

**24th International Conference
Artificial Intelligence and Soft Computing**

Program

Zakopane, Poland, June 22-26, 2025

Program at a glance

Sunday, June 22	Monday, June 23	Tuesday, June 24	Wednesday, June 25	Thursday, June 26
	07:00-9:00 Breakfast, Room: Zakopane	07:00-8:30 Breakfast, Room: Zakopane	07:00-8:30 Breakfast, Room: Zakopane	07:00-11:00 Breakfast, Room: Zakopane
	9:00 - 9:15 Opening Ceremony, Room: Tatry Invited Talk, Chair: Leszek Rutkowski	8:45 - 9:45 Computer Vision, Image and Speech Analysis 10:00-13:30 Science and Business - Part 1, Room: Tatry	8:45 - 9:30 Invited Talk, Chair: Agnieszka Jastrzebska, Room: Tatry 8:45 - 9:30 Guanpu Chen Session 5 - poster session (Room: foyer of Tatry)	
	Witold Pedrycz, Jacek Żurada 9:15 - 10:00 Dacheng Tao Session 1 - posters (Room: Foyer of Tatry)		9:45 - 10:45 Various Problems of Artificial Intelligence 2	
	10:20 - 11:15 Neural Networks		Session 6 - oral online (Room: Rysy)	
	Discussion panel 11:20 - 12:50 Discussion Panel: LLM Current Challenges Christian Napoli Michal Pluháček	13:00 - 14:30 Lunch, Room: Zakopane	9:45 - 11:30 Various Problems of Artificial Intelligence 3 11:30 - 11:35 Coffee break	
	13:00 - 14:30 Lunch, Room: Zakopane Invited Talk, Chair: Janusz Kacprzyk, Room: Tatry 14:30 - 15:15 Włodzisław Duch	15:00-18:30 Science and Business - Part 2, Room: Rysy	Session 7 - poster session (Room: foyer of Tatry)	
	15:15 - 16:00 Przemysław Kazienko		11:00 - 12:00 Bioinformatics, Biometrics and Medical Applications Session 8 - oral online (Room: Rysy)	
	16:00 - 16:20 Coffee break Session 2A - posters (Room: Foyer of Tatry)		11:35 - 13:00 Various Problems of Artificial Intelligence 4	
	16:20 - 17:20 Fuzzy logic and metaheuristics		13:00 - 14:30 Lunch, Room: Zakopane	
	16:10 - 18:00 Session 2B - online (Room: Tatry)		14:15 - 18:00 Sightseeing trip	
	Various problems	Session 4 - posters (Room: Foyer of Tatry)		
18:00 Welcome party Room: Zakopane	18:00 Social event, barbecue	18:30-19:00 Various Problems of Artificial Intelligence 1 20:00 Social event (Banquet), Room: Tatry	18:00 Farewell Dinner, Room: Zakopane	

Detailed Program

Sunday, June 22

checking in...

18:00

Welcome party

Room: Zakopane

Monday, June 23

07:00-9:00

Breakfast, Room: Zakopane

9:00 - 9:15

Opening Ceremony, Room: Tatry

Invited Talk, Chair: Leszek Rutkowski

Witold Pedrycz, Jacek Żurada

9:15 - 10:00

Dacheng Tao, Deep Model Fusion

Session 1 - posters (Room: Foyer of Tatry)

10:20 - 11:15

Session 1: Neural Networks

Date/Time: 10:20 - 11:15, Mon., June 23, 2025

Room: foyer of Tatry, poster session

Efficiently Parallelized Associative Inference of Associative Graph Data Neural Networks

Adam Szreter, Adrian Horzyk

Multi-point directional minimization for conjugate gradient algorithm

Jarosław Biłski, Jacek Smola

Neural Network Training Through Matrix Factorization

Jarosław Biłski, Bartosz Kowalczyk, Martyna Kukułka

Approximate Importance-Based Sampling for Neural Network Training

Piotr Duda, Mateusz Wojtulewicz, Leszek Rutkowski

Prototype Learning for Classification On Spherical Manifolds and its Relation to Quantum Classification Approaches

Alexander Engelsberger, M Psenickova, Thomas Villmann

A centralized federated learning framework with security aspects against Byzantine and Sybil attacks

Antoni Jaszcz, Marcin Woźniak, Mariusz Pleszczyński, Adam Zielonka

The Quasirecurrent Neural Networks in Selected Natural Language Processing Tasks

Hubert Karbowy, Jarosław Protasiewicz

SD-LSTM: A Novel Semi--Decentralized LSTM Architecture for Scalable and Accurate Stock Price Prediction

Peng Li, Roman Senkerik, Zuzana Kominkova Oplatkova

Reliable Classification Learning for Medical Data Analysis Using Prototype-Based Models

Julius Voigt, Marika Kaden, Lynn Reuss, Thomas Villmann

Classification of Literary Epochs by TF-IDF, Transformers, and Large Language Models

