

**23rd International Conference
Artificial Intelligence and Soft Computing**

Program

Zakopane, Poland, June 16-20, 2024

Program at a glance

Sunday, June 16	Monday, June 17	Tuesday, June 18
	07:00-9:00 Breakfast, Room: Zakopane	07:00-8:30 Breakfast, Room: Zakopane
	9:00 - 9:10 Opening Ceremony, Room: Tatry Invited Talks, Chair: Leszek Rutkowski, Room: Tatry	8:30 - 9:15 Qiyu Sun
	9:10 - 9:25 Witold Pedrycz	9:15 - 10:00 Włodzisław Duch
	9:25 - 10:10 Janusz Kacprzyk	10:00 - 10:10 Coffee break
	10:10 - 10:55 Wojciech Samek	Session 2A - poster session (Room: foyer of Tatry)
	10:55 - 11:20 Coffee break	10:10 - 11:10 Computer Vision, Image and Speech Analysis
	Discussion panel	10:10 - 12 :00 Session 2B - online (Room: Tatry)
	11:20 - 12:50 AI-centric AI Organizers: Włodzisław Duch, Danuta Rutkowska, Vagan Terziyan	Various problems
	13:00 - 14:30 Lunch, Room: Zakopane	Session 3 - poster session (Room: foyer of Tatry)
	Invited Talk, Chair: Jacek Zurada, Room: Tatry	11:20 - 12:20 Various Problems of Artificial Intelligence 1
	14:30 - 15:15 Erol Gelenbe	13:00 - 14:30 Lunch, Room: Zakopane
	15:15 - 16:00 Yang Tang	Tutorial, Chair: Aleksander Byrski, Room: Tatry
	16:00 - 16:20 Coffee break	14:30 - 15:30 Michal Pluháček
	Session 1A - posters (Room: Foyer of Tatry)	15:30 - 15:35 Coffee break
	16:20 - 18:00 Neural Networks and Complex-Valued NNs	15:35 - 17:10 Session 4 - online (Room: Rysy)
	16:10 - 18:00 Session 1B - online (Room: Tatry)	Neural Networks and Their Applications
	Computer Vision, Image and Speech Analysis	17:10 - 17:15 Coffee break
		17:15 - 18:50 Session 5 - online (Room: Rysy)
18:00 Welcome dinner, Room: Zakopane	18:00 Social event, barbecue	Computer Vision, Image and Speech Analysis
		19:00 Social event (Banquet), Room: Tatry

Wednesday, June 19**07:00-8:30**

Breakfast, Room: Zakopane

Session 6 - oral online (Room: Rysy)

8:30 - 9:55

Bioinformatics, Biometrics and Medical Applications

9:55 - 10:00

Coffee break

Session 7 - oral online (Room: Rysy)

10:00 - 11:25

Evolutionary and Fuzzy Methods

11:25 - 11:30

Coffee break

Session 8 - oral online (Room: Rysy)

11:30 - 13:00

Various Problems of Artificial Intelligence 2

13:00 - 14:30

Lunch, Room: Zakopane

14:15 - 18:00

Sightseeing trip

18:00

Farewell Dinner, Room: Zakopane

Thursday, June 20**07:00-11:00**

Breakfast, Room: Zakopane

Detailed Program

Sunday, June 16

18:00

Welcome party

Room: Zakopane

Monday, June 17

07:00-9:00

Breakfast, Room: Zakopane

9:00 - 9:10

Opening Ceremony, Room: Tatry

Invited Talks, Chair: Leszek Rutkowski, Room: Tatry

9:10 - 9:25

Witold Pedrycz

9:25 - 10:10

Janusz Kacprzyk

10:10 - 10:55

Wojciech Samek

10:55 - 11:20

Coffee break

Discussion panel, Room: Tatry

11:20 - 12:50

AI-centric AI

Organizers: Włodzisław Duch, Danuta Rutkowska, Vagan Terziyan

13:00 - 14:30

Lunch, Room: Zakopane

Invited Talk, Chair: Jacek Zurada, Room: Tatry

14:30 - 15:15

Erol Gelenbe

15:15 - 16:00

Yang Tang

16:00 - 16:20

Coffee break

Session 1A - posters (Room: Foyer of Tatry)

