.10 – 11.20	Anatoliy Tryhuba, Inna Tryhuba, Oleg Bashynsky, Ihor Kondysiuk, Nazar Koval and Larysa Bondarchuk. Conceptual Model of Management of Technologically Integrated Industry Development Projects
11.20 – 11.30	Maryna Kutsenko. Management of Territorial Development Projects in Global Challenges
11.30 – 11.40	Olena Verenysh and Dmytro Hudoshnyk. Values Identification in Energy Audit Projects (Ukraine Case Study)
11.40 – 11.50	Dmitriy Kritskiy and Olha Kritskaya. Modification of the Quality House Method
11.50 – 12.00	Iryna Strutynska, Lesia Dmytrotsa, Halyna Kozbur, Olha Hlado, Pavlo Dudkin and Olena Dudkina. Development of Digital Platform to Identify and Monitor the Digital Business Transformation Index
12.00 – 12.10	Sergey Chernov, Sergey Titov, Nataliia Kunanets, Lubava Chernova and Ludmila Chernova. Linearization of Problem on Placing a Maximum-Radius Hypersphere in Polyhedral Region
12.10 – 12.20	Oleksandr Voitenko, Borys Lysytsin and Alexander Timinsky. Bi-adaptive Management of Strategic Projects Development of High-Tech Companies through the Improvement of Competencies
12.20 – 12.30	Anatoliy Shakhov, Varvara Piterska, Volodymyr Botsaniuk and Olha Sherstiuk. Mechanisms for goal setting and risk management of concession projects in seaports
12.30 – 12.40	Volodymyr Polishchuk, Mykola Malyar, Andriy Polishchuk and Marianna Sharkadi. Model of Operation Management Systems Risk Assessment
12.40 – 12.50	Halyna Lypak, Nataliia Kunanets, Volodymyr Pasichnyk and Nataliia Veretennikova. Digitization Project for Historical and Cultural Heritage

12.50 – 13.00	Oleksandr Tymchenko, Orest Khamula, Bohdana Havrysh, Oleksandr Tymchenko, Bohdan Kovalskiy and Svitlana Vasiuta. Information Technology Development in Correction Method of Geometric Distortions of Text Images
13.00 – 13.10	Ruslan Nebesnyi, Nataliia Kunanets, Volodymyr Pasichnyk, Nataliia Veretennikova and Oksana Kunanets. Formation of IT Project Implementation Team
13.10 – 13.20	Igor Kononenko and Maximilien Kpodjedo. Method of Selecting the Maturity Level of an Organization When Managing a Project Portfolio
13.20 – 13.30	Oleh Kovalchuk and Oleh Zachko. Models of the life cycle of forming project teams in a security-oriented system
13.30 – 13.40	Alla Bondar, Sergey Bushuyev, Victoria Bushuieva, Nanaliya Bushuyeva and Svitlana Onyshchenko. Action-Entropy Approach to Modeling of 'Infodemic-Pandemic' System on the Covid - 19 Cases
13.40 – 13.50	Nataliia Kunanets, Viktoriya Dobrovolska, Natalia Filippova and Parviz Kazimi. Biobibliographic data repository of documentary cultural heritage
13.50 – 14.00	Hrystyna Lipyana, Oleg Sachenko, Taras Lendyuk, Anatoliy Sachenko and Nadiia Vasylykiv. Formation of Human Resource Management short-term project based on machine learning

## International Workshop on Computational Methods and Information Transformation Systems in honor of prof. Bohdan Popov

<https://zoom.us/j/99616887141>

<b>September 24</b>	<b>10<sup>00</sup>-14<sup>00</sup></b>
---------------------	--

