

NATIONAL ACADEMY OF SCIENCE OF UKRAINE

**RESEARCH CENTER FOR INDUSTRIAL PROBLEMS
OF DEVELOPMENT**

***DIGITAL TRANSFORMATION OF ENERGY
INFRASTRUCTURE IN THE CONDITIONS
OF GLOBAL CHANGES: BIBLIOMETRIC ANALYSIS***

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Koethen, Germany, March 7, 2024

According to estimates **by *Forbes experts***, 67% of the leaders of companies from the Global 2000 list chose digital transformation as a priority goal of their corporate strategy in 2018.

According to a study by analysts **of *the International Data Corporation***, the total global spending on digital technologies will grow by 16.8% annually and reach 2.1 trillion dollars in 2019.

According to forecasts of ***the Boston Consulting Group***, the volume of the digital economy by 2035 will amount to 16 trillion dollars.

Research by Huawei and Oxford Economics showed that intelligent network interaction will trigger the growth of the digital economy, which will reach 23 trillion dollars by 2025.

This increase will be 78.3% compared to 2017 (12.9 trillion dollars).

By 2025, it is planned to increase the share of the digital economy by 7.2 percentage points, or from 17.1 to 24.3% of global GDP.

Digital transformation involves the integration of digital technologies and solutions in all areas of business.

This is a cultural and technological shift that requires organizations to make fundamental changes in their work methods and customer experience management.

Under this term, it is proposed to consider a fundamental rethinking of customer experience, business models and operations.

This is the search for new ways of creating value, generating revenue and improving the efficiency of business processes.

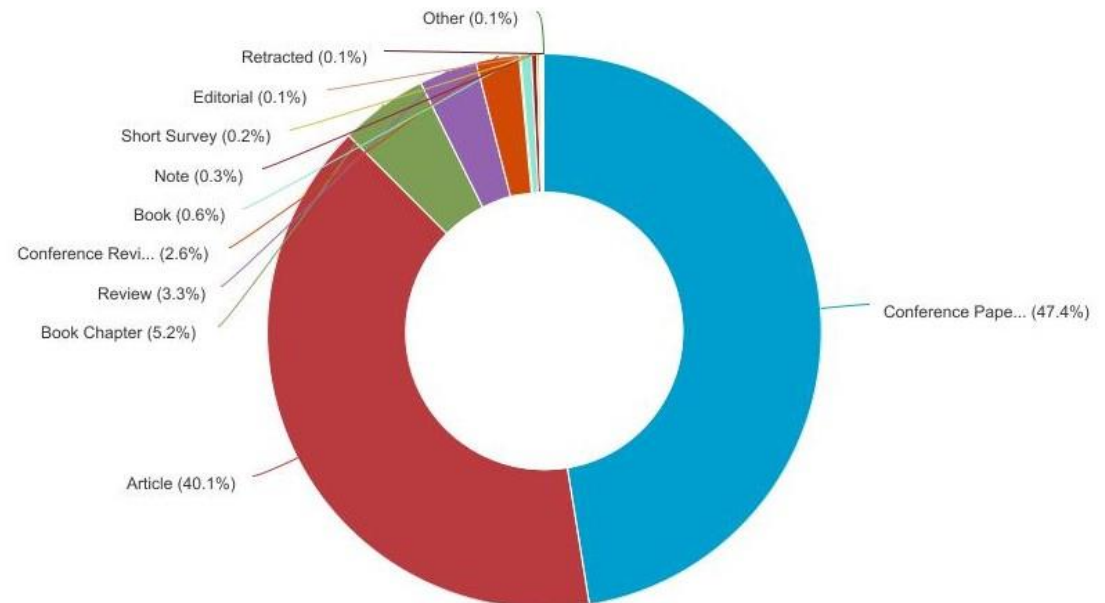
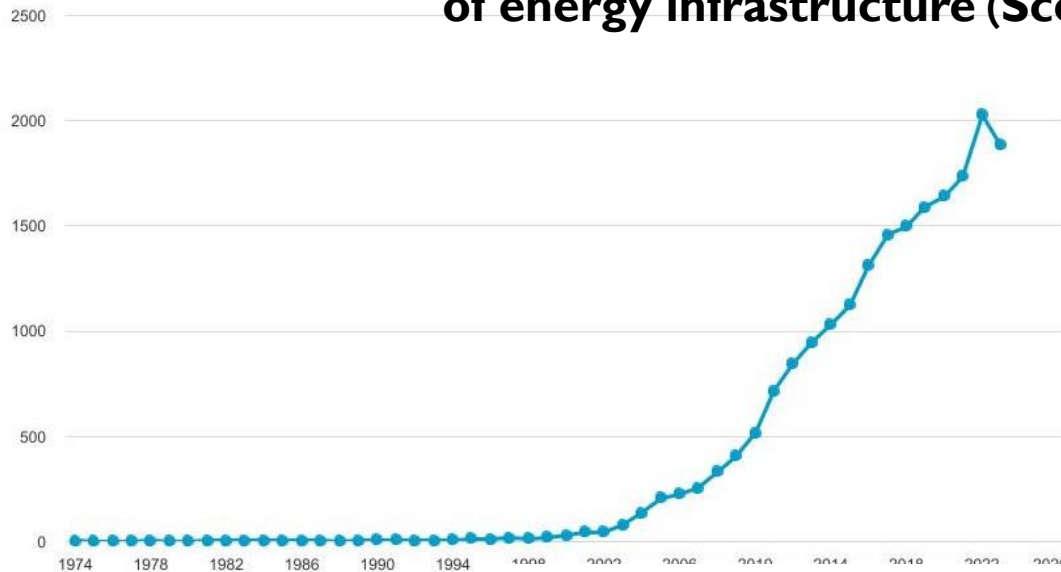
In this work, ***the digital transformation of the energy infrastructure*** is considered as the strategic implementation of digital technologies, which allows the elements of the energy system to function and develop in the digital age.