16:20 - 18:00

Session 1A: Neural Networks and Complex-Valued NNs

Date/Time: 16:20 - 18:00, Mon., June 17, 2024

Room: Foyer of Tatry, poster session

Complex-Valued Restricted Boltzmann Machines for Learning Image Data Distributions
Maciej Jaworski, Agnieszka Niemczynowicz, Radosław Kycia

Evaluating Neural Network Models for Accurate Prediction of Network Traffic Load
Jarosław Bernacki, Kelton Costa, Katarzyna Nieszporek

Practical considerations in implementing neural network training with vector instructions
Jarosław Bilski, Bartosz Kowalczyk

Assessing generalization capability of text ranking models in Polish
Sławomir Dadas, Małgorzata Grębowiec

The Use of Synthetic Data in the Development of a Webshop User Profiling System
Marcin Gabryel, Dawid Lada, Milan Kocić

Graph-based Dialog Structure Modeling Wojciech Janowski, Piotr Pęzik, Julian Szymański
Distracted driver recognition using CNN with dual self-attention module
Antoni Jaszcz, Dawid Polap

On Method of Training of LSTM Neural Network Based on Stability Conditions
Jacek Kafel-Kania, Vasyl Martsenyuk, Georgi Dimitrov, Marcin Bernas

Smooth Quadrature-Inspired Generalized Choquet Integral in an Application to Drone Engine Failures Detection
Paweł Karczmarek, Rafał Stęgierski, Bartłomiej Ambrożkiewicz, Andrzej Koszewnik, Daniel Oldziej, Arkadiusz Syta, Michał Dolecki

Comparison of Hyperparameter Tuning Optimization Methods for LSTM and Stock Price Prediction
Peng Li, Adam Viktorin, Roman Senkerik

Implementing call bots: An architectural guide
Jozef Kovac, Roman Senkerik, Adam Viktorin

Randomness Versus Backpropagation in Machine Learning
Irina Perfilieva, Piotr Artiemjew, Agnieszka Niemczynowicz

Crossing the Divide: Designing Layers of Explainability
Alessandro Zangari, Matteo Marcuzzo, Matteo Rizzo, Andrea Albarelli, Andrea Gasparetto

Transformer Based Semantic Segmentation Network for Medical Imaging Application
Michał Wieczorek, Jakub Silka, Katarzyna Wiltos, Marcin Wozniak

Explainable Cubic Attention-based Autoencoder for Skin Cancer Classification
Inzamam Mashood Nasir, Sara Tehsin, Robertas Damaševičius, Adam Zielonka, Marcin Woźniak

Swarm Optimization for Enhanced Random Forest-Based IoT Security
Jakub Silka, Michał Wieczorek, Katarzyna Wiltos, Marcin Wozniak

How to Predict Bifurcations Induced by Fractional Order in Delayed Large-scale Neural Networks
Yunxiang Lu, Min Xiao, Leszek Rutkowski, Zhengxin Wang, Xiaoqun Wu, Zhen Wang, Jinde Cao, Wei Xing Zheng

16:10 - 18:00

Session 1B - online (Room: Tatry)

Session 1B: Computer Vision, Image and Speech Analysis

Date/Time: 16:10 - 18:00, Mon., June 17, 2024

Room: Tatry, online session by Zoom, Chair: Maciej Jaworski

Dimensionality reduction in multipestral features for voice spoofing detection: case studies with

singular value decomposition, genetic algorithm, and auto-encoder

Rodrigo Colnago Contreras, Amanda Fonseca Carmassi, Monique Simplicio Viana, Marcelo Adriano dos Santos Bongarti, Rodrigo Capobianco Guido

Combining Audio and Image Sequence for Video Moment Retrieval by Natural Language