**Chairman: Prof. Roman Vorobel**

10.00 – 10.10	Vorobel R. Professor Bohdan Popov. Creative path.
10.10 – 10.20	Olexandr Shportko; Lesya Shportko. The Use of a Fixed Height Binary Tree to Accelerate the Calculation of the Medians of Subarrays
10.20 – 10.30	Iryna Ivashenko; Volodymyr Posuvailo; Halyna Veselivska; Vasyl Vynar. Porosity Segmentation and Analysis of Oxide Ceramic Coatings of D16T Alloy
10.30 – 10.40	Petro Malachivskyy; Lev Melnychok; Yaropolk Pizyur. Chebyshev approximation of the functions of many variables with the condition
10.40 – 10.50	Leonid Muravsky; Yurii Kotsiuba; Yaroslav Kulynych. Estimation of Unknown Phase Shift Between Synthesized Speckle Interferograms Using Pearson Correlation Coefficient
10.50 – 11.00	Andrii Bomba; Sergii Baranovsky; Mykola Pasichnyk; Oksana Pryshchepa. Modelling of the infectious disease process with taking into account of small-scale spatially distributed influences
11.00 – 11.10	Myroslava Hlebena; Hryhoriy Tsehelyk. Numerical method of the type of descent for finding the solution to a system of two nonlinear equations
11.10 – 11.20	Valerii Hlukhov. Comparison of homogeneous and heterogeneous digital quantum coprocessors
11.20 – 11.30	Mykola Gusti; Fulvio Di Fulvio; Nicklas Forsell. An algorithm for simulation of shelterwood logging on the forest scale for the Global Forest Model (G4M)
11.30 – 11.40	Liubov Zhuravchak; Nataliya Zabrodska. Mathematical modelling of the orthotropy effect in the problems of DC electrical exploration by boundary and near-boundary element methods
11.40 – 11.50	Dmitriy Kritskiy; Olha Pohudina. Object Recognition to Refine Drone Positioning
11.50 – 12.00	Yaroslav Sokolovskyy; Volodymyr Yarkun; Andriy Nechepurenko; Mar'iana Levkovich; Yuriy Protsyk. Parallel realization of the problem of heat and moisture transfer in fractal-structure materials
12.00 – 12.10	Bogdana Gayvas; Veronika Dmytruk; Oksana Kaminska; Iryna Pastyrska; Anatolii Dmytruk; Svitlana Nezgoda. Simulation of Crack Resistance of Mustard in Pulsed Drying Mode



12.10 – 12.20	Ihor Javorskyj; Roman Yuzefovych; Pavlo Kurapov; Pavlo Semenov. The covariance and spectral properties of the quadrature components of narrowband periodically non-stationary random signals
12.20 – 12.30	Ján Perháč; Zuzana Bilanová. Categorical Model of Functional Language with Natural Numbers and Boolean Values
12.30 – 12.40	Zuzana Bilanová; Ján Perháč; Michal Hulič. A Modern Interpreter of Predicate Linear Logic Formulas
12.40 – 12.50	Oleh Lychak. Evaluation of correlation method for monitoring of localized corrosion in water environment
12.50 – 13.00	Roman Dzhala; Vasyl Dzhala; Maryan Melnyk; Bohdan Verbenets'; Bohdan Horon. Calculation of magnetic field azimuthal distribution of the pipeline with defect
13.00 – 13.10	Teodor Mandziy. Chan-Vese Model for Rust Image Segmentation
13.10 – 13.20	Olena Berehulyak; Roman Vorobel. The Algebraic Model with an Asymmetric Characteristic of Logarithmic Transformation

Session 1	September 24
14.00–16.50	<a href="https://us02web.zoom.us/j/83474352806">https://us02web.zoom.us/j/83474352806</a>