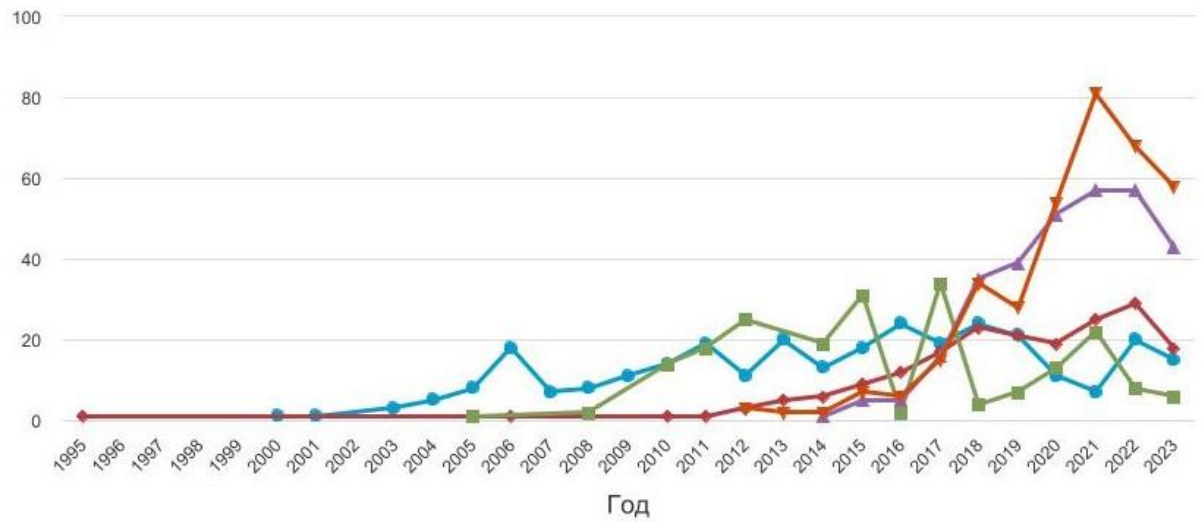
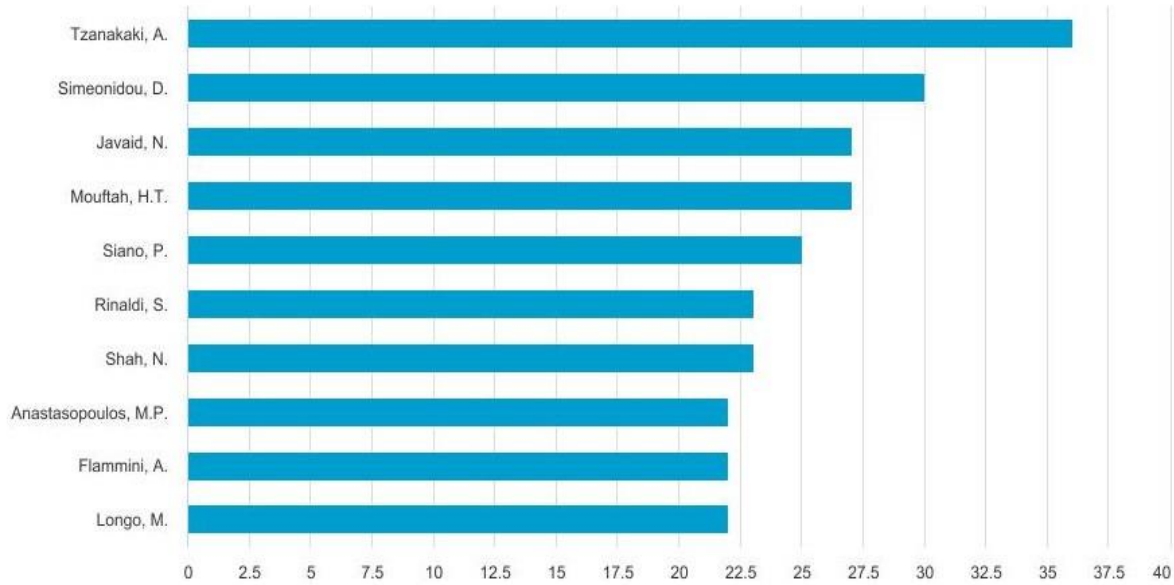
This concept involves the use of digital tools and platforms to transform traditional business processes, improve interaction with customers, introduce innovative technologies and form a digital energy ecosystem.

