



# COMPUTER SCIENCE AND INFORMATION TECHNOLOGIES

17-20 September, 2019

Lviv, Ukraine

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

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

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



Lviv city  
council



## 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



WYŻSZA SZKOŁA GOSPODARKI

## General CSIT 2019 Timetable

September 17	
09.00-10.00	Registration
10.00-10.30	Conference opening (Room 217, Main Building)
11.00-13.30	Plenary session CSIT + IWIM+ IWPM+IWIMDKKE (Room 217, Main Building)
15.00-18.00	International workshop on Inductive modeling (Room 217, Main Building)
15.00-18.00	Session 1 Mathematical modeling (Room 204, Main Building)
15.00-18.00	Session 2 Big data and Data science (Room 226, Main Building)
18.00-21.00	Conference welcome reception
September 18	
10.00-13.00	Plenary session CSIT + IWIM+ IWPM+IWIMDKKE (Room 217, Main Building)
14.00-17.00	International workshop on Inductive modeling (Room 204, Main Building)
14.00-17.00	Session 3 Mathematical modeling (Room 226, Main Building)
10.00-17.00	International Workshop on Information modeling. Data and knowledge engineering (SoftServe)
10.00-18.00	International Workshop on Project management (SoftServe)
17.00-20.30	Excursion to city center, dinner (Mysterious Lviv)
September 19	
10.00-13.00	Session 4 Intelligent Management Technologies (Room 217, Main Building)
14.00-17.00	Session 5 Intelligent Management Technologies (Room 217, Main Building)
14.00-15.30	Session 6 ICT in Higher Education (Room 217, Main Building)
10.00-15.30	Session 7 Artificial intelligence (Room 204, Main Building)
15.30-16.30	Session 8 Cyber-physical systems (Room 204, Main Building)
10.00-14.30	Session 9 Software engineering (Room 226, Main Building)
14.45-17.00	Session 10 Applied linguistics (Room 226, Main Building)
17.00-20.30	Excursion to city center, dinner (Lviv in Middle ages)
September 20	
09.00-16.00	Excursion to Carpathian mountains
12.00-13.00	Close ceremony

### TIME FOR PRESENTATIONS

Paper presentation at the plenary session – 30 min.

Paper presentation at the regular session – 15 min.

Discussion, questions – 3 min.



# CSIT 2019

XIVth International Scientific and Technical Conference

## COMPUTER SCIENCE AND INFORMATION TECHNOLOGIES

**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

University of Economy, Bydgoszcz, Poland

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

**Lviv, UKRAINE**

**17–20 September 2019**



Lviv city  
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<b>J. Ruminski</b>	Gdansk University of Technology, Gdańsk, Poland
<b>D. Scheller-Boltz</b>	Universitat Innsbruck, Austria
<b>C. Seifert</b>	Passau University (PU), Germany
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<b>N. Shakhovska</b>	Lviv Polytechnic National University, Ukraine
<b>V. Shyrovok</b>	Ukrainian Language-Informational Centre, NASU, Ukraine
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**Olena Vovk, Treasurer**, AI Department, Lviv Polytechnic National University, Ukraine

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September 17

PLENARY SESSION, Room 217, main building

Chairman: Prof. Yuriy Bobalo, Prof. Mykola Medykovskyy

Secretary: Tetiana Shestakevych

11:00 – 11:30	<b>Paweł Czarnul</b> Parallel processing using modern high performance computing systems Poland
11:30 – 12:00	<b>Andrii Yarovyι</b> Intelligent information technology for fraud detecting of installing mobile applications Ukraine
12:00 – 12:30	<b>Coffee break</b>
12:30 – 13:00	<b>Yannick Estève</b> Recent advances on end-to-end spoken language understanding (Skype) France
13:00 – 13:30	<b>Jaime Campos</b> Peculiarities of fall prevention databases that support big data and analytics Sweden
13:30 – 14:00	<b>Serhij Bushuev</b> Agile-transformation in projects of community digitalization Ukraine
14:00 – 15:00	<b>Dinner</b>

Session 1	September 17
15.00–18.00	Room 204, main building of Lviv Polytechnic National University

## Mathematical modeling

Chairman: Prof. Liubov Zhuravchak

15:00 – 15:15	<i>Dmytro Fedasyuk and Tetyana Marusenkova.</i> Analyser and Mathematical Model for Synthesizing Noise of MEMS Gyroscopes
15:15 – 15:30	<i>Oleksii Vodka, Andrii Kelin, Raisa Naryzhna, Oleksandr Trubayev, Mariya Shapovalova and Oleksiy Larin.</i> Estimation of residual life-time of pumping units of electric power stations
15:30 – 15:45	<i>Liubov Zhuravchak.</i> Computation of pressure change in piecewise-homogeneous reservoir for elastic regime by indirect near-boundary element method
15:45 – 16:00	<i>Artur Zaporozhets, Volodymyr Eremenko, Volodymyr Isaenko and Kateryna Babikova.</i> Methods for creating reference signals for the diagnosis of composite materials
16:00 – 16:15	<i>Viktor Shynkarenko, Kostiantyn Lytvynenko, Robert Chyhir and Iryna Sansiieva.</i> Constructive Modeling of Lightning Activity in Thunderstorm Front
16:15 – 16:30	<b>Coffee break</b>
16:30 – 16:45	<i>Vasyl Havrysh and Liubov Koliasa.</i> Non-linear Mathematical Model of Determination of Temperature Regimes in a Two-layer Thermo-sensitive Plate with a Point Source of Heat <i>Zinovii Nytrebych, Petro Pukach, Volodymyr Ilkiv and Oksana Malanchuk.</i> On the Modeling of the Oscillating Process of Longitudinal Elastic Body by Two-Point Problem
16:45 – 17:00	<i>Olha Tokar, Mykola Gusti, Olena Vovk, Serhii Havryliuk and Mykola Korol.</i> Geoinformation Technology for the Determination of Carbon Stocks in the Dead Organic Matter of Forest Ecosystems

