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CZECHOSLOVAKIA SECTION IEEE \ COMPUTER CHAPTER, C16
TERNOPIL REGION ASSOCIATION OF PROFESSIONALS IN COMPUTER
INFORMATION TECHNOLOGY, UKRAINE

2024 14th International Conference on
**ADVANCED COMPUTER
INFORMATION TECHNOLOGIES**
CONFERENCE PROGRAM



Ceske Budejovice, Czech Republic
19-21 September 2024

ORGANIZERS

- West Ukrainian National University, Ukraine
- University of South Bohemia, Czech Republic
- Wroclaw University of Economics and Business, Poland
- Deggendorf Institute of Technology, Germany
- Catholic University in Ružomberok, Slovakia

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CONFERENCE SECTIONS

Section ID	Section Title / Location
S1	Computational Intelligence and Mathematical Modelling
S2	Information in Economy and Management
S3	Cyber Security
S4	Specialized Information and Computer Systems
S5	Artificial Intelligence and Cognitive Systems
S6	Information Technology in Education

CONFERENCE STATISTICS

Number of submitted papers – 302, Number of accepted papers –173, Acceptance rate – 57 %

PARTICIPANTS BY COUNTRY

Albania, Algeria, Austria, Azerbaijan, Bangladesh, Belgium, Botswana, Brazil, Bulgaria, Cameroon, Canada, China, Congo, Croatia, Cyprus, Czech Republic, Denmark, Ecuador, France, Gabon, Gambia, Georgia, Germany, Ghana, Greece, India, Indonesia, Iran, Iraq, Israel, Italy, Japan, Jordan, Kazakhstan, Kenya, Kyrgyz Republic, Latvia, Lithuania, Luxembourg, Malaysia, Namibia, Nairobi, Norway, Pakistan, Papua New Guinea, Philippines, Poland, Saudi Arabia, Slovakia, South Africa, Sudan, Sweden, Switzerland, Tunisia, Turkey, Turkmenistan, Ukraine, United Kingdom, USA, Uzbekistan, Vietnam, Zambia

CONFERENCE TIMETABLE

Physical location	Faculty of Science, University of South Bohemia 31a Branišovská str., Building B			
	Room B-2	Room B-4	Room B-5	Room B-6
Zoom	Zoom 1	Zoom 2	Zoom 3	Zoom 4
Thursday, 19.09.2024				
9:00 - 10:00	Registration & Coffee (foyer of Building B)			
10:00 - 10:45	Opening Ceremony (Room B-2 / Zoom 5)			
11:00 - 13:00	S2. Block A I. Grebennik, R. Pasichnyk	S3. Block A L. Dostálek, V. Yatskiv	S1. Block A V.Stepashko, A. Pukas	S4. Block A N. Shakhovska, R. Vohnout
13:00 - 14:00	Lunch			
14:00 - 15:30	S2. Block B R. Pasichnyk, I. Grebennik	S2. Block G R. Zvorych, O. Liashenko	S1. Block B A. Pukas, V.Stepashko	S4. Block B V. Melnyk, A. Melnyk
15:30 - 16:00	Coffee break (foyer of Building B)			
16:00 - 17:30	S2. Block C R. Zvorych, R. Pasichnyk	S5. Block A Y. Bodyanskiy, J. Fesl	S1. Block C V. Kulish, V. Manzhula	S4. Block C R. Vohnout, N. Shakhovska
Friday, 20.09.2024				
8:00 - 9:00	Coffee break (foyer of Building B)			
9:00 - 11:00	S2. Block D A. Rot, O. Liashenko	S3. Block B L. Dostálek, R. Shevchuk	S1. Block D N. Porplytsya, M. Andriychuk	S6. Block A W. Gryniewicz, O. Tsaryk
11:00 - 11:30	Coffee break (foyer of Building B)			
11:30 - 13:00	S2. Block E O. Liashenko, A. Rot	S5. Block B J. Fesl, Y. Bodyanskiy	S1. Block E V. Manzhula, V. Kulish	S6. Block B O. Tsaryk, I. Shcherbiak
13:00 - 14:00	Lunch			
15:00 - 20:00	Excursion (The State Chateau of Hluboká)			
Saturday, 21.09.2024				
8:00 - 9:00	Coffee break (foyer of Building B)			
9:00 - 11:00	S2. Block F I. Grebennik, A. Rot	S5. Block C M. Hernes, W. Dorner	Poster Section (S1-S6) (foyer of Building B) R. Shevchuk, A. Melnyk	
11:00 - 11:30	Meeting of the Board			
11:45 - 12:15	Closing Ceremony (Room B-2 / Zoom 5)			
ID				
S1	Computational Intelligence and Mathematical Modelling			
S2	Information in Economy and Management			
S3	Cyber Security			
S4	Specialized Information and Computer Systems			
S5	Artificial Intelligence and Cognitive Systems			
S6	Information Technology in Education			

All schedules of the conference are based on Central European Summer Time

PARTICIPANTS INSTRUCTION

The conference will be held as hybrid conference, attendees can attend the conference virtually from anywhere or even opt to visit the physical venue.

Online participation will take place via software ZOOM. The software will install once before using it, by clicking the link to the zoom room. Follow the installation instructions. On the website zoom.us you can also find the download and installation instructions. It is not necessary to create an account in zoom for joining the conference.

The conference will be held in the following ZOOM Meeting rooms. Either use the link below or in the programme or copy the Meeting ID to your Zoom-Software:

Name	Zoom Address	Meeting-ID	Code
Zoom 1	https://wunu-edu-ua-ternopil.zoom.us/my/room1	339 812 3203	2024
Zoom 2	https://wunu-edu-ua-ternopil.zoom.us/my/room2	936 448 8755	
Zoom 3	https://wunu-edu-ua-ternopil.zoom.us/my/room3	557 583 2940	
Zoom 4	https://wunu-edu-ua-ternopil.zoom.us/my/room4	228 709 3261	
Zoom 5	https://wunu-edu-ua-ternopil.zoom.us/my/room5	775 106 2814	

TIME LIMITS

Presentation: 7-10 minutes short presentation during the Zoom online session or offline.