## Intelligent Management Technologies

**Chairman: Prof. Ivan Tsmots**

14.00 – 14.10	Tetiana Hovorushchenko; Vladyslav Glukhov; Olha Hovorushchenko. Modelling the Process of Determining the Tourist Demand Based on Fishbein's Multi-Attribute Model
14.10 – 14.20	Tetiana Hovorushchenko; Alla Herts; Yelyzaveta Hnatchuk. Intelligent Agent for Support of Decision Making on Civil Law Regulation of Contract for the Provision of In Vitro Fertilization
11.20 – 14.30	Oleksandr Belej. Development of a Technique for Detecting "Distributed Denial-of-Service Attacks" in Security Systems of Wireless Sensor Network
14.30 – 14.40	Rina Novogrudska; Maryna Popova. Transdisciplinary System for Student Youth Educational and Research Activities Support
14.40 – 14.50	Oleksandr Prokhorov; Yurii Pronchakov; Oleg Fedorovich; Nataliia Kunanets. Modeling of Technological Process in Nanoelectronic Production
14.50 – 15.00	Igor Yakymenko. Algorithmic Support for Rabin Three-Modular Cryptosystem Based on the Operation of Addition
15.00 – 15.10	Alyona Shved. The Basic Concepts of the Normative Theory of the Synthesis of Information Technologies for Decision Support
15.10 – 15.20	Viktor Shynkarenko; Artem Zhadan. Modeling of the Deterministic Fractal Time Series by One Rule Constructors
15.20 – 15.30	Misheel Enkhbaatar; Tatsuya Yamazaki. Study on Automatic LED Monitoring System for Data Center Devices
15.30 – 15.40	Natalia Axak; Korablev Korablev. Cloud Architecture for Remote Medical Monitoring
15.40 – 15.50	Nazar Semenyshyn. Controlling and Modelling Thermal Processes of Wood Drying by Artificial Neural Networks
15.50 – 16.00	Vitalii Larin; Ali Muhammad Kardo; Katerina Larina; Nina Chichikalo. Integrated Intellectual Approach to the Diagnostics of defects of Operations of Induction Motors
16.00 – 16.10	Ivanna Dronyuk. Adaptive Models of Information Management in Crisis
16.10 – 16.20	Ivan Tsmots; Oleksandr Kuzmin; Sergii Kuzmin. Simulation of Environmental Monitoring Using Wireless Sensor Networks
16.20 – 16.30	Ivan Tsmots; Oleksandr Kuzmin; Vasyl Dubuk; Volodymyr Antoniv. Improvement and orientation of method of data arrays sorting by confluence on architecture of graphic processor unit

16.30 – 16.40	Irina Lozovytska; Alina Zakharova; Mariya Nazarkevych. Development of the Ukrainian font prototype for the late blind people for the mobile application
16.40 – 16.50	Sergii Kliuiev; Ievgen Medvediev; Serhiy Soroka; Vasyl Dubuk. Development of the intelligent rail vehicle control system

Session 2	September 24
14.00–17.00	<a href="https://zoom.us/j/98407863109">https://zoom.us/j/98407863109</a>