17:15 – 17:30	<i>Igor Kovalenko, Yevhen Davydenko and Alyona Shved.</i> Formation of Consistent Groups of Expert Evidences Based on Dissimilarity Measures in Evidence Theory
17:30 – 17:45	<i>Anatoliy Vlasyuk, Nataliia Zhukovska and Viktor Zhukovskyy.</i> About Mathematical Modelling Of Spatial Deformation Problem Of Soil Massif With Free Surface
17:45 – 18:00	<i>Heorhiy Hrynyk and Andriy Zadorozhnyy.</i> Density modeling of aboveground phytomass in absolute dry condition of beech trees in Ukrainian Carpathian
18.00 – 21.00	<b>Conference welcome reception</b>

<b>Session 2</b>	<b>September 17</b>
15.00–18.00	Room 226, main building of Lviv Polytechnic National University,

## Big data and Data science

**Chairman: Prof. Vasyl Lytvyn**

15:00 – 15:15	<i>Volodymyr Akhmetov, Sergii Khlamov, Vladislav Khramtsov and Artem Dmytrenko.</i> New algorithm for astrometric reduction of the wide-field images
15:15 – 15:30	<i>Vita Kashtan and Volodymyr Hnatushenko.</i> Computer technology of high resolution satellite image processing based on packet wavelet transform
15:30 – 15:45	<i>Artem Tulenkov, Anzhelika Parkhomenko and Aleksandr Sokolyanskii.</i> Evaluation and Selection of IoT Service for Smart House System Big Data Processing
15:45 – 16:00	<i>Olexander Barmak, Iurii Krak and Eduard Manziuk.</i> Using piecewise hyper linear classification in multi-dimensional feature space for text content
16:00 – 16:15	<i>Natalia Kobliuk, Ruslan Paschenko and Maksim Mariushko.</i> INFORMATION TECHNOLOGY OF AEROSPACE IMAGES FRACTAL ANALYSIS
16:15 – 16:30	<b>Coffee break</b>
16:30 – 16:45	<i>Vadym Savanevych, Eugene Dikov, Aleksander Bryukhovetsky, Vladimir Vlasenko, Volodymyr Akhmetov, Sergii Khlamov, Vladislav Khramtsov, Iana Movsesian</i> New approach to select reference stars for astrometric reduction of CCD-frames
16:45 – 17:00	<i>Andrii Yarovyι and Tetiana Polhul.</i> Intelligent information technology for fraud detection during mobile applications installation
17:00 – 17:15	<i>Olga Artemenko, Volodymyr Pasichnyk and Nataliia Kunanets.</i> E-tourism mobile location-based hybrid recommender system with context evaluation
17:15 – 17:30	<i>Peter Bidyuk, Aleksandr Gozhyj, Irina Kalinina and Volodymyr Beglytsia.</i> Using the Metropolis-Hastings algorithm in Bayesian data analysis procedures
17:30 – 17:45	<i>Vasyl Lytvyn, Victoria Vysotska, Ivan Peleshchak, Taras Basyuk, Viktoriia Kovalchuk, Solomiya Kubinska, Lyubomyr Chyrun, Bohdan Rusyn, Liubomyr Pohreliuk, Tetyana Salo.</i> Identifying Textual Content Based on Thematic Analysis of Similar Texts in Big Data
17:45 – 18:00	<i>Artem Vysotsky, Vasyl Lytvyn, Victoria Vysotska, Dmytro Dosyn, Iryna Lyudkevych, Nataliya Antonyuk, Oleh Naum, Anatolii Vysotskyi, Lyubomyr Chyrun, Olha Slyusarchuk.</i> Online Tourism System for Proposals Formation to User Based on Data Integration from Various Sources
18.00 – 21.00	<b>Conference welcome reception</b>

