

Welcome to



EUSPN 2023

The 14th International Conference on
Emerging Ubiquitous Systems and
Pervasive Networks



ICTH 2023

The 13th International Conference on
Current and Future Trends of
Information and Communication
Technologies in Healthcare

November 7 – 9, 2023
Almaty, Kazakhstan

International Information Technology University, Kazakh-British Technical
University, Astana IT University, Almaty University of Power Engineering
and Telecommunications, Kazakhstan &
Hasselt University, Belgium & Acadia University, Canada



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EUSPN / ICTH SYMPOSIA AND WORKSHOPS

EUSPN	The 14th International Conference on Emerging Ubiquitous Systems and Pervasive Networks
ICTH	The 13th International Conference on Current and Future Trends of Information and Communication Technologies in Healthcare
AMDE	The 3rd International Workshop on the Advancements in Model Driven Engineering & Software Engineering
auICTH	The 8th Work-shop on Adults' Use of In-for-ma-ti-on and Communication Technologies in Healthcare
DS	The International Workshop on Digital society: In the Eve of the 6th Information Revolution
EICN	The 10th International Symposium on Emerging Information, Communication and Networks
HODII	The 4th International Workshop on Healthcare Open Data, Intelligence and Interoperability
ISIoT	The International Workshop on Intelligent Systems based on Internet of Things
SCIS-T&A	The International Workshop on Soft Computing and Intelligent Systems: Theory and Applications

PROGRAM AT A GLANCE

EUSPN 2023, ICTH 2023 and Workshops

Program Time Slots Kazakh British Technical University

Timing	Tuesday 7 November 2023					
16:00-18:00	Registration	Foyer Tole bi (Tole Bi Street 59)				
		ROOM 1	ROOM 2	ROOM 3	ROOM 4	
		Independence Hall	Abay Hall	777 Hall	Halyk Academy Hall	

Timing	Wednesday 8 November 2023					
08:30-17:00	Registration	Foyer Kazybek bi				
		Independence Hall				
09:00 - 09:30	Welcoming Ceremony	Welcoming speech by Vice Minister of Science and Higher Education of Kazakhstan				
09:30 - 10:30	Panel Session	Guest Speakers from leading companies and universities of Kazakhstan				
10:30 - 10:55	Coffee Break	Foyer of Independence Hall				
10:30 - 10:55	Press Conference	Abay Press Center				
11:00 - 12:00	Keynote Speaker I	Independence Hall Prof. Dr. Hossam Hassanein				
12:00 - 13:30	Technical Sessions (1)	EUSPN_S1	ICTH_S1	HODII_S1	ISIoT_S1	
13:30 - 14:30	LUNCH	Lunch Room				
14:30-16:00	Technical Sessions (2)	EUSPN_S2	ICTH_S2	HODII_S2/auICTH	ISIoT_S2	
16:00 - 16:25	Coffee Break	Foyer of Independence Hall				
16:30 - 18:00	Technical Sessions (3)	EUSPN_S3	SCIS-T&A_S1	DS_S1	ISIoT_S3	

Timing	Thursday 9 November 2023					
09:00 - 17:00	Registration	Foyer Kazybek bi				
		Independence Hall				
09:30 - 10:30	Keynote Speaker II	Prof. Dr. Václav Šnášel				
10:30 - 10:55	Coffee Break	Foyer of Independence Hall				
12:00 - 13:30	Technical Sessions (4)	EUSPN_S4	SCIS-T&A_S2	DS_S2	EICN	
13:30 - 14:30	LUNCH	Lunch Room				
14:30-16:00	Technical Sessions (5)	EUSPN_S5	SCIS-T&A_S3	DS_S3		
16:00 - 17:30	Technical Sessions (6)			DS_S4	AMDE	
19:00 - 21:00	Banquet and Award Ceremony	Dom Priemov na Mira				
		End of Event				

KEYNOTE I

Towards Community-Oriented Edge Computing – With a Healthcare Use Case

Prof. Hossam Hassanein
Queen's University, Canada

Abstract

Unlocking the power of everyday devices, known as Extreme Edge Devices (EEDs), can enhance data-intensive and time-sensitive applications. However, preserving data privacy and cost efficiency is crucial for EED-enabled computing. We achieve this by introducing the Community Edge Platform (CEP), which forms communities of requesters and EEDs through business, institutional, and social connections. CEP promotes mutual service exchange, prioritizing nearby EEDs as workers and uses resource usage prediction to account for their dynamic and diverse nature.