Poster: Offline.

Discussion: 5 minutes after each presentation.

OPENING CEREMONY

Thursday, 19 September

10:00 - 10:45

Location: Zoom 5 / Room B-2

Welcome Speech and Participants Congratulation

S1: Computational Intelligence and Mathematical Modelling. Block A

Date: Thursday, 19 September

11:00 – 13:00

Session Chairs: Volodymyr Stepashko, Andriy Pukas

Location: Zoom 3 / Room B-5

1. *Dmytro Sobchuk, Lubov Dobrovolska, Nadiia Kuts, Andrii Hadai, Mykola Romaniuk, Ihor Kundyra*. Reliability and Continuity of Hybrid Power Supply Systems Included Renewable Energy Sources
2. *Gennadii Sokolov, Maksym Zaliskyi, Yuliia Petrova, Ivan Yashanov*. Assessment of Probabilistic Characteristics for the Fire Initial Stage Detection Using Thermal Detectors
3. *Serhii Migel, Maksym Zaliskyi, Roman Odarchenko, Zarina Poberezhna, Alina Osipchuk, Oleksandr Lavrynenko*. Speech Recognition System for Ukrainian Language.
4. *Kyrylo Krasnikov*. Mathematical and Fuzzy Model for Slag Thickness Control Automation in Gas-stirred Ladle
5. *Ihor Kosovych, Igor Cherevko, Tetiana Shchur, Dmytro Shkilniuk*. Computer Modeling of the Dynamics of Epidemiological Processes
6. *Iryna Dorosh, Andrii Dorosh, Igor Cherevko, Mykhailo Marchenko, Larysa Cheban*. Mathematical Modeling of Biomass and Carotenoid Accumulation in Microalgae
7. *Krzysztof Górecki, Przemysław Ptak*. Modeling Dynamic Properties of an Alkaline Electrolyzer
8. *Serhiy Yefimenko, Yevheniya Savchenko-Syniakova, Volodymyr Stepashko*. System Modeling of Physical and Mechanical Properties of a Casting on its Chemical Composition

S1: Computational Intelligence and Mathematical Modelling. Block B

Date: Thursday, 19 September

14:00 – 15:30

Session Chairs: Andriy Pukas, Volodymyr Stepashko

Location: Zoom 3 / Room B-5

1. *Mennan Guder, Nazmiye Balta-Ozkan*. An Integrated Agent-Based Modelling and Machine Learning Framework for Enhancing the Digital Service Access of Minority Ethnic Communities
2. *Nadia Vasylkiv, Lesia Dubchak, Mikolaj Karpinski, Iryna Turchenko, Liubomyr Flud, Tetiana Nadvynychna*. Fuzzy System of IT-Project Works Priority
3. *Mykola Dyvak, Iryna Spivak, Taras Dyvak, Oleksandr Kindzerskyi*. Modeling the Interaction of Unmanned Aerial Vehicles in a Swarm as an Object with Distributed Parameters
4. *Mykola Dyvak, Oleksandr Kindzerskyi*. Implementation of Parallel Computation for Identification of Interval Models based on Multi-core Parallelism and CUDA Technology

5. *Roman Yuzefovych, Ihor Javorskyj, Oleh Lychak, Yury Torba, Yevgen Sbrodov, Bohdan Komarnytskyi.* Correlation Matrix for Analysis of the Covariance and Spectral Structures of PNRP
6. *Halyna Melnyk, Vasyl Melnyk.* Enhancing Mood Detection in Textual Analysis through Fuzzy Logic Integration

S1: Computational Intelligence and Mathematical Modelling. Block C

Date: Thursday, 19 September

16:00 – 17:30

Session Chairs: Vladimir Kulish, Volodymyr Manzhula

Location: Zoom 3 / Room B-5

1. *Natalia Chernova, Olena Serhiienko, Maryna Mashchenko, Iryna Lisna, Olha Haponenko.* Machine Learning Algorithms Application for Fixed-Income Market Analysis: Cross Countries Comparisons
2. *Nataliia Dziubanovska, Andrii Aliluiko, Andrii Tymkiv.* Forecasting Key Indicators of EU International Trade Based on Hybrid Models that Combine SARIMAX and ANN.
3. *Vladimir Vlasenko, Sergii Khlamov, Vadym Savanevych, Tetiana Trunova, Iryna Tabakova, Mariia Mendeleva.* High-Frequency Filtration for the Brightness Alignment of the Astronomical Frame Background
4. *Oleksandr Andreykiv, Iryna Dolinska, Sviatoslav Nastasiak, Mykola Liubchak, Serhii Kozibroda.* Mathematical Modeling of the Influence of Natural Factors on the Durability of Critical Structural Elements
5. *Olena Rayevnyeva, Kostyantyn Stryzhychenko, Olha Brovko.* The Investigation of the Long-Term and Short-Term Cointegration Effects between GDP and Migration
6. *Olena Rayevnyeva, Silvia Matusova, Olha Brovko.* Analysis and Modeling of Structural Changes in Ukrainian Higher Educational System

S1: Computational Intelligence and Mathematical Modelling. Block D

Date: Friday, 20 September

9:00 – 11:00

Session Chairs: Natalia Porplytsya, Mykhaylo Andriychuk

Location: Zoom 3 / Room B-5

1. *Mykhaylo Andriychuk, Borys Yevstyhneiev, Yarko Kuleshnyk.* Modeling the Radiation Characteristics of a Set Chaotically Placed Microparticles
2. *Igor Grebennik, Oleksii Kovalenko.* Realisation of a Given Trucks Loading Logic using a Fuzzy Decision Making Model
3. *Olga Ivanets, Mikle Burichenko, Maryna Arkhyrei, Iryna Morozova, Pavlo Kulakov, Salimov Rynat.* Quantitative Analysis of Recurrent Plots for Assessing the State of Dynamic Systems
4. *Olha Chala, Ivan Izonin, Iryna Pliss, Yevgeniy Bodyanskiy.* Neuro-Fuzzy System With Adaptive Membership-Activation Functions For Pattern Recognition