September 18

PLENARY SESSION, Room 217, main building

Chairman: Prof. Mykola Meykovskyy, Prof. Volodymyr Stepashko

Secretary: Tetiana Shestakevych

10.00 – 10.30	<i>Volodymyr Stepashko</i> On Asymptotic Properties of the GMDH Criteria for solving problems of data-driven modeling Ukraine
10:30 – 11:00	<i>Mikhail Alexandrov</i> Building classifiers for Processing Archives of Accidents in Manufacturing using Text Mining Tools Spain, Russia
11:00 – 11:30	<i>Sergii Babichev</i> Application of Optics Density-Based Clustering Algorithm Using Inductive Methods of Complex System Analysis Czech Republic
11:30 – 12:00	Coffee break
12:00 – 12:30	<i>Tatjana Lange</i> Transformation of the Euclidian data space into a homogeneous event space for the inductive construction of classification rules Germany
12:30 – 13:00	<i>Mykola Dyvak</i> A method of formation of structural elements in the task of structural identification of interval discrete models of the atmosphere pollution processes by harmful emissions of motor vehicles Ukraine
13:00 – 14:00	Dinner

September 18

14.00–17.00 Room 204, main building

### International workshop on Inductive modeling

Chairman: Prof. Volodymyr Stepashko

14:00 – 14:20	<i>Ie. Nastenka, V. Pavlov, O. Nosovets, K. Zelensky, Ol. Davidko, Ol. Pavlov</i> Optimal Complexity Models in Individual Control Strategy Task for Objects that Cannot be Re-trialed
14:20 – 14:40	<i>Serhiy Yefimenko, Volodymyr Stepashko</i> Revised Successive Search GMDH Algorithm with Recurrent Estimating Model Parameters
14:40 – 15:00	<i>Halyna Pidnebesna</i> A Correlation-Based Sorting Algorithm of Inductive Modeling using Argument Rating
15:00 – 15:20	<i>Olha Moroz</i> Software tool for solving inductive modelling tasks based on self-organizing combinatorial-genetic method
15:20 – 15:40	<i>Mykola Dyvak, Natalia Porplytsya, Yurii Maslyiak</i> Modeling of dynamics of harmful emissions from motor vehicles using a procedure of automated formation of structural elements of a model
15:40 – 16:00	Coffee break
16:00 – 16:20	<i>Svetoslav Zverev, Mikhail Alexandrov, Angels Catena, John Cardiff, Elena Shushkevich, Dmitry Srefanovskiy</i> Classification of Schoolchildren on Professional Trajectories using Experience of Successful Specialists
16:20 – 16:40	<i>Olena Tokova, Yevgeniya Savchenko</i> Modelling of Dependence of Mechanical Properties of Cast Iron on Chemical Composition of Raw Materials
16:40 – 17:00	<i>Volodymyr Osypenko, Victor Kaplun</i> Modeling of Dynamic Energy-Management Scenarios in Local Polygeneration Microgrids Using Inductive Bi-clustering Algorithm
17.00 – 21.00	Excursion



Session 3	September 18
14.00–17.00	Room 226, main building of Lviv Polytechnic National University

## Mathematical modeling

**Chairman: Prof. Liubov Zhuravchak**

14:00 – 14:15	<i>Mehmet Koc.</i> Different Decision Fusion Methods for Modular Common Vector Approach
14:15 – 14:30	<i>Ridvan Ozdemir and Mehmet Koc.</i> A Quality Control Application on a Smart Factory Prototype Using Deep Learning Methods
14:30 – 14:45	<i>Petro Pukach, Zinovii Nytrebych, Volodymyr Ilkiv, Myroslava Vovk and Yulia Pukach.</i> On the Mathematical Model of Nonlinear Oscillations under the Impact of a Moving Environment
14:45 – 15:00	<i>Heorhiy Hrynyk, Vladyslav Kysliuk and Yuriy Hrytsiuk.</i> Modeling of the Form Factors of Scots Pine Trees Across the Border of Pine Forests Stands Types Spreading
15:00 – 15:15	<i>Andrii Safonyk, Olena Prysiashniuk and Ihor Prysiashniuk.</i> Modeling of the processes of heat and mass transfer in the thin tube given the conditions of exchange with surrounding soil
15:15 – 15:30	<b>Coffee break</b>
15:30 – 15:45	<i>Grygoriy Chetverykov, Mykhailo Kopot and Vyacheslav Lyashenko.</i> Linear Predicates on a Cone of a Linear Space
15:45 – 16:00	<i>Roman Voliansky, Oleksandr Sadovoi, Nina Volianska and Oleksiy Sinkevych.</i> Root Methods for Dynamic Analysis of the One Class Chaotic Systems
16:15 – 16:30	<i>Anatoliy Mokiy, Mariia Pikh and Yuriy Pynda.</i> Methodological Approach for Detecting Dynamic Characteristics of Interconnections of Subsystems and Complex Systems
16:30 – 16:45	<i>Borys Bakay and Yuriy Tsymbalyuk.</i> Simulation of Transport System Traffic Between Obstacles
16:45 – 17:00	<i>Olena Demchuk, Hanna Balykhina, Volodymyr Kovalchuk, Pavlo Kovalchuk and Viktoria Rozhko.</i> Optimization of integrated water exchange management technologies in territorial systems for conditions of sustainable development
17.00 – 21.00	<b>Excursion</b>

## International Workshop on Information modeling. Data and knowledge engineering (SoftServe)

September 18	10 <sup>00</sup> -17 <sup>00</sup>
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**Chairman: Prof. Volodymyr Pasichnyk**