Luis G. de Souza, Silvio R. R. Sanches, Pedro H. Bugatti, Priscila T. M. Saito

Explainable Recognition System for Computer-Modified Face Photos

Adrian Kamiński, Karol Degórski, Stanisław Kaźmierczak, Jacek Mańdziuk

Implementing call bots: An architectural guide

Jozef Kovac, Roman Senkerik, Adam Viktorin

Identification of mislabelled images with data augmentation

Jakub Koziel, Patryk Tomaszewski, Stanisław Kaźmierczak, Jacek Mańdziuk

Dynamic Layer Extraction for Floor Plan Generation from Point Clouds

Ziya Ozcelik, Oguzhan Guclu, Irem Islek, Cagla Cig Karaman

Knee or ROC

Veronica Wendt, Byunggu Yu, Caleb Kelly, Junwhan Kim

Personality of AI

Byunggu Yu and Junwhan Kim

18:00

Social event, barbecue, venue: Zakopane and terrace, level -1

Tuesday, June 18

07:00-8:30

Breakfast, Room: Zakopane

Invited Talk, Chair: Jacek Mańdziuk, Room: Tatry

8:30 - 9:15

Qiyu Sun

9:15 - 10:00

Włodzisław Duch

10:00 - 10:10

Coffee break

Session 2A - poster session (Room: foyer of Tatry)

10:10 - 11:10

Session 2A: Computer Vision, Image and Speech Analysis

Date/Time: 10:10 - 11:10, Tue., June 18, 2024

Room: foyer of Tatry, poster session

InpaintLocalizer: Detection and Localization of Inpainting Generated by Diffusion-based Machine Learning Models

Giorgio De Magistris, Marco Lo Pinto, Patryk Najgebauer, Rafal Scherer, Christian Napoli

Robust Scale Estimation System for Monocular Mobile Robots using Beacon-based Structure from

Motion

Emanuele Iacobelli, Leonardo Ospizio, Francesco Riccardo Tassone, Janusz Starczewski, Christian Napoli

Viscosity Estimation in Water-PVP Solutions Through Droplet Image Analysis Using a MobileNet-Enhanced CNN

Mohamed Azouz Mrad, Kristof Csorba, Dorián László Galata, Zsombor Kristóf Nagy, Hassan Charaf

Bleeding detection in medical images based on correlation fractional dimension adaptive thresholding

Wojciech Rafajłowicz, Joanna Marszałek

Enhanced Dermatological Asymmetry Measure of Skin Lesions using PCA Method

Sławomir Wiak, Łukasz Wąs, Łukasz Szymański

Evaluation of Dermatological Asymmetry Measure of Shape by Expectation-Maximization

Łukasz Wąs, Sławomir Wiak, Piotr Mileczarski, Łukasz Szymański

Positioning the Reconstruction Plane for a Statistical Iterative Reconstruction Algorithm with Rebinning in CT Scanners with a Flying Focal Spot

Piotr Pluta, Katarzyna Nieszporek, Jakub Sosnowski

Biometric iris authentication using a segmentation network with attention and a key-points detection algorithm

Katarzyna Prokop, Dawid Połap

Wavelet feature extraction for dermoscopy images by tree-like wrappers

Grzegorz Surówka

Tweeting on an Empty Stomach: Unpacking Food Price Hikes and Inflation via Twitter

Maija Kale, Matiss Rikters

Speech deepfake recognition with data-efficient vision transformers

Mateusz Modrzejewski, Szymon Skarzyński, Przemysław Rokita

A Review of the Challenges with Massive Web-mined Corpora Used in Large Language Models Pre-Training

Michał Perelkiewicz, Rafał Poświata

Automated Typographic Font Generation Using Artificial Intelligence

Nataliya Shakhovska, Oleksand Petrovskyi, Solomiia Fedushko, Michal, jr. Greguš

Model of generative adversarial neural network for font style generation within the original style

Nataliya Shakhovska, Oleksand Petrovskyi, Solomiia Fedushko, Aneta Poniszewska-Maranda

Embedding Non-Distortive Cancelable Face Template Generation

Dmytro Zakharov, Oleksandr Kuznetsov, Emanuele Frontoni, Natalia Kryvinska

10:10 - 12 :00

Session 2B - online (Room: Tatry)

Session 2B: Various problems

Date/Time: 10:10 - 12 :00, Tue., June 18, 2024

Room: Tatry, online session by Zoom, Chair: Dawid Połap

Hybridising Genetic Programming Variants for Regression

Kuranga Cry, Pillay Nelishia

A Study of Classifiers for Marking Short Answers in Intelligent Tutoring Systems

Pillay Nelishia, Marais Gisele

Randomness Versus Backpropagation in Machine Learning

Irina Perfilieva, Piotr Artiemjew, Agnieszka Niemczynowicz

Improving Anomaly Detection Methods Through Attribute Exclusion Using Isolation Forest