5. *Olha Kovalchuk, Serhiy Banakh, Mariia Masonkova, Andrii Kolesnikov, Pavlo Chopyk, Pavlo Basisty.* Association Rules Mining in Crime Data Analysis
6. *Olha Sushchenko, Yurii Bezkorovainyi, Oleksander Salyuk, Oleksander Zhdanov.* Application of Neural Networks in Digital Data Processing
7. *Olha Sushchenko, Yurii Bezkorovainyi.* Modelling of the Operation Algorithm for Inertial Navigation Systems Assigned for UAVs
8. *Mykola Dyvak, Roman Pasichnyk.* Inductive and Deductive Approaches to Modeling the Daily Cycle of Carbon Monoxide Concentrations Due to Air Pollution by Motor Vehicles

S1: Computational Intelligence and Mathematical Modelling. Block E

Date: Friday, 20 September

11:30 – 13:00

Session Chairs: Volodymyr Manzhula, Vladimir Kulish

Location: Zoom 3 / Room B-5

1. *Sergii Khlamov, Vadym Savanevych, Volodymyr Troianskyi, Igor Grebennik, Yehor Bondar, Yuriy Netrebin.* Recognition Pattern Analysis of Astronomical Object Forms Using the Analytical Model
2. *Mykola Dyvak, Svitlana Krepych, Volodymyr Manzhula, Tsovka Yurii, Pavlo Popovych, Vadym Zabchuk.* Identification of the Mathematical Model of the pH Environment in the Biogas Plant Based on the Application of the Swarm Intelligence Method
3. *Serhiy Sveleba, Ivan Katerynychuk, Ivan Kunyo, Volodymyr Brygilevych, Volodymyr Franiv, Oleksandr Krychevets.* Convolutional Neural Network with Optimized Learning Parameters
4. *Yaroslav Pyanylo, Nazar Prytula, Olga Khymko, Myroslav Prytula, Zoia Prytula.* Optimal Planning of Operation Modes of Gas Transmission Systems
5. *Yaroslav Pyanylo, Sofiya Tvardovska, Halyna Pyanylo.* The Spectral Methods of Investigation the Processes of Heterodiffusion in the Terms of Fractional Derivatives 182
6. *Nazariy Lopuh, Yaroslav Pyanylo.* Simulation of Gas Filtration Processes in Fractured-Porous Media.
7. *Olena Syrotkina, Ziad Kobti, Mykhailo Aleksieiev, Dmytro Moroz, Iryna Udovyk, Andrii Martynenko.* Mathematical Methods for Reducing the Search Space for Solutions in “Big Data” Analysis and Management

S2: Information in Economy and Management. Block A

Date: Thursday, 19 September

11:00 – 13:00

Session Chairs: Igor Grebennik, Roman Pasichnyk

Location: Zoom 1 / Room B-2

1. *Dmytro Sokolovskyi*. Model of Product Displacement from the Market: Market Failure under Complete Information
2. *Aditi Rajput, Aradhana Gandhi*. Finfluencer: Exploring the Untapped Influence of Financial Influencers
3. *Andrii Oliinyk, Tetiana Melnyk, Kateryna Kovtoniuk, Liudmyla Hulciaieva, Ellana Molchanova, Ianina Tkachenko*. ICT Investment Impact on Economic Growth: Comparing Developing and Advanced Economies
4. *Andrii Trach, Vasyl Pryimak, Olga Holubnyk*. Application of the Apparatus of Fuzzy Logic for Assessing the Development of Human Capital in Ukraine
5. *Bernhard Axmann, Sevgin Ahmed, Dzhelil, Asna Najeeb*. Practical Comparison of UiPath and Power Automate by Creating an Automation Use Case from Logistics
6. *Bogdan Adamyk, Vladlena Benson, Oksana Adamyk, Bożena Fraczek, Anitha Chinnaswamy*. Barriers to Trust in AI: A Study of the Explainability Technologies Adoption in Banks
7. *Tetiana Zheliuk, Dmytro Shushpanov, Alina Zhukovska, Viktor Ostroverkhov, Oleksandr Brechko, Volodymyr Matsyk*. Digitalization as a Tool for Healthcare System Resilience
8. *Deng Dejun, Li Xiaoqing, Nataliia Pochynok*. AI and Big Data in Analyzing Family Business Governance: Non-Family CEOs' Impact on Accounting Irregularities

S2: Information in Economy and Management. Block B

Date: Thursday, 19 September

14:00 – 15:30

Session Chairs: Roman Pasichnyk, Igor Grebennik

Location: Zoom 1 / Room B-2

1. *Iryna Fedorenko, Galyna Chornous, Iryna Didenko, Liudmyla Anisimova, Snizhana Mohyl*. Optimization of Renewable Energy Development Strategies in Ukraine
2. *Mykola Pylypchuk, Natalia Porplytsya, Iryna Stasiv, Lyudmyla Honchar, Viktor Sopiha, Ievgen Bondarenko*. Optimisation of SVD++ Method based on Adam's Algorithm for Small E-commerce Platforms
3. *Lesia Buiak, Kateryna Pryshliak, Oksana Bashutska, Andriy Buiak, Mykola Shynkaryk, Yurii Semenenko*. Digital Transformation of the Process of Monetary Evaluation of Agricultural Land

4. *Lesia Buiak, Mykola Shynkaryk, Yurii Semenenko, Kateryna Pryshliak.* Optimization of Marketing Department Activities using Machine Learning Technologies
5. *Lesia Buiak, Serhii Matiukh, Olga Gonchar, Liudmyla Yemchuk, Larysa Dzhulii, Lesia Bilorusets.* Modeling in the Processes of Assessment and Forecasting of Technological Aspects of Sustainable Enterprise Development
6. *Lesia Buiak, Viktor Lopatovskyi, Liudmyla Yemchuk, Volodymyr Dzhulii, Larysa Dzhulii, Valentyna Bobrovnyk.* Methods and Models in Organizational Management of Production Environmental Friendliness