The fluctuating availability and capabilities of workers can result in variations in service quality. To address this, we forecast worker availability in real time. We also establish a reputation system based on past performance to ensure the reliability of workers. To enhance reliability and protect worker privacy in community-oriented edge computing, we implement a "black box" approach for cost-effective task replication, eliminating the need for information exchange about devices. This approach reduces uncertainty and builds trust in the system.

In healthcare, CEP is a game-changer. We discuss scenarios with health monitoring in hospitals, where devices forming the community help doctors respond quickly to vital data while keeping patient info safe. CEP can also be used for telemedicine, connecting patients with doctors, no matter how far apart they are, making healthcare more accessible.

About the Speaker

Prof. Dr. Hossam Hassanein is a leading authority in the areas of broadband, wireless and mobile networks architecture, protocols, control and performance evaluation. His record spans more than 600 publications in journals, conferences and book chapters, in addition to numerous keynotes and plenary talks in flagship venues. Dr. Hassanein has received several recognition and best paper awards at top international conferences. He is the founder and director of the Telecommunications Research Lab (TRL) at Queen's University School of Computing, with extensive international academic and industrial collaborations. He is the recipient of the 2016 IEEE Communications Society Communications Software Technical Achievement Award for outstanding contributions to routing and deployment planning algorithms in wireless sensor networks, and the 2020 IEEE IoT, Ad Hoc and Sensor Networks Technical Achievement and Recognition Award for significant contributions to technological advancement of the Internet of Things, ad hoc networks and sensing systems. Dr. Hassanein is a fellow of the IEEE and is a former chair of the IEEE Communication Society Technical Committee on Ad hoc and Sensor Networks (TC AHSN). He is an IEEE Communications Society Distinguished Speaker (Distinguished Lecturer 2008-2010).

KEYNOTE II

Metaheuristic Optimization in Hyperbolic Space

Prof. Václav Snášel

VSB-Technical University of Ostrava, Czech Republic

Abstract

Hyperbolic spaces have recently achieved acceleration in the context of machine learning of their high capacity and tree-likeness structures, taxonomies, text, and graphs. With the same dimension, a hyperbolic vector can represent richer information than a Euclidean vector. In this paper, we propose Metaheuristic optimization algorithms in hyperbolic space. Considering that the most popular optimization tools have not been generalized in hyperbolic space, we design optimization algorithms according to the specific property of the hyperbolic manifold.

However, a major bottleneck here is the obscurity of hyperbolic space and a better comprehension of its gyrovector operations. We aim to introduce researchers and practitioners in the metaheuristic community to the hyperbolic equivariant of the Euclidean operations necessary to tackle their application to Metaheuristic optimization.

We conduct experiments on various metaheuristic algorithms in hyperbolic space.

About the Speaker

Prof. Dr. Václav Snášel's research and development experience includes over 35 years in the Industry and Academia. He works in a multi-disciplinary environment involving Artificial intelligence, Bioinformatics, Information retrieval, Machine Intelligence, Data Science, Nature and biologically inspired computing, and applied to various real-world problems. He studied numerical mathematics at Palacky University in Olomouc, a Ph.D. degree obtained at Masaryk University in Brno. From 2001 to 2009, he worked as a researcher at The Institute of Computer Science of the Academy of Sciences of the Czech Republic. Since 2009 he has worked as head of the research program Knowledge Management at IT4Innovation National Supercomputing Center; from 2010 until 2017, he works as dean of the Faculty of Electrical Engineering and Computer Science. Since 2017 he has been rector of the VSB-Technical University of Ostrava. He teaches as a professor at VSB – Technical University of Ostrava. He has given 18 plenary lectures and conference tutorials in these areas. He has authored/co-authored several refereed journal/conference papers and book chapters. He has published over 800 papers (570 papers are indexed in Web of Science and 800 in Scopus). He has supervised 50+ Ph.D. students from the Czech Republic, Jordan, Yemen, Slovakia, Ukraine, Russia, India, China, Lybia, and Vietnam. He is co-editor of 40 books in Springer.

