IEEE
Czechoslovakia Section

ACIT

2022 12TH INTERNATIONAL CONFERENCE ON

ADVANCED COMPUTER INFORMATION TECHNOLOGIES

Part Number: CFP22S92-ART
ISBN: 978-1-6654-1050-2
ISSN: 2770-5226

Spisska Kapitula, SLOVAKIA,
26-28 September 2022

ORGANIZERS:

WEST UKRAINIAN NATIONAL UNIVERSITY
Catholic University in Ružomberok
TECHNISCHE HOCHSCHULE DEGGENDORF
Jihočeská univerzita v Českých Budějovicích
University of South Bohemia in České Budějovice
Wroclaw University of Economics and Business

www.acit.wunu.edu.ua

2022 12th International Conference on Advanced Computer Information Technologies (ACIT) | 978-1-6654-1050-2/22/$31.00 ©2022 IEEE | DOI: 10.1109/ACIT54803.2022.9912748

WEST UKRAINIAN NATIONAL UNIVERSITY, UKRAINE
CATHOLIC UNIVERSITY IN RUŽOMBEROK, SLOVAKIA
UNIVERSITY OF SOUTH BOHEMIA, CZECH REPUBLIC
DEGGENDORF INSTITUTE OF TECHNOLOGY, GERMANY
WROCLAW UNIVERSITY OF ECONOMICS AND BUSINESS, POLAND
CZECHOSLOVAKIA SECTION OF IEEE / COMPUTER (C) SOCIETY CHAPTER

2022 12th International Conference on

ADVANCED COMPUTER INFORMATION TECHNOLOGIES ACIT'2022

Conference Proceedings

Spišská Kapitula, Slovakia
26-28 September 2022

2022 12th International Conference on Advanced Computer Information Technologies (ACIT) | 978-1-6654-1050-2/22/$31.00 ©2022 IEEE | DOI: 10.1109/ACIT54803.2022.9913175

CONTENTS

SECTION 1
Mathematical Models of Objects and Processes

Numerical Model Analysis Of Atypical Gas Filtration In A Porous Medium 1
Nazariy Lopuh, Yaroslav Pyanylo

Collaborative Human-AI Decision-Making Systems with Numerical Channels 5
Mules Oksana, Serge Dolgikh, Tamara Radivilova, Mykola Kotsipak, Yurii Bilak, Oleksii Baranovskyi

Analysis Of Filtration Processes In Porous Environments Taking Into Aaccount The Movement Of Capillaries 9
Yaroslav Pyanylo

Simulation and Numerical Optimization of Specific Characteristics of the Unified Range of Power Converters 13
Mykola Dyvak, Volodymyr Yaskiv, Anna Yaskiv

Distribution of permutations with different cyclic structure in mathematical models of transportation problems 18
Igor Grebennik, Olga Chorna, Inna Urniaieva

Features of the Computational Process Organization of Initial Parameters Determination for Shading 22
Olexandr Romanyuk, Oksana Romanyuk, Pavlo Mykhaylov, Roman Chekhmestruk, Tetiana Korobeinikova, Sergey Romanyuk

Web-applications Fault Tolerance and Autoscaling Provided by the Combined Method of Databases Scaling 27
Tetiana Korobeinikova, Olexandr Romanyuk, Oksana Romanyuk, Volodymyr Maidaniuk, Roman Chekhmestruk, Sergey Romanyuk

The Concept and Means of Adaptive Shading 33
Olexandr Romanyuk, Oksana Romanyuk, Roman Chekhmestruk, Pavlo Mykhaylov, Volodymyr Maidaniuk, Tetiana Korobeinikova

Modeling Hybrid Attacks and Operations to Assess the Threats in Early Warning Systems 39
Volodymyr Sherstjuk, Maryna Zharikova, Stefan Pickl, Marina Alonso Villota, Irina Dorovskaja, Dmytro Chornyi

The Investigation of Wave Processes in Porous Medium using Fractional Time Derivatives 45
Yaroslav Pyanylo, Sofiya Tvardovska