S2: Information in Economy and Management. Block C

Date: Thursday, 19 September

16:00 – 17:30

Session Chairs: Roman Zvarych, Roman Pasichnyk

Location: Zoom 1 / Room B-2

1. *Ladislav Beranek, Radim Remes, Klara Vocetkova, Jan Fesl, Michal Konopa, Tereza Capkova.* The Use of Hypergraph for Collaborative Filtering Recommendation Method
2. *Inna Chaikovska, Pavlo Hryhoruk, Nila Khrushch, Svitlana Grygoruk, Taras Tkach, Maksym Chaikovskyyi.* Integration of Digital Economy, Knowledge Economy and Circular Economy in the conditions of Industry 5.0
3. *Inna Chaikovska, Pavlo Hryhoruk, Nila Khrushch, Svitlana Grygoruk, Taras Tkach, Maksym Chaikovskyyi.* Fuzzy Model for Complex Assessment of the Risk of Enterprise Bankruptcy
4. *Iuliia Gernego, Oleksandr Tymoshenko, Mykhailo Dyba, Svitlana Urvantseva, Oleksandr Dyba.* Fiscal Policy Activity for Digital Sustainable Development Support
5. *Iuliia Gernego, Oleksandr Tymoshenko, Mykhailo Dyba, Svitlana Urvantseva, Liudmyla Petrenko.* Digitalization in Venture Capital Relocation in Wartime
6. *Magdalena Parcheva.* Workplace Changes in the Bulgarian Translation Industry in Conditions of Digitalisation of Labour

S2: Information in Economy and Management. Block D

Date: Friday, 20 September

9:00 – 11:00

Session Chairs: Artur Rot, Olena Liashenko

Location: Zoom 1 / Room B-2

1. *Kateryna Kovtoniuk, Ellana Molchanova, Andrii Oliinyk, Liudmyla Huliaieva, Yuriy Kulyk, Yuliya Demkiv.* Cost-effectiveness of Digitalisation in Europe
2. *Nataliia Dziubanovska, Vadym Maslii, Julia Novak, Viktor Rusin.* Comparative Analysis of Governance Quality's Impact on FDI in EU Countries: Insights from Regression and Panel Models

3. *Nataliia Dziubanovska, Vadym Maslii, Iryna Hural*. Energy Landscape of the European Union: Assessing Convergence and Import Dependency
4. *Viktor Koziuk, Nataliia Dziubanovska, Volodymyr Uhryn*. Money Supply vs Inflation Expectations: What Better Explains Inflation Behavior in Ukraine.
5. *Oleksandr Shulha, Valentyna Lavrenenko, Liudmyla Petrenko, Olga Mozgalli, Yulia Tereshchenko, Bohdan Tishkov*. Digital Entrepreneurial Potential: Assessing Business Models of Internet Companies
6. *Oleksandr Shulha, Valentyna Lavrenenko, Liudmyla Petrenko, Olga Mozgalli, Yulia Tereshchenko, Bohdan Tishkov*. Development of the Ukrainian E-commerce Market in the Face of Uncertainty and Risks
7. *Olexandr Yemelyanov, Kateryna Petrushka, Viktoriya Voytsekhovska, Tetyana Petrushka, Yuliya Voytsekhovska*. Information Support for Assessing the Potential of Implementing Resource-Saving Technological Changes in Enterprises
8. *Nazar Podolchak, Volodymyr Martyniuk, Natalia Tsygylyk*. Synergistic Aspects of Achieving a High Level of Efficiency in Personnel Management of Organizations to Ensure Sustainable Development

S2: Information in Economy and Management. Block E

Date: Friday, 20 September

11:30 – 13:00

Session Chairs: Olena Liashenko, Artur Rot

Location: Zoom 1 / Room B-2

1. *Olga Gonchar, Irina Zakryzhevskaya, Andrii Bitiy, Irma Dikhaminjia, Anton Berdychevskiy, Halyna Nahorniak*. Information Potential and Marketing Innovations in the Enterprise Management System
2. *Olga Gonchar, Vasyl Brych, Serhii Moroz, Liudmyla Bohatchyk*. Factors that Shape Business Efficiency in the Conditions of the War
3. *Olha Kovalchuk, Kateryna Berezka, Ludmila Babala, Roman Ivanytskyy, Nataliia Karpysyn, Natalia Zhuk*. Modeling Country Economic Security: A Machine Learning Approach
4. *Olena Liashenko, Tetyana Kravets, Vladyslav Plushchov*. Stock Price Forecasting using Sentiment Analysis of Stock Tweets
5. *Sviatoslav Kniaz, Vasyl Brych, Nelli Heorhiadi, Sergey Shevchenko, Roman Dzvonyk, Ruslan Skrynkovskyy*. Enhancing the Informativeness of Managing Mentoring Activities based on Simulation Modeling
6. *Sviatoslav Kniaz, Vasyl Brych, Nelli Heorhiadi, Sergey Shevchenko, Roman Dzvonyk, Yuriy Tyrkalo*. Informational-Reflective Management of Mentoring Activities Development in the Enterprise

S2: Information in Economy and Management. Block F

Date: Saturday, 21 September

9:00 – 10:30

Session Chairs: Igor Grebennik, Artur Rot

Location: Zoom 1 / Room B-2

1. *Rostyslav Mukha, Natalia Porplytsya, Iryna Stasiv, Andriy Kovalets, Roksolana Mukha, Zoriana Pushkar.* Method and Software for Managing HR Processes of a Company using the Wolf Pack Algorithm
2. *Svitlana Plaskon, Svitlana Shevelova, Olesya Martyniuk, Ruslana Ruska, Oksana Lesyk, Svitlana Korendii.* Savings and Gross Domestic Product in Ukraine: Cointegration and Causal Relationships Analysis
3. *Svitlana Pryma, Nataliia Mishchuk, Oksana Huhul.* Analysis of the Influence of Socio-economic Processes on the Formation of Human Capital in the Western Region of Ukraine using the Apparatus of Fuzzy Logic
4. *Taras Panchyshyn, Nataliia Mishchuk, Rostyslav Mykhailyshyn, Oleh Vatslavskyi.* The Use of Power BI in the Analysis and Visualization of the Results of the Admission Campaign at Lviv University
5. *Tetiana Cherkashyna.* An Examination of the Impact of Institutional Environment on Socio-economic Development in Candidate Countries for EU Membership using Canonical Correlation Analysis
6. *Tetiana Polozova, Yuri Romanenkov, Iryna Sheiko, Lilia Buiak, Olena Murzabulatova, Stanislav Ponomarov.* Industrial Development in the Era of Digital Technologies: A Comparative Analysis of EU States
7. *Tetiana Stepura, Olena Kuzmak, Oleksandra Mrykhina.* Information Provision of Assessment of Achievements in The Decent Work in Ukraine Using Microdata