## Artificial intelligence

**Chairman: Prof. Nataliya Shakhovska**

14.00 – 14.10	Yuriy Zaychenko; Olena Zalchenko. Application of Computational Intelligence Methods for Fuzzy Portfolio Optimization Problem Under Uncertainty
14.10 – 14.20	Vasyl Mandziy. Hover Signal-Profile Detection
14.20 – 14.30	Olexander Barmak; Iurii Krak; Eduard Manziuk. Classification based hierarchical clustering prediction variability in the ensembles of models using a statistical approach
14.30 – 14.40	Jakub Krymarys; Krzysztof Lichy; Piotr Lipinski. Eco-friendly home automation system implemented using Machine Learning Algorithms
14.40 – 14.50	Nataliya Shakhovska, Khrystyna Shakhovska. The method of text tonality classification
14.50 – 15.00	Alexander Gozhyj; Vladislav Neshachin; Irina Kalinina. Solar Power Control System based on Machine Learning Methods
15.00 – 15.10	Vladyslav Kotsovsky; Anatoliy Batyuk; Ivan Mykoriak. The Computation Power and Capacity of Bithreshold Neurons
15.10 – 15.20	Vladyslav Kotsovsky; Fedir Geche; Anatoliy Batyuk. Bithreshold Neural Network Classifier
15.20 – 15.30	Volodymyr Lytvynenko; Mariia Voronenko; Dmytro Nikytenko; Nataliia Savina; Oleksandr Naumov. Assessing the Possibility of a Country's Economic Growth Using Dynamic Bayesian Network Models
15.30 – 15.40	Vasyl Lytvyn; Dmytro Dosyn; Victoria Vysotska; Andriy Demchuk; Lyubomyr Demkiv; Iryna Lytvyn. Intellectual Agent Construction Method Based on the Subject Field Ontology
15.40 – 15.50	Nikita Fedosenko. Comparing 2D to 3D conversion methods
15.50 – 16.00	Ivan Tsmots; Vasyl Rabyk; Zinovij Lyubun; Oleksa Skorokhoda. Method and Means of Symmetric Real-time Neural Network Data Encryption
16.00 – 16.10	Anatoly Shevchenko; Mykyta Klymenko. Developing a model of “artificial conscience”
16.10 – 16.20	Ivan Dyyak; Lyubomyr Chyrun; Nataliya Antonyuk; Andrii Berk; Vasyl Andrunyk; Andrii Khudyi. Development of Internet Auction Systems
16.20 – 16.30	Oleh Pitsun; Oleg Berezsky; Lesia Dubchak; Kateryna Berezka; Taras Dolynyuk; Bohdan Derish. Cytological Images Clustering of Breast Pathologies
16.30 – 16.40	Vasyl Andrunyk; Olesia Yaloveha. Information system for monitoring the emotional state of a student with special needs using AI
16.40 – 16.50	Andrii Yarovyj; Dmytro Kudriavtsev; Olena Prozor. Improving the accuracy of text message recognition with an intelligent chat-bot information system
16.50 – 17.00	Nataliia Melnykova. The Investigation of Artificial Intelligence Methods for Identifying States and Analyzing System Transitions Between States