The main components of the digital transformation of the energy infrastructure include:

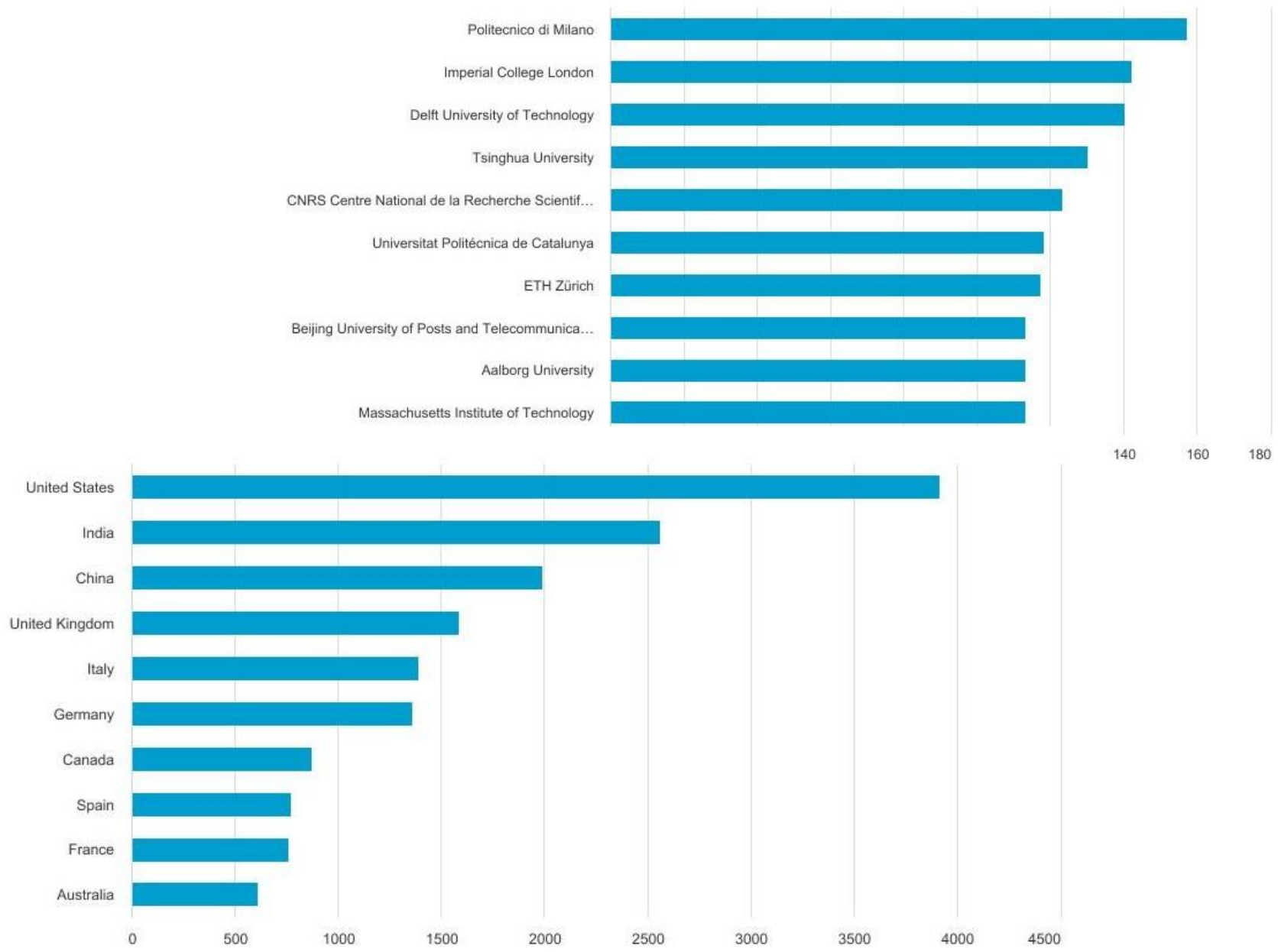
- 1) digital technologies;
- 2) organizational changes;
- 3) customer orientation and integration of digital channels).