S2: Information in Economy and Management. Block G

Date: Thursday, 19 September

14:00 – 15:30

Session Chairs: Roman Zvarych, Olena Liashenko

Location: Zoom 2 / Room B-4

1. *Tetyana Korolyuk, Serhii Spivak, Bohdan Seniv, Mykola Stetsko, Mykola Horodetsky, Anna Ivanova.* Advantages of Blockchain for Efficient Electronic Documents Flow in the Enterprise Accounting System
2. *Serhii Spivak, Tetyana Korolyuk, Lesia Halyniak, Iryna Spivak, Svitlana Krepych, Uliana Tkach.* Improvement of the System Company's Employee Estimation and Motivation
3. *Viacheslav Dzhezdzhula, Iryna Yepifanova, Vasyl Brych.* Economic and Mathematical Simulation Model of Production in the Crisis Environment Condition

4. *Zarina Poberezhna, Oleksandr Truhan*. Strategic Diagnostics of Business Processes of Enterprises using Information Technologies in the Context of Modern Challenges
5. *Zenovii-Mykhailo Zadorozhnyi, Oksana Desyatnyuk, Volodymyr Muravskiy, Oleg Shevchuk, Marian Zadorozhnyi*. Unmanned Aerial Vehicles in Individual Mapping and Accounting of the Use of Land Resources
6. *Zenovii-Mykhailo Zadorozhnyi, Volodymyr Muravskiy, Oleksandr Kundeus, Marian Zadorozhnyi, Vasyl Muravskiy*. Aerial Visual Monitoring in accounting of Smart Construction

S3: Cyber Security. Block A

Date: Thursday, 19 September

11:00 – 13:00

Session Chairs: Libor Dostálek, Vasyl Yatskiv

Location: Zoom 2 / Room B-4

1. *Ihor Muliar, Volodymyr Anikin, Vasyl Yatskiv, Serhii Kulyna, Petro Humennyi, Halyna Kulyna*. Construction of Nonlinear Cryptographic Protocol based on Multiple Linear Cryptosystems
2. *Nataliia Kukharska, Andrii Lagun, Oleksandr Yashchuk*. Crypto-Steganographic System based on the Solver of the Square Root of a Prime Number
3. *Alhassan Abdulhamid, Sohag Kabir, Ibrahim Ghafir, Ci Lei*. Navigating IoT Security Assessment: Current Methods, Challenges and Future Directions
4. *Farshid Haidary Makoui, T. Aaron Gulliver, Mohammad Dakhilalian*. A McEliece-type Cryptosystem Using a Random Inverse Matrix and an Error Vector With Large Hamming Weight
5. *Yevgen Kotukh, Oleksandr Marukhnenko, Gennady Khalimov, Maksym Korobchynskiy, Serhii Khamula, Myhailo Rudenko*. Towards UAT Methodology on Cryptographic Library Assessment
6. *Tetiana Korobeinikova, Illia Tachenko, Olexandr Romanyuk, Sergey Romanyuk, Oleksii Stakhov, Olexandr Reyda*. Assessing Network Security Risks: A Technological Chain Perspective
7. *Andriy Melnyk, Ruslan Shevchuk, Ihor Romanets, Igor Yakymenko, Serhiy Voznyak, Vasyl Luchyk*. A Method of Detecting Anomalies in IP Phone Traffic Based on Ontology of Voip Messages
8. *Igor Yakymenko, Olesya Martyniuk, Serhii Martyniuk, Andrii Martyniuk, Yurii Yakymenko, Mykhailo Kasianchuk*. Hierarchical Encryption in a Residual Number System
9. *Alina Davletova, Vasyl Yatskiv, Stepan Ivasiev, Serhii Kulyna, Taras Tsavolyk, Volodymyr Drapak*. Enhancing Cryptographic System Security Based on Finite Fields

S3: Cyber Security. Block B

Date: Friday, 20 September

9:00 – 11:00

Session Chairs: Libor Dostálek, Ruslan Shevchuk

Location: Zoom 2 / Room B-4

1. *Khalid Alemerien, Sadeq Al-Suhemat, Fadi Alsuhimat, Enshirah Altarawneh.* Enhancing Side-Channel Attacks Prediction using Convolutional Neural Networks
2. *Alp Barış Beydemir, Ulaş Sezgin, Umutcan Doğan, Burak Engin Aşıklar, Fahri Anıl Yerlikaya, Şerif Bahtiyar.* A Dynamically Selected GPT Model for Phishing Detection
3. *Mariia Pleskach, Valentyna Pleskach, Ievgen Zaitsev.* Human Cyber Security: Experience of Ukraine and Lithuanian
4. *Moemedi Lefoane, Ibrahim Ghafir, Sohag Kabir, Irfan-Ullah Awan.* Latent Semantic Analysis for Feature Selection: A Proposed Approach for Anomaly Detection in Network Traffic
5. *Moemedi Lefoane, Ibrahim Ghafir, Sohag Kabir, Irfan-Ullah Awan.* Non-Negative Matrix Factorisation for Feature Selection: A Proposed Approach for the Detection of Multi-Stage Attacks
6. *Nadav Voloch, Noa Voloch – Bloch.* A Cryptographic Encryption Scheme based on a Pythagorean Triplets Manufacturing Formula
7. *Oleksiy Polikarovskiykh, Mykola Malaksiano, Ihor Hula.* Method for Countering Attacks on the GNSS System in Maritime Transport
8. *Serhii Naumenko, Inna Rozlomii, Andrii Yarmilko.* The Built on Feistel Network Architecture Block Ciphers Modification