DETAILED PROGRAM

Tuesday 7 November 2023

Registration 16:00-18:00

Room: Foyer Tole bi (Tole Bi Street 59)

Wednesday 8 November 2023

Registration Starts 08:30

Room: Reception Room

Opening 09:00 - 09:30

Welcoming Ceremony by Vice Minister of Science and Higher Education of Kazakhstan

Room: Main Meeting Room

Panel Session 09:30 - 10:30

Guest Speakers from leading companies and universities of Kazakhstan

Room: Main Meeting Room

Press Conference & Coffee Break 10:30 - 10:55

Room: Foyer of Independence Hall

Keynote I 11:00 - 12:00

Towards Community-Oriented Edge Computing – With a Healthcare Use Case

Prof. Hossam Hassanein, Queen's University, Canada

Session Chair: Ansar Yasar, Hasselt University, Belgium

Room: Main Meeting Room

Technical Sessions (1) 12:00 - 13:30

EUSPN Session S-1

Session Chair: Asel Mukasheva, Kazakh-British Technical University, Kazakhstan

Room: Room 1

Automatic Accident Detection System Using IoT Compared to the Systems that a Traffic Centre Uses for Accident Detection

Wireless Technologies and Network Planning for Water Quality Monitoring: The AQUASENSE Approach

On Abstract Machines Security and Performance

Flavio Lombardi, Alessandro Recchi

Time Pressure's Impact on Taxi Drivers' Driving Speed: A Driving Simulator Study

Husam Snober, Abdulla Al-malki, Mohammed Elias, Mohammed Saqallah, Moath Badran, Yaman Kutmawi,

Wael Alhajyaseen, Qinaat Hussain

Wireless Technologies and Network Planning for Water Quality Monitoring: The AQUASENSE Approach

Sofia Batsi, Stefano Tennina

ICTH Session S-1

Session Chair: Sabina Rakhmetulayeva, International Information Technology University, Kazakhstan

Room: Room 2

A novel approach to sepsis diagnosis: Using artificial intelligence to assist clinicians and innovate

Anika Bukkapatnama, Sara Manjaly, Rachana Senthil

Prognostic Model in the Diagnosis and Treatment of Isolated Fungal Sphenoiditis

Sergei Karpishchenko, Irina Arustamyan, Olga Stancheva, Kirill Sharko, Dmitrii Kaplun, Iryna Shpakouskaya

A YOLOv5-Based Model for Real-Time Mask Detection in Challenging Environments

Saya Sapakova, Askar Sapakov, Yelidana Yilibule

Sphenoid sinus disease in geriatric patients: an analytical approach

Sergei Karpishchenko, Irina Arustamyan, Olga Stancheva, Dmitrii Kaplun

HODII Session S-1

Session Chair: Manuel Filipe Santos & Tiago Guimarães, University of Minho, Portugal

Room: Room 3

Low Code Approach for Business Analytics

Daniel Sá, Tiago Guimarães, Antonio Abelha, Manuel Filipe Santos

OpenEHR logic module: a tool for creating decision rules

Beatriz Silva, Francini Hak, Manuel Santos, António Abelha

Prediction of nosocomial infections associated with surgical interventions

Diogo Fernandes, Sara Cardoso, João Miranda, Júlio Duarte, Manuel Filipe Santos

Decentralize Healthcare Marketplace

Gonçalo Cruz, Tiago Guimarães, Manuel Filipe Santos, José Machado

ISIoT Session S-1

Session Chair: Didar Yedilkhan, Astana IT University, Kazakhstan

Room: Room 4

Multi-Layer Integration of Heterogeneous Wireless Sensor Networks for Smart Home Optimization