The genesis of scientists' views on the issue of digital transformation of energy infrastructure (Scopus)





◆ Lecture Notes In Computer Science Including Subseries Lecture Notes In Artificial Intelligence And Lecture Notes In Bioinformatics
◆ Applied Energy ◆ Journal Of Physics Conference Series ◆ IEEE Access ◆ Energies



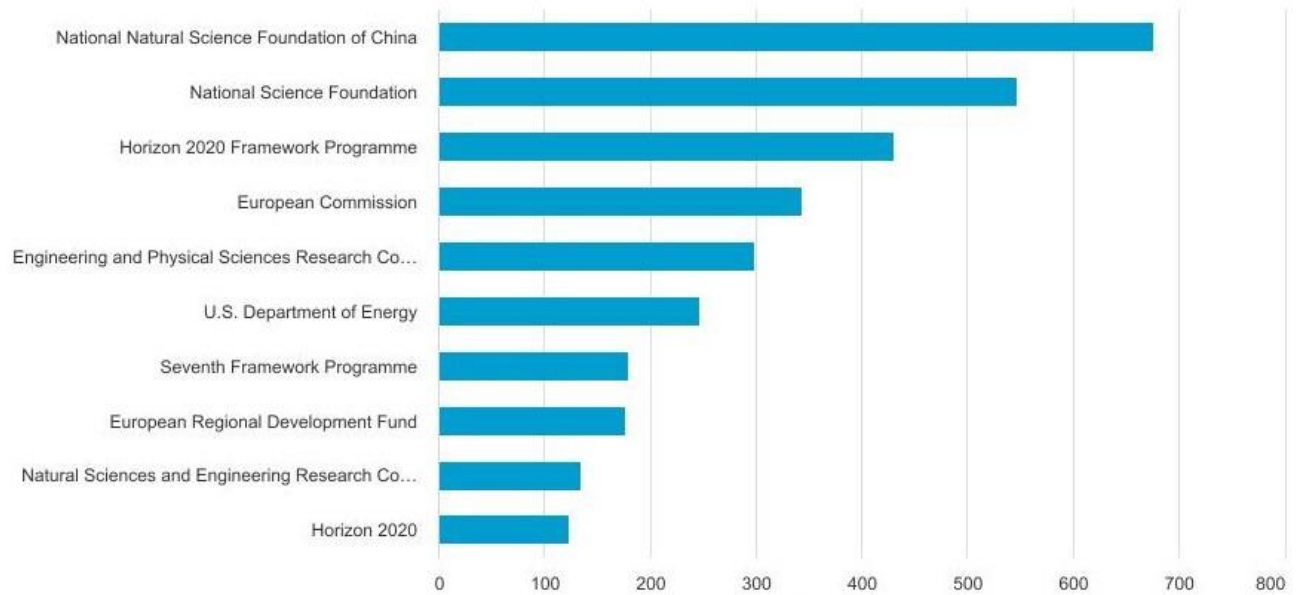
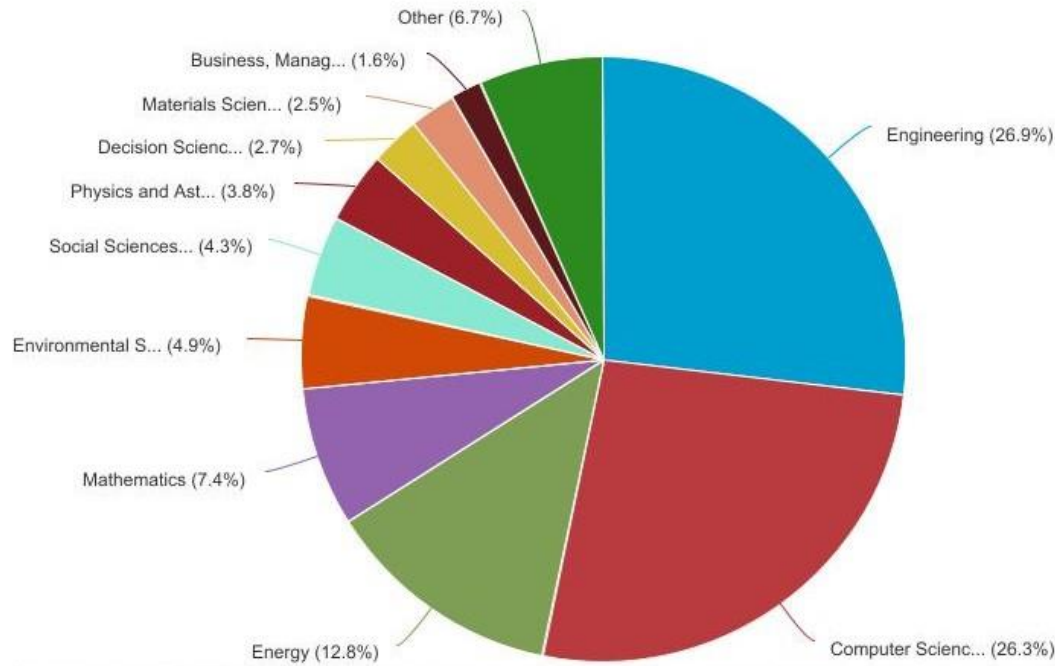