S4: Specialized Information and Computer Systems. Block A

Date: Thursday, 19 September

11:00 – 13:00

Session Chairs: Natalia Shakhovska, Rudolf Vohnout

Location: Zoom 4 / Room B-6

1. *Eiman M. Saleh, Tariq Imbarak, Salwa Elakeili, Abdul Ghafar Faraj.* SGD: Smart Gas Leakage Detection System for Home Safety
2. *Filip Cák, Pavle Dakić.* Configuration Tool for CI/CD Pipelines and React Web Apps
3. *Ignat Myroshnychenko, Dmytro Kucherov, Serge Dolgikh, Vasyl Kondratyuk.* Navigation and Communications Protocols for Autonomous Intelligent Mobility
4. *Peter Demeter, Pavle Dakić.* Visualization of Code Metrics for Code Quality and Assessment of Breach of Standards
5. *Valentyn Khoda, Nadiia Leshchuk, Andrii Topalov, Serhii Robotko, Oleksandr Klymenko, Serhii Nekrasov.* Computerized Lathe Control System Based on Internet of Things Technology

6. *Viktor Satsyk, Oleksandr Reshetylo, Lyudmila Markina, Nataliia Khrystynets, Nataliia Bahniuk, Yuliia Melnychuk.* Modeling of Improved Solar Energy Installation for Efficient Power Systems
7. *Volodymyr Pavlikov, Valerii Volosiuk, Denys Kolesnikov, Volodymyr Kosharskyi, Hlib Cherepnin, Pavlo Malashta.* Concept of Radars Synthesis Theory for Creating Phantom Objects in SAR Images
8. *Roman Tykhyi, Yaroslav Tsapiv, Mykola Dyvak, Dariya Popovych, Andrii Havrylenko, Tetiana Husieva.* Software System for Supporting Art Therapy Processes Using Augmented Reality Technologies
9. *Mykola Dyvak, Volodymyr Tymets, Andriy Dyvak, Viktor Shidlovsky, Dmytro Osadchuk, Volodymyr Bukata.* Algorithm and Hardware for Automatic Adjustment of Electric Signal to Identify the Recurrent Laryngeal Nerve

S4: Specialized Information and Computer Systems. Block B

Date: Thursday, 19 September

14:00 – 15:30

Session Chairs: Viktor Melnyk, Anatoliy Melnyk

Location: Zoom 4 / Room B-6

1. *Mykola Striletskyi.* Algorithm for Enterprise Greenhouse Gas Emissions Control and Management System
2. *Oksana Kovtun, Viacheslav Kovtun.* Machine Learning-based Approach to Transcribing Language Units
3. *Olexandr Romanyuk, Yevhen Zavalniuk, Pavlo Mykhaylov, Roman Chekhmestruk, Nataliia Titova, Sergey Romanyuk.* Accelerated Vector Normalization for Rendering Tasks
4. *Olexandr Romanyuk, Yevhen Zavalniuk, Oksana Romanyuk, Anatoliy Snigur, Oleksandr Reshetnik, Volodymyr Maidaniuk.* Method for Improving the Performance of Linear Interpolation Implementation using the Formation of Two-step Movements
5. *Viktor Melnyk, Anatoliy Melnyk, Mohammad Rahma.* Efficient OAM-Based Programmable Hardware Accelerator Architecture
6. *Serhii Robotko, Oleksandr Susak, Andrii Topalov, Oleksandr Gerasin, Artem Buznyk, Oleksiy Zivenko.* Enabling Cloud-based Data Analysis for Analog Metal Detectors using Microcomputer Systems

S4: Specialized Information and Computer Systems. Block C

Date: Thursday, 19 September

16:00 – 17:30

Session Chairs: Rudolf Vohnout, Natalia Shakhovska

Location: Zoom 4 / Room B-6

1. *Ivan Ostroumov.* Vehicle Positioning with Geospatial Indexing
2. *Ivan Ostroumov, Tamara Galabir.* Airplane Trajectory Data Processing with Actual Weather Data

3. *Leonid Ozirkovskyy, Bohdan Volochiy, Nazar Pryymak, Yurii Zhuk.* Determination of Survivability Indicator of Unmanned Aerial Vehicle Acoustic Detection System
4. *Lesya Mychuda, Zynowij Mychuda, Tetiana Korobeinikova, Ihor Zhuravel, Olexandr Romanyuk, Sergii Kotlyk.* Optimization of Precision and Speed in ADCP
5. *Lesya Mychuda, Zynowij Mychuda, Tetiana Korobeinikova, Ihor Zhuravel, Olexandr Romanyuk, Oksana Romanyuk.* Switched-capacitor ADC Error and Performance Analysis Optimization of Precision and Speed in ADCP
6. *Orest Ivakhiv, Markiyan Nakonechnyi, Oleksandr Viter, Yurii Nakonechnyi, Rostyslav Deyneka.* Adaptive Random Field Scanning System

S5: Artificial Intelligence and Cognitive Systems. Block A

Date: Thursday, 19 September

16:00 – 17:30

Session Chairs: Yevgeniy Bodyanskiy, Jan Fesl

Location: Zoom 2 / Room B-4

1. *Anjali Singh, Zineddine Bettouche, Andreas Fischer.* Synthetic Training-Data Generation for ML-based Process Mining Tools
2. *Himani Sharma, Navdeep Kanwal.* A Smart Video Surveillance Technique using Artificial Intelligence to Detect Forgery and Violence in Real-Time Videos
3. *Peter Hofmann, Nichita Trofanisin, Sebastian Wöllmann.* Automatic Delineation of Burned Forest Areas from Satellite Imagery to Analyze and Manage Wildfires
4. *Vladyslav Holubiev, Bohdan Pushkar, Anton Shevchuk, Roman Mudrak, Oksana Gomotiuk, Nataliia Livitska.* Revolutionizing Contact Center Knowledge Management: The Game-Changing Role of AI Large Language Models And Autonomous Agents in Text Organization and Optimization
5. *Lesia Dubchak, Anatolii Sachenko, Carsten Wolff, Nadia Vasylykiv.* Fuzzy System of Wind Turbine Defect Image Processing
6. *Musa Yenilmez, Ilhan Aydin.* A Federated Learning-Based Approach for Classification of Histopathology Images