10:00 – 10:15	<i>Olga Lozynska, Valeriia Savchuk, Volodymyr Pasichnyk</i> The Sign Translator Information System for Tourist
10:15 – 10:30	<i>Olga Artemenko, Volodymyr Pasichnyk, Natalia Kunanec, Danylo Tabachyshyn</i> Using context analysis for providing real time recommendations in e-tourism mobile location-based recommender systems
10:30 – 10:45	<i>Tetiana Kovalyuk, Alexandr Ustimenko, Nataliya Kobets, Volodymyr Pasichnyk, Nataliia Kunanets</i> Cognitive modeling of students' competencies development in Higher Education system
10:45 – 11:00	<i>Oleksii Duda, Serhii Martsenko, Oleksandr Matsiuk, Nataliia Kunanets, Volodymyr Pasichnyk</i> The information system for planning the parameters of telecommunication operator networks
11:00 – 11:15	<i>Dmytro Terletsykyi</i> Run-time Class Generation: Algorithms for Intersection of Homogeneous and Inhomogeneous Classes

11:15 – 11:30	<i>Serhii Chernov, Liudmyla Chernova, Nataliia Kunanets, Liubava Chernova, Serhii Titov</i> The Analysis of Gomory Algorithm Convergence in Integer Linear Optimization Problem: Projects Management
11:30 – 11:45	<b>Coffee break</b>
11:45 – 12:00	<i>Vladyslav Aliksieiev, Andrii Berko</i> Information Analysis and Knowledge Gain within Graph Data Model
12:00 – 12:15	<i>Roman Holoshchuk, Volodymyr Pasichnyk, Nataliia Kunanets, Nataliia Veretennikova, Taras Pytlenko</i> Modeling the Distance Network-Oriented Education Systems
12:15 – 12:30	<i>Volodymyr Pasichnyk, Andrii Bomba, Nataliia Kunanets, Mariia Nazaruk, Yuriy Bilak</i> Modeling the redistribution processes of knowledge potential in the formation of the professional competency system
12:30 – 12:45	<i>Serhii Lupenko, Nataliia Kunanets, Volodymyr Pasichnyk, Andrii Horkunenko</i> The conceptual foundations of the axiomatic-deductive strategy of e-learning course knowledge organization with high semantic quality
12:45 – 13:00	<i>Maryna Zharikova, Vladimir Sherstjuk</i> Situation diagnosis based on the spatially-distributed dynamic disaster risk assessment
13:00 – 13:15	<i>Serhii Lupenko, Xu Mingtang, Oleksandra Orobchuk, Andrii Horkunenko</i> Onto-oriented expert system for supporting diagnostic and therapeutic decisions in the field of Chinese image medicine
13:15 – 13:30	<i>Igor Kovalenko, Yevhen Davydenko, Alyona Shved, Anzhela Boiko</i> Efficient Funds Allocation System Based on Fuzzy Logic and Smart Contracts
13.30 – 14.30	<b>Dinner</b>
14:30 – 14:45	<i>Ján Perháč</i> Intrusion Detection System Autonomous Reactions: Case Study
14:45 – 15:00	<i>Oleg Bisikalo, Olena Kovalenko, Yevgen Palamarchuk</i> Models of Behavior of Agents in the Learning Management System
15:00 – 15:15	<i>Sergey Stankevich, Iryna Piestova, Sergey Shklyar, Arthur Lysenko</i> Physically Constrained SAR Data Superresolution
15:15 – 15:30	<i>Askar Boranbayev, Seilkhan Boranbayev, Assel Nurusheva, Askar Nurbekov</i> Approaches to Ensure the Reliability and Resiliency of Information Systems
15:30 - 15:45	<i>Svitlana Popereshnyak, Anastasiya Vecherkovskaya</i> Modeling Ontologies in Software Testing
15:45 – 16:00	<b>Coffee break</b>
16:00 – 16:15	<i>Mykola Fisun, Hlib Horban, Ihor Kandyba</i> Processing of Relational Algebra Expressions by the Shunting Yard Algorithm
16:15 – 16:30	<i>Andrzej Kułakowski, Wojciech Ćwiek</i> Proposal of simple agent simulation model of airliner evacuation process
16:30 – 16:45	<i>Ivan Tsmots, Yurii Tsybmal, Oleksa Skorokhoda, Roman Tkachenko</i> Neural-like Methods and Hardware Structures for Real-time Data Encryption and Decryption
16:45 – 17:00	<i>Vasyl Andrunyk, Volodymyr Pasichnyk, Tetiana Shestakevych, Natalya Antonyuk</i> Modeling the recommender system for the synthesis of information and technology complexes for the education of students with autism
17:00 – 17:15	<i>Antonii Rzhеuskyi, Orest Kutyuk, Victoria Vysotska, Yevhen Burov, Vasyl Lytvyn, Lyubomyr Chyrun</i> The Architecture of Distant Competencies Analyzing System for IT Recruitment
17:15 – 17:30	<i>Stanislav Bilokon, Yuriy Turbal, Nataliia Kunanets, Volodymyr Pasichnyk</i> Mathematical and computer modeling of the sprinklers pollution processes in irrigation systems
17:30 – 17:45	<i>Taisa Borovska, Dmitry Grishin, Irina Kolesnik, Victor Severilov</i> Mathematical models and programs of resource feedbacks in the systems "production, retail"
17:45 – 18:00	<i>Taisa Borovska, Dmitry Grishin, Irina Kolesnik, Victor Severilov, Ivan Stanislavsky, Tetiana Shestakevych</i> Research and development of models and programs for optimal product line control
18.00 – 22.00	<b>Excursion</b>