Table: Characterization of clusters of key phrases in scientific studies of transformational changes in energy infrastructure in the context of digitalization

Cluster	The most used term	Number of keywords	Related keywords
1 (red)	infrastructure	7	development, digital transformation, blockchain, impact, digitalization, role
2 (green)	application	6	analysis, energy efficiency, smart grid
3 (blue)	implementation	5	challenge, cloud, opportunity,
4 (yellow)	information	3	communication technology, ICT
5 (purple)	intelligent systems	3	Internet, Internet Things

Conclusions

For effective digital transformation of the energy infrastructure on a practical level, it is advisable to pay attention to such key aspects as:

- ❑ having a clear vision and strategy that meets business goals;
- ❑ involvement of interested parties (stakeholders) and ensuring the interest of the entire organization;
- ❑ constant monitoring and assessment of the implementation of digital transformation initiatives;
- ❑ an adaptive and iterative approach that allows you to navigate the changing digital landscape.

**Thank you
very much for your attention!**

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РЕСЕНСІЇ НАУКОВОГО АКАДЕМІЧНОГО НАУКОВОГО ЦЕНТРУ

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The image shows a screenshot of a Zoom meeting. On the left, a presentation slide is visible, containing the text from the previous block. On the right, a vertical list of participants is shown. The top participant is Nataliia Trushkina, with a video thumbnail. Below her are Marija Kalendar and Shahzod Rahmatilayev, both with video thumbnails. At the bottom of the list, it says 'ICAIT 2024 (offline) 322-1 room'.

Conference Agenda

International Conference on Applied Innovations in IT 2024 (ICAIIT 2024)

This year's conference will feature a combination of **offline** and **online** presentations.