Mathematical Model and Method for Diagnosing the Operability of Information and Control Systems 49
Olena Syrotkina, Ziad Kobti, Mykhailo Aleksieiev, Borys Moroz, Iryna Udovyk, Grygorii Diachenko

Software System for Modeling the Distribution of Harmful Emissions from Vehicles 53
Mykola Dyvak, Iryna Spivak, Svitlana Krepych, Libor Dostalek, Vladyslav Pasichnyk, Vadym Kobylan

Simulation of Various Distribution Restrictions of COVID-19 using Cellular Automata 58
Ihor Kosovych, Igor Cherevko, Yaroslav Vyklyuk, Denys Nevinskyi

Evolutionary Computations based on an Artificial Bee Colony for the Analysis of Interval Data in the Problem of Air Pollution by Nitrogen Dioxide 62
Mykola Dyvak, Iryna Spivak, Svitlana Krepych, Taras Dyvak, Iryna Nedoshytko, Oksana Homotiuk

Hilbert Transform for Analysis of Amplitude Modulated Wide-band Random Signals 68
Ihor Javorskyj, Roman Yuzefovych, Oleh Lychak, Roman Slyepko, Pavlo Semenov

Unilaterally Supported Beam by an Elastic Obstacle 72
Michaela Zahradníková, Jan Eisner

New Two-parametric Mutation Operator for Inductive Modelling using Combinatorial-genetic Algorithm.....76
Olha Moroz, Volodymyr Stepashko

Mathematical Modeling of Aging Processes of Pipeline Materials and Estimation of their Residual Lifetime.....80
Oleksandr Andreykiv, Iryna Dolinska, Nazar Hembara, Orest Svirchevskyi, Miroslav Kopnický, Zuzana Budayová

Historical Training Game Model with Mathematical and Information Aspects 84
Roman Pasichnyk, Andriy Melnyk, Iryna Bilous, Liudmyla Duma, Bohdan Pushkar, Roman Monko

Repository of Interval Models of Dynamics of Concentrations of Harmful Emissions of Motor Transport 89
Mykola Dyvak, Andriy Melnyk, Libor Dostalek, Viktor Ostroverkhov, Lyudmyla Honchar, Ihor Romanets

Evolutionary Method based on Artificial Bee Colony and Ontological Approach for Structural Identification of Interval Discrete Models of Objects with Distributed Parameters 95
Mykola Dyvak, Andriy Melnyk, Yevgeniya Martsenyuk, Nina Rohatynska, Ruslan Brukhanskyi, Sviatoslav Pytel

Software Architecture for Mathematical Modelling Based on Interval and Ontology Approach ...101
Andriy Melnyk, Ruslan Shevchuk, Oksana Huhul, Iurii Shcherbiak, Anton Shevchuk, Yuriy Franko

The Task of Parametric Identification the Interval Models with Nonlinear Parameters.....106
Mykola Dyvak, Andriy Pukas, Volodymyr Manzhula, Natalia Kasatkina, Myroslav Komar, Vadym Zabchuk

The Task of Structural Identification the Interval Models of Static Objects with Multiple Parameters.....112
Mykola Dyvak, Andriy Pukas, Volodymyr Manzhula, Oleksandr Papa, Amantius Akimjak, Bogdan Maslyiak

A Scoring Model for Support Decision Making in Criminal Justice 116
Olha Kovalchuk, Serhiy Banakh, Mariia Masonkova, Volodymyr Burdin, Oleh Zaverukha, Roman Ivanytskyy

An Ensemble Based Model for Detecting Genetically Inherited Disorder.....121
Joan Chebet Tarus, Kennedy Ogada, Tobias Mwalili

Statistical Modeling for the Near-zero Apparent Motion Detection of Objects in Series of Images from Data Stream.....126
Sergii Khlamov, Vadym Savanevych, Iryna Tabakova, Tetiana Trunova

Towards an Effective Monitoring, Evaluation and Learning (MEL) System: Challenges and Solutions in a Data Science Perspective.....130
Janvier Mwitirehe, Cheruiyot Kipruto, Charles Ruranga

Nitride Semiconductor Quantum Dots - Mathematical Models of the Electronic Spectrum and Methods for its Simulation.....136
Julia Nestor, Igor Boyko, Ivan Mudryk, Halyna Tsupryk, Yurii Stoianov