## International workshop on Project management (SoftServe)

September 18

10<sup>00</sup>-18<sup>00</sup>

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

10:00 – 10:15	<i>Anatoliy Tryhuba and Oleg Bashynsky</i> Coordination of dairy workshops projects on the communityterritory and their project environment
10:15 – 10:30	<i>Anatoliy Tryhuba, Oksana Ftoma, Inna Tryhuba and Oleh Boyarchuk</i> Method of quantitative assessment of the risk of benefits for investors of fodder-producing cooperatives
10:30 – 10:45	<i>Nataliia Kunanets, Antonii Rzhеuskyi, Bogdan Plyasun, Volodymyr Pasichnyk and Vasyl Kut</i> Intellectual System for Codicological Analysis of Manuscripts
10:45 – 11:00	<i>Nataliia Kunanets, Antonii Rzhеuskyi, Bozена Sudakova, Volodymyr Pasichnyk, Mariia Nazaruk and Yuriy Bilak</i> The Project of Intellectual System for Rating of Educational Institutions
11:00 -11:15	<i>Vira Liubchenko</i> Model of Alignment between Personal Expectations and Project Needs
11:15 – 11:45	<i>Askar Boranbayev, Seil Khan Boranbayev and Askar Nurbekov</i> Implementation of a software system on the detection and neutralization of information systems risks
11.45 – 12.00	<i>Nataliia Kunanets, Nataliia Boiko and Ostap Vasiuta</i> Advanced Technologies of Big Data Research in Distributed Information Systems
12:00 – 12:15	<i>Varvara Pitera, Anatoliy Shakhov, Oleh Lohinov and Liliia Lohinova</i> The Method of Transfer of Research Project Results of Institution of Higher Education
12:15 – 12:30	<i>Sergey Kiyko, Evgeniy Druzhinin, Oleksandr Prokhorov and Dmitriy Kritsky</i> Management of energy saving project and programs at metallurgical enterprises
12:30 – 12:45	<i>Oleh Zachko, Roman Golovatyi and Dmytro Kobylkin</i> Models of safety management in development projects
13:00 – 13:15	<i>Nataliia Yehorchenkova and Oleksii Yehorchenkov</i> Conceptual Groundwork of Digital Transformation of Project Management
13.30 – 14.30	<b>Dinner</b>
14:30 – 14:45	<i>Nataliia Dotsenko, Dmytro Chumachenko and Igor Chumachenko</i> Modeling of the process of critical competencies management in the multi-project environment
14:45 – 15:00	<i>Milica Jovanovic, Vladimir Obradovic and Marija Todorovic</i> ICT Development as A Key Innovation Driver: The Project Management Approach
15:00 – 15:15	<i>Volodymyr Pasichnyk, Mariia Nazaruk, Nataliia Kunanets, Nataliia Veretennikova and Antonii Rzhеuskyi</i> Simulation of the social communication system in projects of smart cities
15:15 – 15:30	<i>Roman Holoshchuk, Nataliia Kunanets, Volodymyr Pasichnyk, Oksana Kunanets, Antonii Rzhеuskyi and Roman Korzh</i> Engineering methods for implementation of dual education principles in domain of IT
15:30 – 15:45	<i>Oleh Veres, Volodymyr Pasichnyk, Nataliia Kunanets, Nataliia Veretennikova, Roman Korzh and Andriy Leheza</i> Development and Operations – the Modern Paradigm of the Work of IT Project Teams
15:45 – 16:00	<i>Olena Verenysh, Viktoriia Bushuieva and Denis Bushuiev</i> The Blended Mental Space: erosions as a reason of a project failure

16:00 – 16:15	<i>Sergey Bushuyev and Anastasiia Voitushenko</i> Determination of competences that take affect the formation of creative capabilities of team of managers
16:15 – 16:30	<i>Oleksandr Voitenko, Alexander Timinsky and Igor Achkasov</i> Competence-based knowledge management in project oriented organisations in bi-adaptive context
16:30 – 16:45	<i>Sergey Bushuyev and Nadiia Rusan</i> Conceptual model of the project success: emotional intelligence, competences of managers, transformational leadership, values
16:45 – 17:00	<i>Natalia Bushuyeva and Maryna Kutsenko</i> Data Mining techniques in projects with multinational teams
17:00 – 17:15	<i>Anatoliy Ivankevich, Anatoliy Shakhov, Varvara Pitera, Valentin Shakhov and Vladimir Yarovenko</i> A Proactive Strategy of Ship Maintenance Operations
17:15 – 17:30	<i>Sergiy Bushuyev, Boris Kozyr and Alina Zapryvoda</i> Strategic audit of infrastructure projects
17:30 – 17:45	<i>Ivan Oberemok and Nataliia Oberemok</i> Agile methods of product formation and the results of an innovative project
17:45 – 18:00	<i>Natalya Chukhray, Natalya Shakhovska, Oleksandra Mrykhina, Myroslava Bublyk and Lidiya Lisovska</i> Consumer aspects in assessing the suitability of technologies for the transfer
18.00 – 22.00	<b>Excursion</b>