Batyrzhan Akhmetzhanov, Bauyrzhan Akhmetzhanov, Didar Yedilkhan, Aigul Medeshova, Khaled Rabie, Nurkhat Zhak

Development of microprocessor device of relay protection based on open architecture using Industrial Internet of Things technology

Alexandr Neftissov, Ilyas Kazambayev, Lalita Kirichenko, Aliya Aubakirova, Dnislam Urazayev, Kamilla Zhakupova

The “Study Easy” Information System

Taras Dyda, Nataliia Kunanets, Roman Vaskiv, Daniyar Dauletiya, Sergiy Chernovc, Ludmila Chernova, Lubava Chernova

The concept of the Internet of Things in the development of information and analytical systems based on the method of constructing a scalar assessment of the results of research activities of scientists

Andrii Biloshchytskyia, Serik Omirbayev, Aidos Mukhatayev, Svitlana Biloshchytska, Sapar Toxanov, Adil Faizullin

Lunch Break

13:30 - 14:30

Room: Lunch Room

Technical Sessions (2)**14:30 - 16:00****EUSPN Session S-2****Session Chair:** Asel Mukasheva, Kazakh-British Technical University, Kazakhstan**Room:** Room 1

Cloud Computing Security and Deep Learning: An ANN Approach

Lumbardha Hasimi, Dimitrios Zavantis, Elhadi Shakshuki, Ansar Yasar

Exploring driver behaviors during tailgating situations: a driving simulator study

Charitha Dias, Mahmoud Gazalh, Wael Alhajyaseen, Issa Habouba, Rayyan Maulana, Dawood Ahmed, Taimoor Hussain, Misab Roshan, Aiman Saad Baig, Qinaat Hussain

Forecasting international migration in Kazakhstan using ARIMA models

Fariza Tolesh, Svitlana Biloshchytska

Detecting Overlay Attacks in Android

*Animesh Kar, Natalia Stakhanova, Enrico Branca***ICTH Session S-2****Session Chair:** Sabina Rakhmetulayeva, International Information Technology University, Kazakhstan**Room:** Room 2

Review of Dental Diagnosis by Deep Learning Models: Trends, Applications and Challenges

Rime Bouali, Oussama Mahboub, Mohamed Lazaar

Vaccimon Device: A Design and Development of Vaccine Carrier Monitoring Device for COVID-19 Vaccines

Paul Harriet S. Asineroa, Orven E. Llantos

Software Design Specification Proposal of a Diagnostic Decision Support System for Clinical Low Back Pain

*Ishaya Gambo, Christopher Agbonkhese***HODII/aulCTH Session S-2****Session Chair:** Heiko Gewalt, Neu-Ulm University of Applied Sciences, Germany**Room:** Room 3

Architecture proposal for deploying and integrating intelligent models in ABI

Rui Gomes, Júlio Duarte, Cesar Quintas, Maria Manuel Salazar, Manuel Filipe Santos

Towards a Standardized Real-Time Data Repository based on Laboratory Test Results

Regina Sousa, Hugo Peixoto, Tiago Guimaraes, Ant´onio Abelha, Jose Machado

The Healing Power of Words: Examining the Effect of Communication Styles on Appreciation within the Hospital Setting

Kirsten Hannah Seerig, Maximilian Haug, Alexander Maiera, Heiko Gewalt

Promoting Sports and Wellness with Social Media Advertising – An Analysis of Different Marketing Channels

*Sina Zimmermann, Johannes Dauter, Heiko Gewalt***ISIoT Session S-2****Session Chair:** Didar Yedilkhan, Astana IT University, Kazakhstan**Room:** Room 4

Integration of GIS and machine learning analytics into Streamlit application

Noyan Tendikov, Leila Rzayeva

Improved Chain-based Multi-Output Classification for Packaging Planning

Sena Nur Yıldız, Feyza Yıldırım Okay, Abulkhair Islamov, Suat Özdemir

Narrowed Regions-based Bidirectional Path Planning Using RRT-Connect for Single Aircraft Missions