Color-Based Determination of the Components Ratio in Two-Component Allochromatic Crystals 140
Alla Savchenko, Alexey Galuza, Ivan Kolenov, Nataly Protsay, Olga Tevyasheva, Halyna Holotaistrova

Single-Phase Fault Detection Based on GCN-TCN Sparse-Attention Model 144
Ouyang Yong, Wan Dou, Gao Rong, Ye Zhiwei, Orest Kochan

Pulse-Width Modulator Simulation 150
Markian Nakonechnyi, Orest Ivakhiv, Yurii Hirniak

Optimization with Restriction in the Generalized Phase Problem 154
Mykhaylo Andriychuk, Yarema Kuleshnyk

Modeling Radiating Systems for the GPS Applications 159
Mykhaylo Andriychuk, Victor Hoblyk, Volodymyr Pavlysh, Victor Tkachuk

Algorithm for Studying the Stability of Linear Systems with Many Delays 164
Iryna Tuzyk, Igor Cherevko

A Method for Planning Spare Parts Inventory during Aircraft Operation 168
Onyedikachi Chioma Okoro, Maksym Zaliskyi, Celestine Nkemakolam Chukwu, Oleksii Holubnychyi

Analysis of Learning Efficiency of Expert System for Decision-Making Support in Aviation 172
Maksym Zaliskyi, Onyedikachi Chioma Okoro, Ivan Yashanov, Olga Shcherbyna

SECTION 2
Information in Economy and Management

Evaluation of Information Support for Energy Saving Project Management at Enterprises 176
Olexandr Yemelyanov, Kateryna Petrushka, Lilia Lesyk, Anastasiya Symak, Olena Vovk

Links Between Export of Digital Services and Economic Complexity: a Comparative Study for Ukraine and its Trade Partners 181
Diana Mirzoieva, Ihor Oleksiv

Modification of the Genetic Algorithm for Building and Reconfiguring Schedules of Order Completion in the Field of Service Provision 185
Serhii Hrybkov, Olga Seidykh, Lidia Vlasenko, Valerii Lytvynov

Modeling of Correlation on the Stock Market using Complex Network Methods 190
Olena Liashenko, Tetyana Kravets, Anastasiia Filohina

Improving the Assessment of Personnel Security Level and its Control using Human Intellectual Activity Simulation Model 194
Podolchak Nazar, Martyniuk Volodymyr, Tsygylyk Natalia, Dziurakh Yurii

Crowdfunding in the Context of Intelligent Information Technologies Development in Finance ... 198
Iuliia Gernego, Liudmyla Petrenko, Mykhailo Dyba, Svitlana Urvantseva

Forecasting of New Grocery Store Opening Success Using Machine Learning Algorithms 203
Bohdan Yakymchuk, Olena Liashenko

Portfolio Optimization of Equity Funds 207
Vasyl Brych, Lyudmyla Shkvarchuk, Rostyslav Slav'yuk, Ruslan Skrynkovskyy, Galyna Liakhovych, Olena Borysiak

Mathematical Modeling of the Stress-Strain State in Variable Thickness Axial Bodies 211
Oleksii Grevtsev, Ninel Selivanova, Vasyl Brych, Oksana Shevchuk, Ryslan Rozum, Yurii Rudyak

Modeling of the Information System of Environmental Risk Management of an Enterprise 215
Sviatoslav Kniaz, Vasyl Brych, Viktoriya Marhasova, Yuriy Tyrkalo, Ruslan Skrynkovskyy, Alexander Sumets

Assessment of Environmental Risks Using Elements of Fuzzy Logic.....219
Liubov Poberezhna, Liubomyr Poberezhnyi, Vasyl Brych, Lesia Shkitsa, Pavlo Popovych, Oksana Shevchuk

Book Recommendation using Collaborative Filtering Technology.....223
Karolina Cwojdzinska, Marcin Hernes, Wiesława Gryncewicz, Artur Rot, Paweł Golec

Quality Assessment of Translators using Deep Neural Networks for Polish-English and English-Polish Translation 227
Agnieszka Pilch, Ryszard Zygała, Wiesława Gryncewicz