<b>Session 4</b>	<b>September 19</b>
<b>10.00–13.00</b>	<b>Room 217, main building</b>

## Intelligent Management Technologies

**Chairman: Prof. Ivan Tsmots**

10:00 – 10:15	<i>Mariana Grytsiuk, Yuriy Hrytsiuk, Pavlo Grytsyuk and Orest Kiyko.</i> Modeling the Behavior of Tourist Agencies in the Market of Providing Services
10:15 – 10:30	<i>Andriy Ivanusa, Sergiy Yemelyanenko, Roman Yakovchuk and Zoryana Ivanusa.</i> Safety-focused Stakeholder Management in Civil Protection Projects
10:30 – 10:45	<i>Oleksandr Tymchenko, Bohdana Havrysh, Orest Khamula, Bohdan Kovalskyi, Svitlana Vasiuta and Ihor Lyakh.</i> Methods of Converting Weight Sequences in Digital Subtraction Filtration
10:45 – 11:00	<i>Roman Kaminsky, Natalya Shakhovska, Andrew Khudy.</i> Calculating the constant in the Hurst index for the time series
11:00 – 11:15	<i>Yuliia Tatarinova and Olga Sinelnikova.</i> Automatic construction of a neuro-fuzzy vulnerability risk analysis model
11:15 – 11:30	<i>Pavlo Lub, Andriy Sharybura, Vitaliy Pukas and Olga Lysiuk.</i> Modelling of the technological systems projects of harvesting agricultural crops
11:30 – 11:45	<b>Coffee break</b>
11.45 – 12.00	<i>Mykola Medykovskiy and Roman Melnyk.</i> Method of optimizing the parameters of the photovoltaic solar power plant regime
12:00 – 12:15	<i>Rostyslav Kudrynetskyi, Viktor Dnes, Roman Kuzminskyj and Volodymyr Skibchuk.</i> Substantiation of rational seasonal scenario of inter-farm use of combine harvesters
12:15 – 12:30	<i>Borys Bakay, Yuriy Tsymbalyuk and Ihor Rudko.</i> Managing a Life Cycle of the Mechanical Engineering Product
12:30 – 12:45	<i>Andriy Peleshchyshyn and Henrikh Bandrovskiy.</i> Informational influence in social networks: dynamics modeling based on the system of linear equations
12.45 – 13.00	<i>Pawel Czarnul and Mariusz Matuszek.</i> Use of ICT infrastructure for teaching HPC
13.00 – 14.00	<b>Dinner</b>

Session 5	September 19
14.00–17.00	Room 217, main building of Lviv Polytechnic National University,

## Intelligent Management Technologies

**Chairman: Prof. Ivan Tsmots**

14:00 – 14:15	<i>Lubomyr Sikora, Natalya Lysa, Roman Martysyshyn, Yulia Miyushkovych, Yaroslav Dragan and Bohdana Fedyna.</i> Technology of Monitoring the Dynamic Displacements of Objects Spatial Structures Using a Laser Surface Sensing System
14:15 – 14:30	<i>Volodymyr Kuchkovskiy.</i> Information technology of Blockchain: database, smart contracts, architecture
14:30 – 14:45	<i>Artur Zaporozhets, Svitlana Kovtun and Oleg Dekusha.</i> Determination of the technical condition of heating networks based on the processing of thermal imaging
14:45 – 15:00	<i>Ivan Tsmots, Oleg Riznyk, Vasyl Rabyk and Yurii Kynash.</i> Method of Synthesis and Practical Realization of Quasi-Barker Codes
15:00 – 15:15	<i>Yuriy Hrytsiuk, Pavlo Grytskyuk and Tetiana Dyak.</i> Averaging Methods of Expert Based Evaluation of Software Quality
15:15 – 15:30	<b>Coffee break</b>
15:30 – 15:45	<i>Volodymyr Lytvynenko, Andry Fefelov, Nataliia Savina, Irina Lurie, Jan Krejci and Mariia Voronenko.</i> The use of Bayesian methods in the task of localizing the narcotic substances distribution
15:45 – 16:00	<i>Yuki Hashimoto and Tatsuya Yamazaki.</i> Information Design of Evaluation Application and Process for Japanese Sake
16:15 – 16:30	<i>Svitlana Kuznichenko, Iryna Buchynska, Ludmila Kovalenko and Yurii Gunchenko.</i> A GIS-based Fuzzy Multi-Criteria Analysis Approach to Industrial Site Selection
16:30 – 16:45	<i>Volodymyr Riznyk.</i> Model of Intelligent Toroidal System of Axes
16:45 – 17:00	<i>Oleksii Shamuratov, Natalya Shakhovska, Yuriy Ryshkovets, Ihor Kohut.</i> The methods for Contour Analysis of Images
17.00 – 21.00	<b>Excursion</b>