*Dogan Candemir, Ibrahim Kokb, Suat Ozdemir***Coffee Break****16:00 - 16:25****Room:** Meeting Foyer

Technical Sessions (3)**16:30 - 18:00****EUSPN Session S-3****Session Chair:** Asel Mukasheva, Kazakh-British Technical University, Kazakhstan**Room:** Room 1

Convolutional Neural Network-Based Defect Detection Technique in FDM Technology

Kaisar Kozhay, Shynggys Turarbek, Tolkyn Asselbekova, Md. Hazrat Alia, Essam Shehab

From Raw Data to Informed Decisions: The Development of an Online Data Repository and Visualization Dashboard for Transportation Data

Ioannis Tsouros, Amalia Polydoropoulou, Athena Tsirimpa, Ioannis Karakikes, Shahram Tahmasseby, Anas Ahmad Nemer Mohammad, Wael K. M. Alhajyaseen

The Use of Deep Learning Techniques in OFDM Receivers for 5G NR: A Survey

Maggie Shammaa, Maggie Mashaly, Ahmed El-mahdy

Enhancing Student Success with XAI-Powered RADAR: An Automated AI-driven System for Early Detection of At-risk Students

*Ossama H. Embarak, Shatha Hawarna***SCIS-T&A Session S-1****Session Chair:** Pakizar S. Shamo, Kazakh-British Technical University, Kazakhstan**Room:** Room 2

Comparing Machine Learning Models to Determine the Effect of Speech Duration on Speaker Identification within Kazakh Speech Corpus

Janybekova Saltanat, Aidos Sarsembayev, Gaukhartas A. Tolganbayeva

Crop classification using UAV multispectral images with gray-level co-occurrence matrix features

Almas Alzhanov, Aliya Nugumanova

Large Language Model Based Fake News Detection

Mussa Aman

Development of an Approach for Multicomponent Evaluation of the Efficiency of Modified Algorithms of Artificial Immune Systems

*Galina Samigulina, Zarina Samigulina***DS Session S-1****Session Chair:** Dinara Kozhamzharova, International Information Technology University, Kazakhstan**Room:** Room 3

Clip thinking in the digital age: complementary or contradictory

Sergiy Bushuyev, Svetlana Murzabekova, Maira Khusainova, Oleksandr Chernysh

Creating Urban Transportation Networks Grounded In the Principles of the Smart Port-City Paradigm

Bushuyev Sergiy, Lapkina Inna, Bondar Alla, Lapkin Alexander, Maira Khusainova

Application of Recommended Systems for E-commerce

Bektemyssova Gulnara, Shyntore Guldana, Akhmer Yerassyl

Use of Mathematical Modeling Tools to Support Decision-Making in Medicine

*Alua Myrzakerimova, Katerina Kolesnikova, Mugulsum Nurmaganbetova***ISloT Session S-3****Session Chair:** Didar Yedilkhan, Astana IT University, Kazakhstan**Room:** Room 4

Machine Learning Approaches for Smart Home Device Recognition from Network Traffic

Didar Yedilkhan, Saida Smakova

Energy-efficient Internet of Things using LoRa Network and modular universal programmable controller in bee apiary management

Vladimir Vatskel, Andrii Biloshchytskyi, Alexandr Neftissov, Oleksandr Kuchanskyi, Yurii Andrashko, Illia Sachenko

Surveillance Camera Using Wi-Fi Connection

*Arnas Zhaxalikov, Alibek Mombekov, Zhuldyz Sotsial***End of Wednesday Technical Sessions**

Thursday 9 November 2023

Registration Starts 09:00

Room: Reception Room

Keynote II 9:30 - 10:30

Metaheuristic Optimization in Hyperbolic Space

Prof. Václav Snášel, VSB-Technical University of Ostrava, Czech Republic

Session Chair: Yevgeniya Daineko, International Information Technology University, Kazakhstan