Session 3	September 25
10.00–14.20	<a href="https://us02web.zoom.us/j/83474352806">https://us02web.zoom.us/j/83474352806</a>

## Mathematical modeling

**Chairman: Prof. Liubov Zhuravchak**

10.00 – 10.10	Larysa Yaremchuk; Tetyana Olyanyshen; Liliya Hogaboam. System Science Approach of Hierarchical Modeling to Selection of Wood Material Coloring Methods
10.10 – 10.20	Yuriy Starodub; Vasyl Karabyn. Mathematical modeling of the earth heat processes for the purposes of eco-technology and civil safety
10.20 – 10.30	Petro Pukach; Yaroslav Pelekh; Roksolyana Stolyarchuk; Andrii Kunynets; Serhii Mentynskyi; Bohdan Fil. Modelling and Methods for Calculating of Electromagnetic Field in a Conducting Ferromagnetic Layer
10.30 – 10.40	Petro Onyskiv; Yaroslav Lytvynenko; Serhii Lupenko. Method of evaluation of discrete rhythm structure of cyclic signals with the help of adaptive interpolation
10.40 – 10.50	Iryna Spivak; Svitlana Krepych; Natalia Porplytsya; Serhii Spiva. Method of Estimation the Level of Influence of Motivational Factors on Labor Efficiency
10.50 – 11.00	Petro Onyskiv; Yaroslav Lytvynenko; Serhii Lupenko; Andriy Zozulia. Processing of Vector Rhythmic signal Based on Software Complex
11.00 – 11.10	Olha Pohudina. A Mathematical model of electric ohmic propulsion system dynamics
11.10 – 11.20	Olga Tuzenko; Igor Sagirov; Elena Balalayeva. Mathematical and Computer Modeling of the Work of the Grain Terminal of Mariupol Commercial Sea Port
11.20 – 11.30	Winfried Auzinger; Alexey A. Kytmanov; Sergey P. Tsarev. A study of anomalies in GPS time series via polynomial filtering
11.30 – 11.40	Grygoriy Hladiy. Combined approach to modeling supplier selection
11.40 – 11.50	Ievgen Medvediev; Olha Sakno; Dmytro Moisia; Tatiana Kolesnikova; Andrii Rogovyi. Linear and non-linear wheel slip hypothesis in studying stationary modes of a double road train
11.50 – 12.00	Vasyl Dozosky; Oksana Dozorska; Evhenia Yavorska; Vyacheslav Nykytyuk; Leonid Dediv. The method of selection and pre-processing of electromyographic signals for bio-controlled prosthetic of hand
12.00 – 12.10	Roman Bazylevych; Mariusz Wrzesień; Lubov Bazylevych. A set of nets planarization for electronic devices' physical design automation
12.10 – 12.20	Liubov Zhuravchak. Combination of near-boundary and contact elements in modelling stationary processes in piecewise-homogeneous objects
12.20 – 12.30	Volodymyr Shymanskyi; Yaroslav Sokolovskyy. Variational Formulation Of The Stress-Strain Problem In Capillary-Porous Materials With Fractal Structure
12.30 – 12.40	Yurii Stoianov; Yaroslav Kinakh; Igor Boyko; Halyna Tsupryk; Oksana Pryveda. Modeling of tunneling current in nanostructures taking into account the effect of electron-electron interaction
12.40 – 12.50	Vitaliy Polovyi; Petro Kostrobij; Bohdan Markovych. Modeling of a surface plasmons frequency spectrum in dielectric/metal/dielectric structures: the influence of the Coulomb correlations
12.50 – 13.00	Yaroslav Sokolovskyy; Oleksiy Sinkevych; Roman Volianskyi; Bogdan Kshyvetskyy. Modeling of Heat Transfer in the Process of Wood Drying Based on the Theory of Cellular Automata
13.00 – 13.10	Bohdan Yavorskyi. Computer Simulation for Quantum Tomography
13.10 – 13.20	Iryna Ryzha; Petro Kostrobij. Modeling of Carbon Monoxide Oxidation on Gold Nanoparticles: Is There Oscillatory Mode?
13.20 – 13.30	Lyudmyla Rozova; Gennadii Martynenko. Mathematical Modeling and Program Implementation of Gasdynamic Solution of Dry Gas Seals for Centrifugal Compressors
13.30 – 13.30	Olena Vovk. Modeling and information support for the development of government programs to increase the accessibility of small business lending