S5: Artificial Intelligence and Cognitive Systems. Block B

Date: Friday, 20 September

11:30 – 13:00

Session Chairs: Jan Fesl, Yevgeniy Bodyanskiy

Location: Zoom 2 / Room B-4

1. *Oleksandr Andronati, Svitlana Antoshchuk, Oksana Babilunha, Olena Arsirii, Anatolii Nikolenko, Kyrylo Mikhalev.* A Method of Constructing Ensemble Classifiers for Recognizing Audio Data of Various Nature

2. *Johannes Reisinger, Andreas Fischer, Christoph Goller*. The Importance of Clustering in Word-Sense Induction
3. *Md Mehedi Hassain, Md. Fakwer Uddin Mazumder, Kazi Mohammad Abdullah, Md Reyad Arefin, Md. Arafatur Rahman*. Design and Implementation of Road Monitoring System using Embedded System and IoT
4. *Muaz Muhammad, Md Mehedi Hassain, Md. Khaled Hossain Jahin, Md. Ariful Islam, Md. Arafatur Rahman, Kazi Mohammad Abdullah*. Design and Implementation of a SCADA Based Boiler Monitoring and Controlling System
5. *Volodymyr Lytvynenko, Oleksandr Naumov, Mariia Voronenko, Olha Naumova, Iryna Lurie, Petro Radovenchuk*. Application of Mutual Information Estimation Methods for Feature Selection in Regression Problems of Aviation Traffic Forecasting
6. *Bohdan Zozuliak, Mikolaj Karpinski, Pawel Sawicki, Maria Stadnyk*. Analysis of Methods and Means of Identifying Infrastructure Anomalies using Unmanned Aerial Vehicles within the Scope of a Smart City

S5: Artificial Intelligence and Cognitive Systems. Block C

Date: Saturday, 21 September

9:00 – 11:00

Session Chairs: Marcin Hernes, Wolfgang Dorner

Location: Zoom 2 / Room B-4

1. *Agata Kozina, Michał Nadolny, Marcin Hernes, Ewa Walaszczyk, Artur Rot*. One Hot Encoding and Hashing_trick Transformation – Performance Comparison
2. *Artur Skoczylas, Agnieszka Rosa, Wiesława Gryniewicz, Michał Nadolny*. Deep Learning in Underground Mines – A Review
3. *Ewa Walaszczyk, Michał Nadolny, Agata Kozina, Marcin Hernes, Artur Rot*. Predicting Prosumption Survey Response using Machine Learning
4. *Jinquan Yang, Zexi Chen, Orest Kochan, Olha Fedchyshyn*. FKD-YOLO: A Lightweight Student Classroom Behavior Recognition Algorithm
5. *Sheng Qi, Rong Gao, Xiongfai Shao, Donghua Liu, Xiang Wan, Orest Kochan*. Group Recommendation Method for Hypergraph Message Passing Meta-path Mask
6. *Xizhi Deng, Siwei Wei, Zexi Chen, Serhii Mokhun*. RUCARDAS: Retinex-inspired Unrolling with Channel Attention Residual Dense Cooperative Prior Architecture Search for Low-light Image Enhancement
7. *Yuanhu Liu, Zhiwei Ye, Wanfang Bai, Orest Kochan, Yuquan Zhang, Donglei Xu*. An Improved Bayesian Learner Based On Weighted Beta Kernel Density Estimation
8. *Zuhua Li, Siwei Wei, Zexi Chen, Lei Yu, Beier Luo, Haibo Wang*. Traffic Flow Prediction Model Based on Gated Temporal Attention and Down-sampling Convolutional Network

S6: Information Technology in Education. Block A

Date: Friday, 20 September

9:00 – 11:00

Session Chairs: Wiesława Gryniewicz, Olga Tsaryk

Location: Zoom 4 / Room B-6

1. *Andriy Pukas, Andrii Simak, Andriy Yushko, Sergiy Nadvynychnyy, Serhii Shandruk, Oleh Vatslavskyi.* Automated Reporting Module in the Academic Staff Performance Appraisal System. Automatic Generation of Problem Scenarios for Assessment of Methodological Knowledge
2. *Andriy Yushko, Mykola Dyvak, Uliana Koruts, Martin Taraj, Edita Hrabar, Vasil Sprinsyan.* The Information-Intellectual System for Evaluating Scientific and Scientific-Pedagogical Activities of the Academic Community
3. *Iurii Volk, Artem Artyukhov, Nadiia Artyukhova, Oleksandr Dluhopolskyi, Tetiana Dluhopolska, Anzhela Kuznyetsova.* Model of Immersive Educational Instruments of Behavioral Analysis and Management in Distributed Educational Teams
4. *Paulina T. Tsvetkova, Georgi P. Dimitrov, Iva Kostadinova, Katia Rasheva–Yordanova, Lyubomir Gotsev, Pavel S. Petrov.* Image Processing Techniques in a Python Course based on Ancient Manuscript Processing
5. *Yevhen Palamarchuk, Olena Kovalenko.* Principles for Constructing the Architecture of Information Ecosystems in Education

S6: Information Technology in Education. Block B

Date: Friday, 20 September

11:30 – 13:00

Session Chairs: Olga Tsaryk, Iurii Shcherbiak

Location: Zoom 4 / Room B-6

1. *Iurii Shcherbiak, Kateryna Binytska, Dmytro Kostenko, Svitlana Krupko, Andrii Kolesnikov, Sviatoslav Gerchakivsky.* The Conceptual Information Model for Enhancing Social Mobility among Students through the Digitalization of the University's Educational Space
2. *Halyna Henseruk, Serhii Martyniuk, Oksana Vasylenko, Yuliia Henseruk, Viktor Henseruk, Valerii Habrusiev.* Digital Competence of Specialists: Development Technology in a Higher Education Institution
3. *Iryna Lutsyk, Illia Lutsyk, Olha Potapchuk, Halyna Havryshchak, Roman Zahorodnii, Volodymyr Rak.* Method of Formation of Basic Practical Skills of Data Analysis using Google Services
4. *Mariia Pleskach.* The Concept and Role of Digitalization in the Realization of the Human Right to Education: A Comparative Legal Perspective
5. *Anatolijs Prohorovs, Olga Tsaryk, Levs Fainglozs.* Employers' Expectations of students' generative AI skills: A Student Perspective