The Assessment of the Impact Investments on the Economic Development of Ukraine Based on Panel Data.....231
Nataliia Dziubanovska, Vadym Maslii

Economic and Mathematical Modelling of Service Companies Competititon and Integration.....235
Olga Gonchar, Anatoliy Kholodenko, Mariia Bashchak

Risk Management of Economic Security of Poultry Enterprise: Accounting and Analytical Model 240
Svitlana Luchyk, Vasil Luchyk, Marharyta Luchyk, Yulia Manachynska, Volodymyr Yevdoshchak, Iryna Mustetsa

Evaluation of Innovative Development.....245
Liliana Horal, Volodymyr Onyshchenko, Oleksandra Yakubyshyn, Vira Shyiko, Vasyl Brych

Information System and Technologies in the Health Care Management.....249
Alina Zhukovska, Tetiana Zheliu, Dmytro Shushpanov, Oleksandr Brechko, Chygur Olga, Olena Nytka

Information Support of Social Audit 255
Inna Sysoieva, Andriy Pukas, Zoriana Pushkar, Serghiy Radynskyy, Nadiia Yushchenko, Oleh Vatslavskyi

Estimation of Energy Consumption by Ukrainian Households: Approaches, Models, Results.....261
Volodymyr Sarioglo, Maryna Ogay, Tetiana Lukovych, Dmytro Shushpanov, Olga Diakiv, Lina Diakovich.

Data Mining Tools for Analysis of Dependence of Gas Consuption of the Gas Price for Housholds of the EU Memberd-States.....267
Olha Kovalchuk, Mykola Shynkaryk, Kateryna Berezka, Ludmila Babala, Pavlo Chopyk, Pavlo Basistyi

Information-Functional Modeling of the Resource Support for the Management Decision-Making Process in the Conditions of COVID-19 272
Mykola Izha, Tetyana Pakhomova, Olha Slobodianiuk, Oleg Dolzhenkov, Yuliia Yevstiunina

Intelligent Behavioural Analysis of Social Network Data for the Purposes of Accounting and Control.....276
Zenovii-Mykhailo Zadorozhnyi, Volodymyr Muravskyi, Oleg Shevchuk, Viktor Rusin, Beáta Akimjaková, Mária Gažiová

Preliminary Estimation of War Impact in Ukraine on the Global Air Transportation 281
Ivan Ostroumov, Oleg Ivashchuk, Nataliia Kuzmenko

Transformation of Accounting Methods with the Use of Robotic Equipment with Artificial Intelligence.....285
Zenovii-Mykhailo Zadorozhnyi, Volodymyr Muravskyi, Vasyl Muravskyi, Nataliia Pochynok

Information Support of Public Administration in the Conditions of COVID-19.....290
Myroslav Kryshtanovych, Sierhiei Sakhanienko, Oleksandr Sylkin, Svitlana Lypovska, Olha Purtskhvanidze

Simulation on the Aircraft Engine By-Pass Ratio Optimization in Regards with the Number of the Passengers on Board **294**
Andriy Goncharenko

Workplace Innovations in Digital Age **298**
Magdalena Parcheva

Study of the Impact of Meteorological Phenomen in Flight Management **303**
Gabriela-Liliana Stroe, Mihaela-Luminita Costea, Emil Costea

Revaluation of Fixed Assets as the Main Factor of Non-Optimal Capital-Labour Ratio in Ukraine **307**
Volodymyr Yankovyi, Yuriy Kozak, Ihor Lishchynskyy, Mariia Lyzun, Yevhen Savelyev, Vitalina Kuryliak

Use of the Theory of Fuzzy Sets in Determining the Level of Enterprise Security **311**
Viacheslav Dzhedzhula, Iryna Yepifanova, Yurii Kravchyk

Web Application for Remote Document Signing **316**
Bohdan Melnyk, Petro Stakhiv, Nataliya Melnyk, Stepan Trokhanyak, Rostyslav Mykhailyshyn, Ivan Dyyak

Information and Digital Technologies in the Evaluation and Development of International Cluster Systems **320**
Lesia Buiak, Olga Gonchar, Larysa Dzhulii, Liudmyla Yemchuk, Hanna Tsymbaliuk, Lesia Bilorusets