Albert Rachwał, Paweł Karczmarek

Session 3 - poster session (Room: foyer of Tatry)

11:20 - 12:20

Various Problems of Artificial Intelligence

The use of fuzzy sets in the classification of metagenomic data

Adam Kiersztyn, Krystyna Kiersztyn, Rafał Łopucki, Patrycja Jędrzejewska-Rzezak, Ewa Sajnaga

A Hybrid Approach towards Vertical Handover in 5G Networks using Genetic Neuro-Fuzzy Controller

Olena Semenova, Natalia Kryvinska, Christian Napoli, Andriy Semenov, Andrii Lutsyshyn

MI-DAUKF for Co-Estimation of SOC and SOH in Lithium-ion Batteries

Jing An, Jiang Xiong, Jiacheng Wu, Jinkui Liu, Wei Zhang

Cartesian Genetic Programming with a Modified Selection Operator for Combinational Circuit Design: Arithmetic Multipliers and Adders

Tomas Hulka, Radomil Matousek, Ladislav Dobrovsky, Jakub Kudela, Ondrej Hojny

Can algorithms used in automatic preprocessing affect the final value of brain volume? - preliminary study

Ilona Karpiel, Ana Starcevic, Patrycja Mazgaj, Klaudia Duch

Empowering Intelligent Database Systems Using an Adaptive Recommendation Algorithm

Mykola Beshley, Olena Hordiichuk-Bublivska, Halyna Beshley, Iryna Ivanochko, Michal Gregus

Effective High Utility Itemsets Mining Algorithm for Incremental Databases

Do Thanh Cong, Do Mai Phuong, Pham Duc Duong, Phan Duy Hung

Enhancing Semantic Search through Domain Adaptation: A Case Study on the Mobifone News Dataset

Thach Duc Long, Nguyen Minh Hieu, Nguyen Trieu Ngoc Huyen, Phan Duy Hung

Class-Based Time Series Data Augmentation to Mitigate Extreme Class Imbalance for Solar Flare Prediction

Junzhi Wen, Rafal Angryk

An Efficient Clique-based Level-wise Search Algorithm for Spatial Prevalent Co-location Pattern Mining

Muquan Zou, Vanha Tran, Thiloan Bui, Hoangan Le, Ducduong Pham

AI-based IoT System for Energy Forecasting and Load Management in Smart Grid

Pavlo Beshley, Natalia Kryvinska, Mykola Beshley

Utilizing Evolutionary Algorithms for the Synthesis of Cryptographic Substitution Patterns

Oleksandr Kuznetsov, Nikolay Poluyanenko, Emanuele Frontoni, Sergey Kandy, Michal Gregus

Advanced Steganography in 3D Models: An AI-Powered Approach

Oleksandr Kuznetsov, Emanuele Frontoni, Kateryna Kuznetsova, Natalia Kryvinska, Christian Napoli

A Novel Approach to Cancelable Biometrics through Deep Learning Distortion Metrics

Oleksandr Kuznetsov, Dmytro Zakharov, Emanuele Frontoni, Christian Napoli, Iryna Ivanochko

More individualized survival function estimation using training data clustering

Wojciech Rafajłowicz, Ewaryst Rafajłowicz, Ewa Skubalska-Rafajłowicz, Magda Skoczeń, Sławomir Zmonarski

Eigenmaps - modified PCA-based approach for dimensionality reduction of multivariate time series of geospatial data

Ewa Skubalska-Rafajłowicz, Adam Krzyżak, Michał Piórek

Ontology-based rare disease database integration - practical issues and challenges

Wojciech Palacz, Grażyna Ślusarczyk, Barbara Strug

PV solar power forecasting using a subset of characteristic features selected by AI methods

Tomasz Szczepanik, Zalasiński Marcin

Pain intensity assessment using Recurrent Neural Networks

Michał Szczerba, Jarosław Kobiela, Sławomir Stemplewski

13:00 - 14:30

Lunch, Room: Zakopane

Tutorial, Chair: Aleksander Byrski, Room: Tatry

14:30 - 15:30

Michał Pluháček

15:30 - 15:35

Coffee break

15:35 - 17:10

Session 4 - online (Room: Rysy)