Room: Independence Hall

Coffee Break 10:30 - 10:55

Room: Meeting Foyer

Technical Sessions (4) 12:00 - 13:30

EUSPN Session S-4

Session Chair: Bigadevanahalli Mruthyunjaya Avinash, Kazakh-British Technical University, Kazakhstan

Room: Room 1

Information system for remediation and cleanup of contaminated soil with machine learning

L.Naizabayeva, Ch.A. Nurzhanov, M.N. Satymbekov, V.Zh.Elle

The Impacts of Mobility-as-a-Service (MaaS) on a Diverse Society: A Framework for Advanced Assessment

Anas Mohammed, Wael Alhajyaseen, Shahram Tahmasseby, Salwa Salam, Aparna Parassini Madappurakkal

Machine learning for predicting energy efficiency of buildings: a small data approach

Ivan Izonin, Roman Tkachenko, Stergios Aristoteles Mitoulis, Asaad Faramarzi, Ivan Tsmots, Danylo Mashtalir

Usability Evaluation of Handheld and Wearable AR devices: Exploring Collaboration and the Role of Physical Props

Imad Afyouni, Mohammed Lataifeh, Zulaiha Afrah, Naveed Ahmed

SCIS-T&A Session S-2

Session Chair: Pakizar S. Shamoj, Kazakh-British Technical University, Kazakhstan

Room: Room 2

Blockchain concept for the educational purposes: bibliometric analysis and conceptual structure

Dinara Zhaisanova, Madina Mansurova

Sharing Identity with AI Systems: A Comprehensive Review

Alina Gutoreva

A multi-factor approach for height estimation of an individual using 2D image

Mosavi Sakina, Ilyas Muhammad, Sani Sani Abdullahi

Fuzzy Approach for Audio-Video Emotion Recognition in Computer Games for Children

Pavel Kozlov, Alisher Akram, Pakizar Shamoj

DS Session S-2

Session Chair: Dinara Kozhamzharova, International Information Technology University, Kazakhstan

Room: Room 3

Affective computing methods for simulation of action scenarios in video games

Sarsenbek Kadyr, Chinibayeva Tolganay

Development of a model of personal data protection in the context of digitalization of the educational sphere using information technology tools

Raichuk Isus, Kateryna Kolesnikova, Iulia Khlevna, Timinskyi Oleksandr, Kubiavka Liubov

Earthquake time-series forecast in Kazakhstan territory: Forecasting accuracy with SARIMAX

Marat Nurtas, Zhumabek Zhantaev, Aizhan Altaibek

Digitalization of human resource department: the experience of Kazakhstani enterprise

Galiya Berdykulova, Yevgeniya Daineko, Marat Kamysbayev, Aigul Omarova, Vilmur Auken, Makpal Abdinova

EICN Session**Session Chair:** Elhadi Shakshuki, Acadia University, Canada**Room:** Room 4

A Robust DCT-Based Scheme for Watermarking Deep Neural Networks

Mohammed Baziyad, Ibrahim Kamel, Tamer Rabie, Grigory Kabatyansky

The Erosion of Competencies in Managing Innovation Projects due to the Impact of Ubiquitous Artificial Intelligence Systems

Sergiy Bushuyev, Denis Bushuiev, Victoria Bushuieva, Natalia Bushuyeva, Svetlana Murzabekova

Features of modeling the online real estate market in Almaty

Saya Sapakova, Askar Sapakov

Maintenance Process Analysis in a Port Cargo Company through Discrete Event Simulation

*Hernan Corrotea, Héctor Portales, Luis Amigo, Gustavo Gatica, Alexander Troncoso-Palaciob, Daniela**Mondragón, Mariana Ramos***Lunch****13:30 - 14:30****Room:** Lunch Room**Technical Sessions (5)****14:30 - 16:00****EUSPN Session S-5****Session Chair:** Alexander Pak, Kazakh-British Technical University, Kazakhstan**Room:** Room 1

Bundle AI: An Application of Multiple Constraint Knapsack Problem (MCKP) Through Genetic Algorithm (GA)"