Information and Communication Technologies as the Main Factor in the Development of Intellectual Capital of the Enterprise **326**
Lesia Buiak, Liudmyla Yemchuk, Larysa Dzhulii, Volodymyr Dzhulii, Larysa Skorobohata, Lesia Bilorusets

The Impact of Data Analytics on the Nature of Doing Business **331**
Olena Liashenko, Oleksandr Podskrebko, Nadiia Ivanchenko

SECTION 3
Cyber Security

Cybersecurity Assessment: World and Ukrainian Experience **335**
Maryna Nehrey, Iryna Voronenko, Abdel-Badeeh M. Salem

Ideal Lattices in Cryptography **341**
Sara Vyhnalova

Polynomial Rabin Cryptosystem based on the Operation of Addition **345**
Igor Yakymenko, Mykhailo Kasianchuk, Inna Shylinska, Ruslan Shevchuk, Vasyl Yatskiv, Mikolaj Karpinski

EMG Data Collection for Multimodal Keystroke Analysis **351**
Stefan Korecko, Matus Pleva, Matus Haluska, Markus Hoff Skudal, Patrick Bours

Modeling the Information Security System Under the Impact of COVID-19 ..... **356**
Olha Ivanytska, Tetyana Manuilova, Kateryna Kolesnikova, Mykola Slobodianiuk, Yurii Norchuk

Dual Use of Internet of Things Technology in Accounting Automation and Cybersecurity **360**
Oksana Desyatnyuk, Volodymyr Muravskyi, Oleg Shevchuk, Mykhailo Oleksiiv

SECTION 4
Specialized Information and Computer Systems

Soil Analysis Software Tool for Smart Control of Agronomic Data **364**
Viktor Satsyk, Oksana Mekush, Nataliia Lishchyna, Nataliia Khrystynets, Larysa Gumeniuk, Liudmyla Korobchuk

IoT Architectures Comparison for Patient Localization in Healthcare....369
Antonio Scarfò

Estimation of Geodetic Altitude from Barometric One with Actual Meteorological Aerodrome Report Data....375
Ivan Ostroumov, Nataliia Kuzmenko, Olena Kyzymchuk

A Weather-Based Traffic Prediction System using Big Data Techniques....379
Yuan-Cheng Lai, Shan-Yung Chen, Ssu-Fan Wang, Bor-Shen Lin

Development of an Interactive Map within the Implementation of Actual State and Public Directions....384
Maksym Lupei, Myroslav Shlahta, Oleksandr Mitsa, Yurii Horoshko, Hanna Tsybko, Vasyl Gorbachuk

CMOS Simulation of Mixed-Polarity Generalized Fredkin Gates....388
Oleksii Dovhaniuk, Vitaly Deibuk

Cyber-physical System for Dynamic Annotating Real-world Objects using Augmented Reality....392
Ruslan Shevchuk, Roman Tykhiy, Andriy Melnyk, Mikolaj Karpinski, Jan Owedyk, Tetiana Yurchyshyn

A Graph Analysis of Aviation Enroute Network....396
Oleg Ivashchuk, Ivan Ostroumov, Nataliia Kuzmenko

An Approach Based on the Visualization Model for the Ukrainian Web Content Classification....400
Vitalii Slobodzian, Maryna Molchanova, Oleksii Kovalchuk, Olena Sobko, Olexander Mazurets, Olexander Barmak, Iurii Krak

Research of Efficiency of Information Technology of Intraoperative Neuromonitoring in the Prevention of Injuries of Laryngeal Nerves....406
Viktor Shidlovsky, Olexandr Shidlovsky, Andriy Dyvak, Vitaliy Pryvrotskyy, Iryna Spivak

High-performance Coprocessors for Arithmetic and Logic Operations of Multi-Bit Cores for Vector and Scalar Supercomputers....410
Yaroslav Nykolaychuk, Volodymyr Hryha, Natalia Vozna, Artur Voronych, Andriy Segin, Petro Humennyi .