Date: Saturday, 21 September

9:00 – 11:00

Session Chairs: Ruslan Shevchuk, Andriy Melnyk

Location: foyer of Building B

1. *Andriy Melnyk, Yurii Maslyiak, Pavlo Popovych, Taras Sitkar, Evhenii Momotiuk, Bohdan Kostyk.* Software Architecture for Process Simulation in Biogas Plants
2. *Bohdan Melnyk, Petro Stakhiv, Nataliya Melnyk, Yuriy Franko, Bohdan Seniv, Yevgeniya Martsenyuk.* Software for Implementing the Directed Cone Optimization Method
3. *Mykola Dyvak, Natalia Porplytsya, Roman Pasichnyk, Vladimir Kulish, Yaroslav Voytyuk, Bohdan Ihnatiuk.* Interval Model of pH Dynamics of the Fermentation Medium
4. *Mykola Dyvak, Volodymyr Manzhula, Andriy Melnyk, Libor Dostalek, Mykhailo Ozhha, Oleksandr Papa.* A Cloud-Based Software Architecture for Mathematical Modeling Based on Interval Data Analysis
5. *Andriy Krysovaty.* Contemporary Trends in the Information Space of Fiscal Policy
6. *Andriy Krysovaty, Fedir Tkachyk, Tetiana Iefymenko, Volodymyr Dmytriv.* Information Support for Property Tax Administration: Ukrainian Realities and European Experience
7. *Andriy Krysovaty, Olena Ptashchenko, Viktoriia Adamyk.* Transformation of the Financial Sector in the Context of the Digital Economy
8. *Bohdan Malyniak, Andriy Melnyk, Olha Kyrylenko, Andrii Derlytsia, Volodymyr Trush, Roksolana Malyniak.* Building an Intellectualized Analytical Module for Evaluating the Effectiveness of public Spending on Corruption Prevention Using an Ontological Approach
9. *Inna Sysoieva, Andriy Pukas, Oleh Pohrishchuk, Borys Pohrishchuk, Olena Tsikhanovska, Maria Lyzun.* Artificial Intelligence as an Organized Assembly of Information Technologies for the Goals of Sustainable Development
10. *Marian Tripak, Yaroslava Toporivska, Amantius Akimjak, Joachim Nowak, Tetiana Lebid, Olena Vasylykiv.* Economic Efficiency of the Newest Technologies of the Distance Institutionalization of Inclusive Education in the Conditions of a Special Educational Environment
11. *Oksana Desyatnyuk, Olena Ptashchenko.* Impact of Digitalization on Financial Systems and Services
12. *Svitlana Zhukevich, Vita Semaniuk, Nazar Marchyshyn, Volodymyr Shpak, Natalia Zhuk, Andriy Papinko.* Analysis of the Financial State of Enterprises: a Complex Approach and Formalization of Evaluation for the Management System
13. *Volodymyr Horyn, Kateryna Berezka, Zoryana Lobodina, Tetyana Kizyma, Andriy Kizyma.* Application of Factor Analysis in Information Support of Participatory Budget Management in an Inclusive Economy

14. *Ruslan Shevchuk, Vasyl Martsenyuk, Andriy Melnyk*. Research Hotspots and Trend Analysis of Social Media Security on CiteSpace Knowledge Graph
15. *Ruslan Shevchuk, Igor Yakymenko, Mykhailo Kasianchuk*. Encryption using Residue Number System: Research Trends and Future Challenges
16. *Andriy Pukas, Vitalii Smal, Andriy Dyvak, Iryna Voytyuk, Ihor Deikalo, Nadiia Hrynkiv*. Augmented Reality Simulator for Recurrent Laryngeal Nerve Identification during Thyroid Surgery
17. *Lubomyr Petryshyn, Mykhailo Petryshyn*. Method and Algorithm of Successive Approximation Analog-to-Digital Conversion of Information in Management Systems
18. *Ruslan Shevchuk, Mikolaj Karpinski, Tetiana Yurchyshyn, Ihor Lishchynskyy, Maria Lyzun, Andriy Melnyk*. A Context-Aware Approach and Software for Notifications about Personal Safety
19. *Vasyl Tymchyshyn, Andriy Melnyk, Bohdan Tymchyshyn, Vasyl Faifura, Ivan-Stanislav Mazur, Lyudmyla Honchar*. Data Management Service Architecture of the Software for Modeling Harmful Emissions in Soil
20. *Oksana Hoholyuk, Yaroslav Paranchuk, Petro Stakhiv, Yuriy Shabatura, Oleksiy Kuznyetsov, Taras Rudyi*. Fuzzy Control System of Arc Furnace Modes With Phase Load Equalization
21. *Olha Kovalchuk, Vladyslav Teremecky, Andrii Kolesnikov, Nataliia Chudyk, Valerii Kaniuka*. Machine Learning Models for Information Support in the Justice System
22. *Andriy Melnyk, Andriy Hirnyak, Halyna Hirnyak, Mariya Mudrak, Ihor Hevko, Yuriy Popovych*. Automatic Generation of Problem Scenarios for Assessment of Methodological Knowledge
23. *Andriy Melnyk, Andriy Hirnyak, Halyna Hirnyak, Iurii Shcherbiak, Olena Shevchenko, Volodymyr Nemeryshyn*. Methods and Tools of Automatic Generation of Practical Tasks for Checking the Assimilation of Programming Knowledge

Meeting of the Board

Saturday, 21 September

11:00 – 11:30

Location: Room B-5

Closing Ceremony

Saturday, 21 September

11:45 – 12:15

Location: Zoom 5 / Room B-2

Concluding reports of Section Chairs, Conference Summary, Conference Closing

Campus Map

Faculty of Science, University of South Bohemia
 Building B, Branišovská 31d, 370 05 České Budějovice

Mapa kampusu / Map of the Campus



Phočeská univerzita
 v Českých Budějovicích
 University of South Bohemia
 in České Budějovice