Session 4: Neural Networks and Their Applications 2

Date/Time: 15:35 - 17:10, Tue., June 18, 2024

Room: Rysy, online session by Zoom, Chair: Janusz Starczewski

Utilizing Pointer Generator Network for Vietnamese Spelling Error Correction Nguyen Ba Chuan

Le Thanh Binh, Phan Duy Hung

Advancing GDPR Adherence: Leveraging Generative AI for In-Depth Privacy Policy Analysis in Android Apps

Bui Tien Duc, Pham Thanh Nghiem, Khanh H. V., Khoa T. D., Triet M. N., Bang L. K., Ngan N. T. K.

Fuzzy Hyperplane based Least Squares K-SVCR with Its Applications to Stock Trend Classification

Pei-Yi Hao

Stock Movement Prediction by Using a Multi-Tasks Multi-Kernel Fuzzy Support Vector Machine with Parametric Margin

Pei-Yi Hao

Researching ML Algorithms for Predicting FHB in Corn: A Case Study in Dnipro Region of Ukraine

Ivan Laktionov, Artem Vizniuk, Grygorii Diachenko

Investigating HuBERT-based Speech Emotion Recognition Generalisation Capability

Letian Li, Cornelius Glackin, Nigel Cannings, Vito Veneziano, Jack Barker, Olakunle Oduola, Chris Woodruff

17:10 - 17:15

Coffee break

17:15 - 18:50

Session 5 - online (Room: Rysy)

Session 5: Neural Networks and Their Applications 3

Date/Time: 17:15 - 18:50, Tue., June 18, 2024

Room: Rysy, online session by Zoom, Chair: Christian Napoli

Detecting and Warning Duplicate Job Postings on Job Portals

Phan Thanh Ngoc, Phan Ngoc Huan, Phan Duy Hung, Vu Thu Diep

Using BERT to Generate Contextualised Textual Images for Sentiment Analysis

Harpreet Singh, Na Helian, Roderick Adams, Yi Sun

Improving YOLOv8: An Algorithm Based on EfficientRepHead and BIFPN

LinJuan Xie, Jiang Xiong, Jiong Wang, Jinkui Liu

Pupil Constrictions and Dilations Effects as Data Augmentation on an Iris Recognition CNN Approach

Diego Lucio, Luiz Zanlorensi, Viviane Besson, Yandre Gomes da Costa, David Menoti

Breaking the Mold: ViT-CNN Fusion for Enhanced Glaucoma Prediction in OCT Images

Mahjabin Rahman Oishe, S. M. Mahedy Hasan, Minhaz F. Zibran

Classification of cardiac arrhythmias using 1D and 2D convolutional neural networks

Ana L. Franco, Cristiano M. Agulhari, Pedro H. Bugatti, Priscila T. M. Saito

Handcrafted vs. Non-handcrafted features for acoustic scene classification

Joao Vitor Castanho, Yandre Costa

Machine Learning for Gesture Recognition using Leap Motion Controller

*Henrique Felizardo, Leonichel Guimaraes, Heloise Teixeira, Rodrigo Souza, Linnyer Aylon, Yandre Costa***19:00**

Social event (Banquet), Room: Tatry

Wednesday, June 19

07:00-8:30

Breakfast, Room: Zakopane

Session 6 - online (Room: Rysy)

8:30 - 9:55

Session 6: Bioinformatics, Biometrics and Medical Applications

Date/Time: 8:30 - 9:55, Wed., June 19, 2024

Room: Tatry, online session by Zoom, Chair: Maciej Jaworski

Myo-to-Gesture: Evolving AI-Based Innovations in Myoelectric Signal Processing -- State-of-the-Art Survey and Research Proposal

Uwe M. Borghoff, Klaus Buchenrieder

Automatic Program Assessment, Grading and Code Generation: Possible AI-Support in a Software Development Course

Uwe Borghoff, Mark Minas, Kim Mönch

Machine Learning-Based Tool for Efficient Discrimination Between Deleterious and Neutral Missense Mutations