Offline: 06354 Koethen (Anhalt), Germany, Bernburger Straße 57, main building 01 (Rotes Gebäude), Room 222/1, 218, 320, 219

Online: [Zoom](#) (Berlin time)
Meeting ID: **985 4031 4580**
Passcode: **2024**

MARCH 7, 2024

09:45 Guest registration, Room 320 and [online](#)

10:00 Welcome speech (Prof. Dr. Eduard Siemens, Anhalt University of Applied Sciences), Room 222/1 and online

10:10 Vishnudev Kurumbaparambil, Subashkumar Rajanayagam and Stefan Twieg
Modular Robotic Reinforcement Learning Platform for Object Manipulation (offline)

10:30 Tanja Dimova, Igor Kalendar, Daniel Denkovski, Danijela Efnusheva and Marija Kalendar

An Innovative Approach of Automation Testing Implemented on Cloud Environments using Container Management Services (offline)

10:50 Darko Angelovski, Bojana Velichkovska, Goran Jakimovski, Danijela Efnusheva and Marija Kalendar

Machine Learning-Based Forecasting of Bitcoin Price Movements (offline)

11:10 Halina Falfushynska, Vladyslav Zhadan and Markus Holz

Advancement and Assessment of Power-to-X Strategies as a Significant Contribution for the De-Fossilization of Economies (offline)

11:30 Coffee break
50 min

Section 1 Communication and data transport technologies (Section chair Prof. Dr. Marija Kalendar), Room 222/1

12:20 Liliia Bodnar, Mykola Bodnar, Kateryna Shulakova, Oksana Vasylenko, Roman Tsarov and Eduard Siemens

Practical Experience in DevOps Implementation (online)

12:40 Victor Tikhonov, Abdullah Taher, Serhii Tikhonov, Kateryna Shulakova, Vlad Hluschenko and Andrii Chaika

Turing Machine Development for High-secure Data Link Encoding in the Internet of

Things Channel (online)

13:00 Natalia Plakhotniuk, Oksana Chernysh and Oleh Makarevych

The Use of ICT for the Development of Foreign Language Communicative Competence in Hospitality Industry Students (online)

13:20 Vitalina Babenko, Oleg Pursky, Bohdan Karpishen and Mykhaylo Fedorchuk

Design of a Model of an Information and Communication System for Solving the Problem of Preventing Car Collisions (online)

13:40 Tetiana Verhun, Maryna Davydovych, Kateryna Parnus, Marina Kosheleva, Iryna Biliak and Olga Khorosh

Algorithms for Optimizing Vocabulary Acquisition in Language Learning (online)

14:00 Oleksandr Blazhko, Viktoriia Podhorna, Anastasiia Kokotieieva and Oleksii Ivanov

Scratch PoseNet Exergame Prototyping for Learning Process Support in Physical Education (online)

14:20 Coffee break 20 min

14:40 Roman Tsarov, Lesya Nikityk, Iryna Tymchenko, Vladyslav Kumysh, Kateryna Shulakova, Serhii Siden and Liliia Bodnar

Using a Genetic Algorithm for Telemedicine Network Optimal Topology Synthesis (online)

15:00 Oleksandra Dmytrenko and Mariia Skulysh

Method of Grouping Complementary Microservices Using Fuzzy Lattice Theory (online)

15:20 David Akpuluma and Alexey Yurchenko

Advancing Solar Irradiation Prediction in Extreme Climates: a LASSO Regression Analysis in Tomsok (online)

15:40 Hennady Shapovalov, Anatoly Kazakov and Gleb Ksendziuk

Computer Simulation of Critical Phenomena in Materials of Cyber Systems Elements (online)

16:00 Olimjon Toirov, Vera Ivanova, Viktoriya Tsyapkina, Mikhail Kozlitin, Dilshod Isamukhamedov and Dilnoza Jumaeva

Overview of Modern Materials Used for the Production of Optical Fiber for Fiber Optic Cable (online)

16:20 Abbaz Primbetov, Kibriyo Mukhamadieva and Fazilat Saidova

Real Time Logo Recognition Using Yolo on Android (online)

Section 2 Data analysis and processing, Statistical modelling and analysis and their applications in life sciences

(Section chair Prof. Dr. Prof. Dr. Halina Falfushynska), Room 218

12:20 Sergii Degtyar, Oleh Kopiika and Yurii Shusharin

Transient Phenomena in Information Technology for Branching Processes with an Infinite Set of Types (online)

12:40 Anastasia Krivtsun and Daria Kushchii

Scenario Modelling of University International Activities based on Fuzzy Cognitive Maps (online)

13:00 Abeer A.Salam Abdulkarem and Anastasia Krivtsun

Bert Embedding and Scoring for Scientific Automatic Essay Grading (online)