Hign Availability System for Monitoring Material Degradation Processes at the Concrete-Polymer Interface....415
Roman Mysiuk, Volodymyr Yuzevych, Bohdan Koman, Mykhailo Yasinskyi

Software Solution for Energy Smart Analyzer with IoT Module....419
Andriy Pukas, Vitalii Smal, Iryna Voytyuk, Inna Sysoieva, Iryna Belova, Olga Zavytii

Model of an Autonomous Airmobile Complex for Measuring Air Pollution Concentrations by Vehicles....423
Vasyl Tymchyshyn, Frank Otoo, Myroslav Komar, Volodymyr Shpak, Vita Semaniuk, Volodymyr Fronchko

Performance of VOR/DME Navigation Aided by Altimeter Data....427
Ivan Ostroumov, Nataliia Kuzmenko

Information System for the Work of Scientific Councils with the Possibility of Voting....432
Oleksii Bilyk, Iryna Vergunova

Using Microservice Architecture for High-Load Information Systems on the Example of MedicinePlanner Service....437
Volodymyr Kornuta, Eduard Sobotnyk, Yuliia Katamai, Ihor-Mykhailo Katamai

Toward Building Specialized Information Systems as Software Platforms....443
Vladyslav Holubiev, Volodymyr Simashko, Edward Jarmoch, Peter Majda, Martin Taraj, Janka Bursová

Smart House Assistive Technologies for Senior Citizens....448
Linos Nchena

The Concept of Automated Phonetic Analysis of a Speech with Asymptotic Adaptation to the Specifics of Phonation of Language Units 454
Oleg Bisikalo, Oksana Kovtun, Viacheslav Kovtun

Research Study on the Use of CI/CD Among Slovak Students 458
Nikoleta Hroncova, Pavle Dakic

Thermo-calibration of MEMS Sensors in Information Systems 462
Volodymyr Golitsyn, Olha Sushchenko, Yurii Bezkorovainyi

Structural Matrix for Algorithm Flow Graph Representation in Computer 466
Anatoliy Melnyk, Inna Iakovlieva

SECTION 5
Artificial Intelligence and Cognitive Systems

Analysing Movement Patterns from Smartphones for the Training of Exoskeletons 472
Sven Kirmess, Christina Sigl, Wolfgang Dorner

AI-based System for Cultural Heritage Objects Identification from Real Photos 476
Jan Fesl, Jiří Jelínek, Kateřina Horníčková, Zuzana Nevařilová, Michal Konopa, Marie Feslová

Towards Data Normalization Task for the Efficient Mining of Medical Data 480
Ivan Izonin, Roman Tkachenko, Natalya Shakhovska, Bohdan Ilchyshyn, Michal Greguš, Christine Strauss

Terrain Image Recognition with Unsupervised Generative Representations: the Effect of Anomalies 485
Pylyp Prystavka, Serge Dolgikh, Oleksandr Kozachuk

Noise Presence Detection in QR Code Images 489
Ahmad Bilal Wardak, Jawad Rasheed, Amani Yahyaoui, Sadaf Waziry, Erdal Alimovski, Mirsat Yesiltepe

Prediction of Toxicity of Phenols Using Artificial Neural Networks 493
Yaroslava Pushkarova, Galina Zaitseva, Mustafa Al Saker

An Introduction to Detection of Hate Speech and Offensive Language in Slovak 497
Zuzana Sokolova, Jan Stas, Daniel Hladek

Text Mining for the Analysis of Legal Texts 502
Olha Kovalchuk, Serhiy Banakh, Mariia Masonkova, Kateryna Berezka, Serhii Mokhun, Olha Fedchyshyn.