Angel Nicole Carloman, Urel Van William Bermudo, Eiries Marc Estiloso, Orven E. Llantos

ContractArmor: Attack Surface Generator for Smart Contracts

Ferda Ozdemir Sonmeza, William J. Knottenbelt

An Improved Hybrid Metaheuristic for Active Job-Shop Scheduling Problems

Lotfi NOHAIR, Abderrahim EL ADRAOUI, Abdelwahed NAMIR

Digital Citizenship and Sustainable Governance: A Design Thinking Approach

Belinha Herrera Tapias, Diego Hernández Guzmán, Paola Carvajal Muñoz, Nathaly Reyes Duarte

UAVs for Disaster Management - An Exploratory Review

*Julian Kedys, Igor Tchappi, Amro Najjar***SCIS-T&A Session S-3****Session Chair:** Pakizar S. Shamoï, Kazakh-British Technical University, Kazakhstan**Room:** Room 2

Intelligent System for Assessing University Student Personality Development and Career Readiness

Assylzhan Izbassar, Muragul Muratbekova, Daniyar Amangeldi, Nazzere Oryngoza, Anna Ogorodova, Pakizar Shamoï

Assessment of the impact of big data analysis on decision-making in stock trading processes

Ruslan Kalashnikov, Amandyk Kartbayev

Smart traffic lights with video vision based on a control minicomputer in Kazakhstani megacities

*Baurzhan Belgibaev, Madina Mansurova, Sanzhar Abdrakhim, Ainur Ormanbekova***DS Session S-3****Session Chair:** Dinara Kozhamzharova, International Information Technology University, Kazakhstan**Room:** Room 3

Using digital monitoring of respiratory functions in breathing simulators

Nurzhan T. Duzbayev, Lyudmila A. Kozina, Yerbulat K. Makashev

Speech recognition for Kazakh language: a research paper

Galym Kapyshev, Marat Nurtas, Aizhan Altaibek

Towards Metahospital: augmented and virtual reality in medicine

Yevgeniya Daineko, Madina Ipalakova, Dana Tsoya, Bakhyt Alipova, Azamat Kozhakhmetov, Akkyz Mustafin

Technical Sessions (6)**16:00 - 17:30****DS Session S-4****Session Chair:** Dinara Kozhamzharova, International Information Technology University, Kazakhstan**Room:** Room 3

Transformation of the Team Role Model of Scientific Schools into a Markov Chain

Askar Khikmetov, Kaisar Alpysbayev, Kateryna Kolesnikova

Application of immersive technology in a museum

Dmitrii Kapluna, Sergei Romanova, Madina Ipalakovac, Yevgeniya Daineko, Zhiger Bolatovc, Dana Tsoy

Automating hybrid business processes with RPA: optimizing warehouse management

*Nurgul Nalgozhina, Raissa Uskenbayeva***AMDE Session****Session Chair:** Yassine Rhazali, ESTM, UMI, Morocco**Room:** Room 4

Towards A Software Factory for Developing the Chatbots in Smart Tourism Mobile Applications

Lamya Benaddia, Charaf Ouaddi, Abdeslam Jakimi, Brahim Ouchao

Automatic Generation of a Microservice Data Structure from ReLEL

Fanomezana Mihajasoia Léa, Rapatsalahy Miary Andrianjaka, Razafindrakoto Nicolas Raft, Costin Bădică

A Web-based Methodology to Automate foundation of business process model in MDA by AI

Mohamed EL Ayadia, Yassine Rhazali, Mohammed Lahmer

Architecture, Tools, and DSLs for Developing Conversational Agents: An Overview

Charaf Ouaddia, Lamya Benaddi, Abdeslam Jakimi

A DSL-based Approach for Code Generation and Navigation Process Management in a Single Page Application

*Lahbib Naimi, Hamza Abdelmalek, Abdeslam Jakimi***End of Thursday Technical Sessions****Banquet and Award Ceremony****19:00 - 21:00**

Dom Priemov na Mira

END of Event