13:20 Olena Kosovets, Mariana Kovtoniuk, Olena Soia and Denis Koval

Integration of digital technologies in modeling the educational environment of a bachelor

in the conditions of martial law (online)

13:40 Viktoriia Khaustova, Mykola Kyzym, Nataliia Trushkina and Mykyta Khaustov
Digital Transformation of Energy Infrastructure in the Conditions of Global Changes:
Bibliometric Analysis (online)

14:00 Oleksandr Redych and Ruslan Boychuk
Comparative Analysis of Holt-Winters Algorithms on the Oracle Machine Learning
Platform (online)

14:20 Coffee break 20 min

14:40 Galyna Otylvanska, Iryna Stankevych, Inna Yatskevych, Hanna Sakun, Oksana
Vasylenko and Eduard Siemens

Measuring the Economic Value of Investment Activities: a Case Study of Ukrainian
Telecommunications Companies (online)

15:00 Pavlo Hryhoruk, Inna Chaikovska, Oksana Proskurovych, Kateryna Gorbatiuk, Oleksandr
Valkov and Maksym Chaikovskiy

Forecasting Indicators of the Region Intellectual Potential (online)

15:20 Stepan Mezhev and Maxim Krayushkin Stepan
Artificial Intelligence in Forecasting Demographic Processes (online)

15:40 Olha Kovalchuk, Kateryna Berezka, Mariia Masonkova, Nataliia Chudyk, Vasyl
Ukhach and Yuriy Pilyukov

Statistical Modeling of Determinants Influencing Economic Security in the Context of
Sustainable Development and National Security (online)

16:00 Olha Polous, Inna Mykhalchenko, Hanna Radchenko and Olena Lysenko
Anticrisis Marketing of IT Sector Companies in the Conditions of Economic Activity's
Informatization and Intellectualization (online)

16:20 Larysa Globa, Rina Novogrudska, Oleg Kopiika and Mariia Skulysh
Ontological Model of Technological Process for the Production of Complex Shape Details
(online)

Section 3 Control and Automation, Electronics (Section chair PhD Marina Popova), Room 218

12:20 Serhii Kondratiev, Daria Koshutina, Olha Liubomska and Illia Baskov
Research on Energy Efficiency of Wi-Fi IoT Systems on Renesas DA16200 Platform
(online)

12:40 Valentin Davydov, Vladimir Brunetkin and Ganna Lysiuk
Solution of the Inverse Incorrectly Posed Problem by the Library Method (online)

13:00 Galina Shcherbakova, Svetlana Antoshchuk, Daria Koshutina and Kiril Sakhno
Adaptive Clustering for Distribution Parameter Estimation in Technical Diagnostics
(online)

13:20 Viktor Nazymko, Liudmila Zakharova and Denis Boulik
Paradoxes of the Multi-Chain Critical Paths as the Dissipative Structures (online)

13:40 Jakhongir Normuminov and Zukhriddin Mukhiddinov
Enhancing the Efficiency of a Gas Turbine Through the Integration of Solar Heat - a
Case Study of Tashkent CHP (online)

14:00 Andrii Bondarenko, Viktor Kukhar and Assel Nurmanova
Substantiating the Jet Agitator Parameters for Dredgers (online)

14:20 Coffee break 20 min

14:40 Kurbon Dzhuraev, Abdurauf Abduaziz Uulu, Fotima Shadibekova and Azamat Mambetov
Features of Using Pumps in Turbine Mode

15:00 Muhammadjon Tursunov, Khabibullo Sabirov, Tohir Axtamov, Maxamadi Chariyev,
Umirbek Abdiyev, Boysori Yuldoshov and Sirojiddin Toshpulatov
Effectiveness of Photoelectric Systems Against Intensive Gardening and Desertification
(online)

15:20 Islom Jurayev, Isroil Yuldoshev and Zukhra Jurayeva
Results of Study of Photovoltaic Thermal Battery Based on Thin-film Module by Modeling
and Computational Methods (online)

15:40 Bozorbek Botirov, Isroil Yuldoshev, Sanjar Shoguchkarov, Shahzod Rahmatillayev and
Afzalkhoja Kudratov
Ensure the Reliability of the Heating System of the Autonomous Helio-greenhouse of the
Trench Type in Emergency Situations (online)

16:00 Kuvondar Bektoshev
Modeling Roll Contact Curves of a Squeezing Machine (online)