13.30 – 13.40	Ivan Sokolovskyy; Jaime Campos. Numerical models of diffusion processes based on fractional order derivatives.
13.40 – 13.50	Mykola Kuzlo; Nataliia Zhukovska; Viktor Zhukovskyy; Nataliia Tarasyuk. Experimental Investigations Of Filtration Coefficient Of Clay Soils Under Anthropogenic Factors Influence
13.50 – 14.00	Oleksandra Mrykhina; Lidiya Lisovska. Methodical approach to pricing of R&D products during their transfer from universities to business environment
14.00 – 14.10	Alexander Trunov. Formation of Method of Synthesis of Parameters of Devices of Prevention and Post Therapeutic Restoration of Spine Zones
14.10 – 14.20	Petro Pukach; Andrii Slipchuk; Yaroslav Hlynskyi; Halyna Beregova; Yulia Pukach. Asymptotic Approaches to Study the Mathematical Models of Nonlinear Oscillations of Movable 1D Bodies

## International Workshop on Information modeling. Data and knowledge engineering

September 25

10<sup>00</sup>-13<sup>30</sup>

### Information modeling of database and knowledge systems

Chairman: Prof. Volodymyr Pasichnyk

<https://zoom.us/j/99616887141>

10.00 – 10.10	Serhii Lupenko, Oleksandra Orobchuk and Andrii Horkunenko. Ontooriented information systems for folk medical directions
10.10 – 10.20	Yuri Romanenkov, Yurii Pronchakov and Tieimur Zieiniiev. Algorithmic support for auto-modes of adaptive short-term forecasting in predictive analytics systems
10.20 – 10.30	Nataliia Komleva, Vira Liubchenko and Svitlana Zinovatna. Evaluation of the Quality of Survey Data and its Visualization Using Dashboards
10.30 – 10.40	Oleksandr Matsiuk, Nataliia Kunanets, Oleksii Duda, Oleh Palka, Volodymyr Pasichnyk and Danylo Tabachyshyn. Existing city assessment systems
10.40 – 10.50	Sviatoslav Vasylyshyn, Ivan Opirskyy and Vitalii Susukailo. Analysis of the use of software baits (honeypots) as a means of ensuring information security
10.50 – 11.00	Yurii Tulashvili, Yurii Turbal, Driwi Abd Alkaleg, Volodymyr Pasichnyk, Al Shukri Sumayya Ali and Nataliia Kunanets. The Optimal Tour Problem in Smart Tourism Recommender Systems
11.00 – 11.10	Anna Khyzhniak. Urban modeling based on the data fusion with Cellular Automata approach
11.10 – 11.20	Yevhen Burov, Khrystyna Mykich and Igor Karpov. Building a versatile knowledge-based system based on reasoning services and ontology representation transformations
11.20 – 11.30	Vitalii Susukailo, Ivan Opirskyy and Sviatoslav Vasylyshyn. Analysis of the attack vectors used by threat actors during the pandemic
11.30 – 11.40	Svitlana Yatsyuk, Anatolii Fedonuyk, Inna Mykytyuk and Anatolii Padalko. Choice of software for geodesic research
11.40 – 11.50	Valentina Yunchyk, Anatolii Fedonyuk, Svetlana Yatsyuk and Tatiana Cheprasova. The models of data and knowledge representation in educational system of mathematical training of IT-specialists
11.50 – 12.00	Maryna Zharikova and Volodymyr Sherstiuk. Event-based Spatially-distributed Multi-hazard Risk Analysis
12.00 – 12.10	Oleksii Duda, Nataliia Kunanets, Oleksandr Matsiuk, Volodymyr Pasichnyk and Antonii Rzhеuskyi. Multidimensional Representation of COVID-19 Data Using OLAP Information Technology
12.10 – 12.20	Tetiana Kovaliuk, Nataliya Kobets, Volodymyr Pasichnyk and Nataliia Kunanets. Ontological Approach to the Development and Accreditation of the Educational Programs for the Training of IT Specialists of Ukraine

12.20 – 12.30	Olga Artemenko, Nataliia Kunanets and Volodymyr Pasichnyk. Using mobile location-based recommender systems for providing real time recommendations for social distancing urban route planning
12.30 – 12.40	Viacheslav Zosimov and Oleksandra Bulgakova. Development of domain-specific language for data processing on the Internet
12.40 – 12.50	Oleksandr Kramar, Yuriy Drohobytskyi, Yuriy Skorenkyy, Oleksandr Rokitskyi, Volodymyr Pasichnyk, Nataliia Kunanets and Oleksandr Matsiuk. Augmented Reality-assisted Cyber-Physical Systems of Smart University Campus
12.50 – 13.00	Dmytro Terletsykyi and Oleksandr Provotar. Algorithm for Intersection of Fuzzy Homogeneous Classes of Objects
13.00 – 13.10	Taisa Borovska, Dmytro Hryshyn, Iryna Kolesnyk, Victor Severilov and Tetiana Shestakevych. Searchless Intelligent System of Modern Production Control
13.10 – 13.20	Svitlana Lavrynenko, Galyna Kondratenko, Ievgen Sidenko and Yuriy Kondratenko. Fuzzy Logic Approach for Evaluating the Effectiveness of Investment Projects
13.20 – 13.30	Vasyl Andrunyk, Yurii Prystai and Tetiana Shestakevych. Analytic hierarchy process for personalization of education IT (for students with autism)

Session 4	September 25
15.00–17.00	<a href="https://us02web.zoom.us/j/83474352806">https://us02web.zoom.us/j/83474352806</a>