Session 6	September 19
14.00–15.30	Room 217, main building

## ICT in Higher Education

**Chairman: Prof. Dmytro Fedasyuk**

14:00 – 14:15	<i>Roman Korzh, Andriy Peleshchyshyn, Olha Trach and Mikola Tsiutsiura.</i> Analysis of the integrity and completeness of the higher education institution informational image coverage
14:15 – 14:30	<i>Kateryna Yalova and Kseniia Yashyna.</i> Virtual laboratory practicum on the «Databases» discipline
14:30 – 14:45	<i>Yulia Romanyshyn, Vasyl Sheketa, Volodymyr Pikh, Yaryna Kalambet, Liudmyla Poteriailo and Nadiia Pasiaka.</i> Social-Communication Web Technologies in the Higher Education as Means of Knowledge Transfer
14:45 – 15:00	<i>Tetyana Neroda and Roman Ivaskiv.</i> Designing the Integrated Multi-User Media Platform for Educational and Scientific Research Support
15:15 – 15:30	<b>Coffee break</b>

Session 7	September 19
10.00–15.30	Room 204, main building of Lviv Polytechnic National University,

## Artificial intelligence

**Chairman: Prof. Nataliya Shakhovska**

10:00 – 10:15	<i>Sergei Yelmanov and Yuriy Romanyshyn. A New Approach to Image Enhancement by Intensity Transformation</i>
10:15 – 10:30	<i>Mykhailo Verkhola, Ulyana Panovyk and Ihor Huk. A Neural Network Model for Modeling and Analysis of Ink Printing Systems</i>
10:30 – 10:45	<i>Yuriy Zaychenko and Michael Zgurovsky. Banks Bankruptcy Risk Forecasting with Application of Computational Intelligence Methods</i>
10:45 – 11:00	<i>Vitaliy Boyun. Principles of organization selection and pre-processing video information. Bioinspired approaches</i>
11:00 – 11:15	<i>Mykola Korablyov, Natalia Axak, Olesia Barkovska and Dmytro Rosinskiy. Hybrid adaptive decision-making model based on fuzzy logic and artificial immune systems</i>
11:15 – 11:30	<i>Roman Bazylevych, Mariusz Wrzesień and Lubov Bazylevych. Power System Islanding by the Hierarchical Clustering</i>
11:30 – 11:45	<b>Coffee break</b>
11.45 – 12.00	<i>Alona Moskalenko, Vyacheslav Moskalenko and Nikolay Zaretskiy. Model and training method of moving object classification system for a compact drone</i>
12:00 – 12:15	<i>Nataliya Boyko, Andrii Stasiuk and Volodymyr Solohub. System Of Restriction Access With The Help Of NodeMCU And RFID Module</i>
12:15 – 12:30	<i>Vasyl Sheketa, Mykola Chesanovsky, Volodymyr Pikh, Liudmyla Poteriailo, Yulia Romanyshyn and Mykola Pasyeka. Case-Based Notations for Technological Problems Solving in the Knowledge-Based Environment</i>
12:30 – 12:45	<i>Nataliya Antonyuk, Artem Vysotsky, Victoria Vysotska, Vasyl Lytvyn, Yevhen Burov, Andriy Demchuk, Iryna Lyudkevych, Lyubomyr Chyrun, Sofiia Chyrun, Igor Bobyk. Consolidated Information Web Resource for Online Tourism Based on Data Integration and Geolocation</i>
12.45 – 13.00	<i>Oleh Veres, Ihor Rishnyak and Halyna Rishniak. Algorithm for classification of symbols when recognizing a mathematical expression</i>
13.00 – 14.00	<b>Dinner</b>
14:00 – 14:15	<i>Dmytro Chumachenko, Ievgen Meniailov, Kseniia Bazilevych, Tetyana Chumachenko and Yuliia Kuznetsova. Development of an intelligent agent-based model of the epidemic process of syphilis</i>
14:15 – 14:30	<i>Sergei Yelmanov and Yuriy Romanyshyn. A New Approach to Image Enhancement based on Modified Histogram Equalization</i>
14:30 – 14:45	<i>Anatoliy Shevchenko. WHO IS INTELLIGENCE?</i>
14:45 – 15:00	<i>Fedir Geche, Oksana Mulesa, Anatoliy Batyuk and Veronika Voloshchuk. Generalized Logical Neural Functions Over The Galois Field And Their Properties</i>
15:00 – 15:15	<i>Oksana Pichugina, Sergiy Yakovlev Quadratic Optimization Models and Convex Extensions on Permutation Matrix Set</i>
15:15 – 15:30	<b>Coffee break</b>

Session 8	September 19
15.30–16.30	Room 204, main building of Lviv Polytechnic National University,