Cost-effective real-time parking space occupancy detection system 506
Roland Szarka, Pavle Dakic, Valentino Vranic

The Ukrainian AI Strategy: Premises and Outlooks 511
Anatolij Shevchenko, Maksym Vakulenko, Mykyta Klymenko

A Tool for Scholarly Phonemic Transcription of Ukrainian Texts 516
Maksym Vakulenko

Video-Based Text to American Sign Language via Transitional Motion Synthesis 520
Yulia, Chuan-Kai Yang, Yuan-Cheng Lai

Data Structure and Simulation Model for Associative Reasoning 525
Jiří Jelínek

Automatic License Plate Recognition Using OpenCV 530
Michael Krocka, Pavle Dakic, Valentino Vranic

Gradient Methods for Teaching a Multilayer Neural Network to Recognize Printed Digits 536
Sergiy Sveleba, Ivan Katerynchuk, Ivan Kunyo, Ostap Semotyjuk, Natalia Sveleba, Mykhailo Ozhha

Machine Learning Approaches for Lung Cancer Prediction 540

Alpre Emre Celik, Jawad Rasheed, Amani Yahyaoui

Exploiting Stage Information for Prediction of Switching Times of Traffic Actuated Signals Using Machine Learning.....544
Lena Elisa Scheegans , Kevin Heckmann , Robert Hoyer

SECTION 6
Information Technology in Education

Modified Ling Six Sound Test Audiometry Application.....549
Stanislav Ondas, Matus Pleva, Jozef Juhar, Eva Kiktova, Julius Zimmermann, Viktoria Soltesova

Analysis of the Target Use and Tools of Information Communication Technologies by Students of Pedagogical Specialties.....554
Volodymyr Rak, Yurii Turanov, Iryna Lutsyk, Olha Potapchuk, Yuriy Franko, Andrii Uruskyi

Modern Information Technologies for Teaching and Control of Knowledge Acquisition of Older Preschoolers and Primary School Students 559
Iurii Shcherbiak, Iryna Kuzma, Olha Bilyakovska, Kateryna Binytska, Olena Halian, Oleksandra Yankovych

Access Distribution to the Evaluation System Based on Fuzzy Logic 564
Lesia Dubchak, Nadiia Vasylkiv, Iryna Turchenko, Myroslav Komar, Tetiana Nadvynychna, Rudolf Volner

Features of Implementation the Academic Staff Performance Appraisal System.....568
Andriy Pukas, Andrii Simak, Serhii Shandruk, Lesia Bilovus, Viacheslav Stepanenko, Antonina Demianiuk.

Using R Programming Language to Cluster of Universities based on Sustainability Potential Indicators.....572
Liudmyla Yurchyshena, Larysa Shaulska, Maryna Naumova

Education 4.0 and University 4.0 from Society 5.0 Perspective 577
Cemal Akturk, Tarık Talan, Ceren Cubukcu Cerasi

Astronomical Knowledge Discovery in Databases by the CoLiTec Software 583
Sergii Khlamov, Vadym Savanevych, Olexander Briukhovetskyi, Iryna Tabakova, Tetiana Trunova

Stellarium Software as a Means of Development of Students' Research Competence While Studying Physics and Astronomy 587
Serhii Mokhun, Olha Fedchyshyn, Mykhailo Kasianchuk, Pavlo Chopyk, Pavlo Basistyi, Viktor Matsyuk ....

The Technique of Delivering Interactive Lectures Using Internet Technologies.....592
Volodymyr Kornuta, Olena Kornuta, Yuliia Katamai

Improving the Quality of IT Students Education: the Ukrainian Experience.....597
Olena Haitan

Methods and Forms of Increasing the Student Involvement in Online Education Process for Computer Science Students 601
Olena Haitan

AUTHOR'S INDEX 605

Methods and forms of increasing the student involvement in online education process for Computer Science students

Olena Haitan
Department of Computer and Information Technologies and Systems National University «Yuri Kondratyuk Poltava Polytechnic»
Poltava, Ukraine
azalie@ukr.net

***Abstract*—An effective way to involve students in the educational process and, as a result, to improve the education quality is the use of modern innovative and interactive technologies in education.**

The paper considers various innovative technologies in online education of the Computer Science students. Examples of such technologies for the specific academic disciplines, in particular, “Discrete Mathematics”, “Basics of Algorithmization and Programming”, “Algorithms and Data Structures”, “Information Security”, “Methods of Software Testing and Quality Assurance", and "Web Programming and Web Design” are given.

Keywords—IT education, game learning, simulator, algorithm visualize, team work, project, peer-to-peer task assessment.

XXX-X-XXXX-XXXX-X/XX/$XX.00 ©20XX IEEE