## Applied linguistics

**Chairman: Prof. Olena Levchenko**

15.00 – 15.10	Nataliia Hrytsiv; Ihor Kulchytsky; Oksana Rohach. Quantitative Comparative Analysis in Parallel Translation Corpus: building author's and translator's statistical profiles (a case study of Lucy Maud Montgomery).
15.10 – 15.20	Iryna Khomytska; Vasyl Teslyuk; Lyudmyla Bordyuk. The Kolmogorov-Smirnov's Test for Authorship Attribution on the Phonological Level.
15.20 – 15.30	Roksolana Nazarchuk; Iryna Karamysheva; Kateryna Lishnievska. Peculiarities of usage of terminology management systems in SDL Trados and MemoQ Translator Pro for translation of English-language instructions.
15.30 – 15.40	Vasyl Lytvyn; Victoria Vysotska; Yevgen Burov; Oksana Brodyak. Approach to Automatic Construction of Interpretation Functions During Ontology Learning.
15.40 – 15.50	Yurii Hulyk. Statistical peculiarities of words distribution based on the Pastoral letters of Andrey Sheptytsky.
15.50 – 16.00	Viktoriia Vasyliuk; Yuliia Shyika; Tetiana Shestakevych. Modeling the Automated Working Place of Psycholinguist.
16.00 – 16.10	Yevgen Burov; Vasyl Lytvyn; Victoria Vysotska; Iryna Shakleina. The Basic Ontology Development Process Automation Based on Text Resources Analysis.
16.10 – 16.20	Dmytro Dosyn; Vasyl Lytvyn; Oksana Oborska; Roman Vovnyanka; Victoria Vysotska; Valentyna Panasyuk. Intellectual Agent Behavior Simulation Based on Stimulating Learning.
16.20 – 16.30	Marianna Dilai; Iryna Dilai. Automatic Extraction of Keywords in Political Speeches.
16.30 – 16.40	Solomiia Albota. Linguistic and Psychological Features of the Reddit News Post.
16.40 – 16.50	Oleg Hirnyak. Means for automated research of ethnonyms (based on the material of internet posts).
16.50 – 17.00	Marianna Dilai; Oleh Tyshchenko; Olena Levchenko. Modeling of the associative verbal network and its cognitive interpretation (the conceptual domain ЗРАДА 'BETRAYAL').

Session 5	September 25
15.00–17.00	<a href="https://zoom.us/j/99616887141">https://zoom.us/j/99616887141</a>

## Big data nad Data science

**Chairman: Prof. Vasyl Lytvyn**

15.00 – 15.10	Gennady Chuiko; Olga Dvornik; Yevhen Darnapuk; Yaroslav Krainyk; Olga Yaremchuk. Recurrence Plots for Ambulatory Blood Pressure Monitoring (Means for Data mining of circadian rhythms)
15.10 – 15.20	Vitaliy Kinakh; Tomohiro Oda; Rostyslav Bun. Algorithms for analysis of geolocation error of nightlight satellite data and greenhouse gas data calculated on their basis
15.20 – 15.30	Roman Stupen; Mykhailo Stupen; Nazar Stupen; Zoriana Ryzhok; Oksana Stupen. Analysis of the interrelations between elements of geoinformation system structure
15.30 – 15.40	Yevgeniy Bodyanskiy; Anastasiia Deineko; Anastasiia Pirus. Multilayer radial-basis function network and its learning
15.40 – 15.50	Yevgeniy Bodyanskiy; Anastasiia Deineko; Olha Chala; Iryna Pliss. Adaptive Probabilistic Neural Network With Fuzzy Inference And Its Online Learning
15.50 – 16.00	Oleksii Vodka; Ivan Zadorozhnyi; Ruslan Lavshhenko. Application Algorithms of Nonlinear Dimensionality Reduction to Material Database Visualization
16.00 – 16.10	Volodymyr Riznyk. Methods of Big Vector Data Processing Under Toroidal Coordinate Systems
16.10 – 16.20	Victoria Vysotska; Vasyl Lytvyn; Myroslava Bublyk; Andriy Demchuk; Lyubomyr Demkiv; Yuriy Shpak. Method of Ontology Quality Assessment for Knowledge Base in Intellectual Systems Based on ISO\IEC 25012
16.20 – 16.30	Victoria Vysotska; Andrii Berko; Myroslava Bublyk; Lyubomyr Chyrun; Artem Vysotsky; Kateryna Doroshkevych. Methods and Tools for Web Resources Processing In E-Commercial Content Systems
16.30 – 16.40	Andrii Berko; Lyubomyr Chyrun; Vasyl Andrunyk; Liliya Chyrun; Ivan Dyyak; Nataliya Antonyuk. E-Commercial Systems Designing Methods for Virtual Enterprise
16.40 – 16.50	Lyubomyr Chyrun; Andrii Berko; Nataliya Antonyuk; Liliya Chyrun; Vasyl Andrunyk; Ivan Dyyak. Online Business Processes Support Methods
16.50 – 17.00	Lyubomyr Chyrun; Andrii Berko; Ivan Dyyak; Nataliya Antonyuk; Vasyl Andrunyk; Khrystyna Mykich. Features of Internet Auction Systems Design