Eshel Faraggi, Robert Jernigan, Andrzej Kloczkowski

Multi-Label Long-Tailed Disease Recognition on Chest X-ray Images

Dang Minh Anh, Phan Duy Hung

A new image enhancement-based framework for spoofing detection in ear-based biometric authentication systems

Rodrigo Colnago Contreras, Caio Ulisses Silva Carmassi, Monique Simplicio Viana, Önsen Toygar, Rodrigo Capobianco Guido

From Omics Data to Candidate Genes: An Innovative Machine Learning Approach for Biomarker Identification

Ana Duarte, Orlando Belo

Polyps Segmentation in Colonoscopy Images using SegFormer Transformer

Truong Hoang Son, Phan Duy Hung

9:55 - 10:00

Coffee break

Session 7 - online (Room: Rysy)

10:00 - 11:25

Session 7: Evolutionary and Fuzzy Methods

Date/Time: 10:00 - 11:25, Wed., June 19, 2024

Room: Tatry, online session by Zoom, Chair: Marcin Zalasinski

Evaluating policy effectiveness to enhance smart farming technologies adoption using fuzzy logic and Sugeno integral

Luca Anzilli

Automated Design of Multilevel Thresholding using Differential Evolution

Thambo Nyathi

Evolving Velocity Equations for Particle Swarm Optimisation for Function Approximation

Michael Du Plessis, Nelishia Pillay

A Comparison of Genetic Programming and Grammatical Evolution for the Generation of Fuzzy

ART Choice Functions
Mia Gerber, Nelishia Pillay

11:25 - 11:30

Coffee break

Session 8 - online (Room: Rysy)

11:30 - 13:00

Session 8: Various Problems of Artificial Intelligence 2

Date/Time: 11:30 - 13:00, Wed., June 19, 2024

Room: Tatry, online session by Zoom, Chair: Wojciech Rafajłowicz

Different Approaches for Customer Lifetime Value in e-Book Subscription Domain
Paweł Drozda, Krzysztof Ropiak, Łukasz Mozalewski, Mikołaj Małaczyński, Mateusz Frukacz

Agent-Based Model for Field Service Management
Eugene Alooeff

Memory Augmented Multi-Agent Reinforcement Learning for Cooperative Environment
Maryam Kia, Jordan Cramer, Artur Luczak

Learning Optimal Bidding Strategies in All-Pay Auctions
Luis Craizer, Moacyr Silva, Dário Oliveira, Marcelo Sant'Anna

On Handling AI Tasks in CPU with Low Latency and High Performance
Noman Hossain, Shakib Mahmud Dipto, Sovon Chakraborty, Zareen Tasneem, Sahal Bin Saad, Abu Kowsar, Farjana Islam

Classifier Ensemble Learning using Discrete Optimization
Muhammad Uzair, Zohaib Jan

T-REX: Trustworthy and Reliable EXplainability Framework
Michał Zakrzewski, Mariana Temnyk, Taras Rumezhak, Volodymyr Karpiv

13:00 - 14:30

Lunch, Room: Zakopane

14:15

Sightseeing trip

A tour containing the most interesting corners of Zakopane, the winter capital of Poland.

Duration: 3-4 hrs. Please sign up for the guided tour at the ICAISC conference office.

18:00

Farewell Dinner, Room: Zakopane

Thursday, June 20

07:00-11:00

Breakfast, Room: Zakopane

Conference site

The ICAISC Conference is held in:

Bachleda Kasprowy Zakopane Hotel
ul. Szymaszkowa
34-500 Zakopane, POLAND
tel. (+48) 18 202 40 00

Useful phone numbers:

taxi in Zakopane: +48 18 196 25, Radio Taxi Giewont +48 18 196 26

Radio Taxi 919: +48 18 20 12 560

INTER Radio Taxi: +48 18 201 42 32

Zakopane tourist information: +48 18 20-122-11

Ambulance: 999, Police: 997 (or 112 from your mobile phone)

Mountain Rescue Team TOPR : 985 , +48 601 100 300

Krakov tourist information: +48 12 422 60 91, +48 12 421 77 06, +48 12 433 73 10

taxi in Krakow: (+48 12) 19919, 19191, 19621, 19623, 19625