## Cyber-physical systems

**Chairman: Prof. Mykhailo Lobur**

15:30 – 15:45	<i>Serhiy Shcherbovskykh, Mykhailo Lobur, Tetyana Stefanovych, Kamil Staniec and Tadeusz Więckowski.</i> Load-sharing Accounting Between Communication Channels for Three Servers System Based on k-Terminal Dynamic Fault Tree
15:45 – 16:00	<i>Serhii Ivanov, Leonid Vorobiov, Oleg Dekusha, Leonid Dekusha and Zinaida Burova.</i> The Synchronous Thermal Analysis Cyber-Physical System for the Wet Materials Properties Study
16:15 – 16:30	<i>Dmytro Havrilov, Serhii Baraban, Andrii Volovik, Oleksandr Zviahin, Andriy Semenov and Anton Savytskyi.</i> Real-Time Video Processing System based on Field Programmable Gate Array
17.00 – 21.00	<b>Excursion</b>

Session 9	September 19
10.00–14.30	Room 226, main building of Lviv Polytechnic National University,

## Software engineerig

**Chairman: Prof. Vitaliy Yakovyna**

10:00 – 10:15	<i>Roman Melnyk and Ruslan Tushnytskyy.</i> Distributed Cumulative Histogram Features for Similarity Graph Decomposition of Face Images
10:15 – 10:30	<i>Pavlo Zhezhnych and Teodor Burak.</i> An approach to multiple security system development using database schemas
10:30 – 10:45	<i>Vitaliy Yakovyna, Bohdan Uhrynovskyy and Oleksandr Bachkay.</i> Software Failures Forecasting by Holt – Winters, ARIMA and NNAR Methods
10:45 – 11:00	<i>Roman Melnyk, Ruslan Tushnytskyy and Yuriy Kalychak.</i> Modification of SWIR Face Images for their Comparison by Distributed Cumulative Histogram Features
11:00 – 11:15	<i>Yuriy Hrytsiuk, Pavlo Grytsyuk, Tetiana Dyak and Heorhiy Hrynyk.</i> Software Development Risk Modeling
11:15 – 11:30	<i>Ruslan Tushnytskyy, Roman Sahan and Tetyana Korotyeyeva.</i> Effective dynamic interactive component of time-varying data visualization
11:30 – 11:45	<b>Coffee break</b>
11.45 – 12.00	<i>Mikola Yeremiyev, Dmitriy Kritskiy, Alexander Karatanov and Olha Pohudina.</i> Automated system of the variable-pitch propeller rotation control
12:00 – 12:15	<i>Roman Bazylevych and Andrii Franko.</i> Parallelization of unit tests generation by Control Flow Graph analisys
12:15 – 12:30	<i>Yuriy Hrytsiuk and Orest Bilas.</i> Visualization of Software Quality Expert Assessment
12:30 – 12:45	<i>Yuriy Hrytsiuk and Taras Mukha.</i> Software Quality Determination with Using of Metrics Analysis
12.45 – 13.00	<i>Tetiana Hovorushchenko, Olga Pavlova and Kostyantyn Kobel.</i> Method of Evaluating the User Interface of Software Systems for Compliance with the Gestalt Principles
13.00 – 14.00	<b>Dinner</b>
14:00 – 14:15	<i>Viktor Shynkarenko and Oleksandr Zhevago.</i> Visualization of program development process
14:15 – 14:30	<i>Oleksii Duda, Nataliia Kunanets, Serhii Martsenko, Oleksandr Matsiuk and Volodymyr Pasichnyk.</i> Software modelling complex of network operating parameters with variable input data

Session 10	September 19
14.45–17.00	Room 226, main building of Lviv Polytechnic National University,

## Applied linguistics

**Chairman: Prof. Olena Levchenko**

14:45 – 15:00	<i>Iryna Khomytska and Vasyl Teslyuk</i> . Mathematical Methods Applied for Authorship Attribution on the Phonological Level
15:00 – 15:15	<i>Olena Flys</i> . Cognitive Modeling of Lingual Cultural Type "Woman" (Graph analysis)
15:15 – 15:30	<b>Coffee break</b>
15:30 – 15:45	<i>Victoria Vysotska, Vasyl Lytvyn, Viktoriia Kovalchuk, Solomiya Kubinska, Marianna Dilai, Bohdan Rusyn, Liubomyr Pohreliuk, Lyubomyr Chyrun, Sofiia Chyrun, Oksana Brodyak</i> . Method of Similar Textual Content Selection Based on Thematic Information Retrieval
15:45 – 16:00	<i>Uliana Kryva and Marianna Dilai</i> . Automatic Detection of Sentiment and Theme of English and Ukrainian Song Lyrics
16:15 – 16:30	<i>Halyna Matsiuk and Nataliia Kunanets</i> . Application of the "Smart City" data domain thesaurus as the tool for representing knowledge while improving the problem-oriented Web search effectiveness
16:30 – 16:45	<i>Oksana Taran, Iryna Karamysheva, Roksolana Nazarchuk and Ihor Drahushchak</i> . The Software Product "Education Web Scraper" in the Sociolinguistic Monitoring of the Language Situation in Ukraine
16:45 – 17:00	<i>Solomiia Albota and Andriy Peleshchyn</i> . Requirements for the Linguistic Quality Control of Wikipedia Article
17.00 – 21.00	<b>Excursion</b>

## FINAL SESSION

September 20	14 <sup>00</sup> -15 <sup>00</sup>
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**Chairman: Prof. M. Medykovsky, 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