Session 6	September 26
10.00–12.40	<a href="https://zoom.us/j/98407863109">https://zoom.us/j/98407863109</a>

## Software engineerig

**Chairman: Prof. Vitaliy Yakovyna**

10.00 – 10.10	Serhiy Shcherbovskykh; Tetyana Stefanovych; Mykhaylo Lobur. Availability Audit of IoT System Data Reserved by 3-2-1 Backup Strategy based on Fault Tree and State Transition Diagram Analysis
10.10 – 10.20	Ivan Symets; Vitaliy Yakovyna; Maksym Seniv. The Relation between Software Development Methodologies and Factors Affecting Software Reliability
10.20 – 10.30	Sergei Yelmanov; Yuriy Romanyshyn. A New Approach to Improving Images by Transforming Their Intensity
10.30 – 10.40	Iryna Spivak; Svitlana Krepych; Serhii Spiva. Approach to Forecasting of Utility Costs Using Neural Networks

10.40 – 10.50	Viktor Shynkarenko; Oleksandr Zhevaho. Constructive Modeling of the Software Development Process for Modern Code Review
10.50 – 11.00	Ilona Revenchuk; Bogdan Sus; Nataliia Tmienova; Oleksandr Bauzha; Taras Chaikivskiy. Software System for Virtual Laboratory Works
11.00 – 11.10	Taisa Borovska. Models of Production Systems taking into Account Uncertainties and Disturbances
11.10 – 11.20	Roman Bazylevych; Paweł Czarnul; Andrii Franko. Unit test generation in a cluster using parallel computations and control flow graph analysis
11.20 – 11.30	Viktor Shynkarenko; Iryna Nikitina. Lightning Recognition on the Filtered Videos in the Dynamic Clouds
11.30 – 11.40	Olha Mokrytska; Yaroslav Sokolovskyy; Andriy Nechepurenko; Igor Kroshnyy; Ivan Sokolovskyy. Software and algorithmic support for finite element analysis of spatial heat-and-moisture transfer using cloud technology
11.40 – 11.50	Ruslan Tushnytskyy; Roman Melnyk; Yurii Havrylko. Defects Detection by Approximation, Multilevel Segmentation and Comparison of Samples
11.50 – 12.00	Nataliia Yehorchenkova. The Concept of an "Add-On" of a Functional Portfolio And Project Management Environment
12.00 – 12.10	Oleksandra Bulgakova; Viacheslav Zosimov. Web data displaying approach based on user's semantic profile templates
12.10 – 12.20	Ivan Mudryk; Mykhaylo Petryk; Mariia Petryk; Oksana Kushnir. Hybrid artificial intelligence systems for complex neural network analysis of abnormal neurological movements with multiple cognitive-nodes signal
12.20 – 12.30	Bohdan Uhrynovskyy; Vitaliy Yakovyna. User-Perceived Response Metrics in Android OS for Software Aging detection
12.30 – 12.40	Sergei Yelmanov; Yuriy Romanyshyn. Assessment of the Incomplete Integral Contrast for Complex Image

### FINAL SESSION

<https://us02web.zoom.us/j/83474352806>

<b>September 26</b>	<b>13<sup>00</sup>-13<sup>30</sup></b>
---------------------	--

**Chairman: Prof. M. Medykovskyy , Prof. N. Shakhovska**

**Secretary: Tetiana Shestakevych**

- 1. Conference summary. Discussion of the presented papers.**
- 2. Meeting of the participants, Program and Organizing Committees. Feedbacks on the conference. Discussion on the possible ways of improvement for future.**



Lviv Polytechnic National University map:  
Main building and building V