Tomasz Walkowiak

Explanation Consistency Matters: A Novel Metric for Evaluating Adversarial Vulnerability in Transformers
Chang Gao and Leszek Rutkowski

Traffic flow attack-resistant prediction based on adversarially fine-tuned time series Large Language Model
Moirai Zhuoxuan Li and Leszek Rutkowski

Forecasting the Particulate Matter Concentration Using Autoencoders
Jarosław Bernacki

UAV Forensics: Transformer-Based Identification of Mobile Devices for Drone Piloting
Katarzyna Nieszporek, Jarosław Bernacki, Kelton A.P Costa, Qiao Ke, Wei Wei

Discussion panel, Room: Tatry

11:20 - 12:50

Discussion Panel: LLM Current Challenges
 Christian Napoli, Michal Pluháček

13:00 - 14:30

Lunch, Room: Zakopane

Invited Talk, Chair: Janusz Kacprzyk, Room: Tatry

14:30 - 15:15

Włodzisław Duch, AI: state-of-the-art and the near prospects

15:15 - 16:00

Przemysław Kazienko, Challenges of Developing Large Language Models

16:00 - 16:20

Coffee break

Session 2A - posters (Room: Foyer of Tatry)

16:20 - 17:20

Session 2A: Fuzzy logic and metaheuristics
 Date/Time: 16:20 - 17:20, Mon., June 23, 2025
 Room: foyer of Tatry, poster session

Dimensionality-based evaluation of fuzzy models developed for high-dimensional data, Rami Al-Hmouz
Witold Pedrycz, Majdi Mansouri, Ahmed Al-Hmouz

The use of fuzzy sets to detect strengths among students
Adam Kiersztyn, Krystyna Kiersztyn, Jakub Bis, Patrycja Jędrzejewska-Rzezak

Towards Application of Multi-dimensional ACO Pheromone for Multi-criteria Optimization
Grażyna Starzec, Mateusz Starzec, Małgorzata Zajęcka, Grzegorz Dobrowolski, Aleksander Byrski

TOPSIS-like metaheuristic for LABS
Aleksandra Urbańczyk, Bogumiła Papiernik, Piotr Magiera, Piotr Urbańczyk, Aleksander Byrski

Migration Timing in Hybrid Island-Based Metaheuristic Algorithms
Adam Żychowski, Xin Yao, Jacek Mańdziuk

A Comprehensive Framework for Turn-Taking Evaluation in Multi-Agent Systems: Rotational Periodicity for Scalable Coordination Analysis
Nikolaos Papadopoulos, Rallou Taratori, Marti Sanchez Fibla, Konstantinos Psannis

Application of Adaptive PSO Algorithm in Design of FIR Filters
Kamil Pipka, Tomasz Talaska, Rafal Dlugosz, Witold Pedrycz

New approach for instance selection leveraging clustering and neighboring strategies
Maciej Kusy, Roman Zajdel

Elliptic Separator: A Geometric Approach to Linear Classification
Firuz Kamalov

Invariant Aircraft Recognition with Fourier and Dual-tree Complex Wavelet Features

Guang Yi Chen, Adam Krzyzak, Ventzeslav Valev

Invariant Pattern Recognition with Selectively Denoising and Ridgelet-Fourier Features
Guang Yi Chen, Krzyzak Adam

16:10 - 18:00

Session 2B - online (Room: Tatry)

Session 2B: Various Problems of Artificial Intelligence

Date/Time: 16:10 - 18:00, Mon., June 23, 2025

Room: Tatry, online session by Zoom, Chair: Piotr Duda

Distributed Variational Autoencoder Using Actor-Based Architecture

Sithembiso Dyubele, Duncan Coulter

Bottleneck Analysis in a Software Development Flow Using Process Mining: a Case Study

Rodrigo Almeida de Oliveira, Juliano de Paulo Ribeiro, Edson Emílio Scalabrin

Analysis of Data and Supervised Machine Learning Algorithms for Intrusion Detection

Rafael Masson, Arruda Rodolfo, Soares Anderson, Bugatti Pedro, Castelo Branco Kalinka, Saito Priscila

Adaptive Interactive Process Drift Detection: Detecting and visualizing process drifts

Denise Maria Vecino Sato, Sheila Cristiana Freitas, Jefferson Koji Sato, Jean Paul Barddal

Taxonomic Classification of Spiders (Araneae) Based on Image Texture Analysis Using Multifiltering

Facundo Martín Labarque, Rodrigo Contreras, Monique Simplicio Viana, Önsen Toygar, Rodrigo Capobianco Guido

Combining classifiers for texture classification

Michel Gomes de Souza, Yandre M. G. Costa, Alceu Souza Britto Jr., Juliano Foleis, Diego Bertolini

An LSTM and Markov Chain-based Approach for Urban Crime Prediction

Fernanda Padilha, Borsa Eduardo, Edson E. Scalabrin

18:00

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

Tuesday, June 24

07:00-8:30

Breakfast, Room: Zakopane

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

8:45 - 9:45

Session 3: Computer Vision, Image and Speech Analysis

Date/Time: 8:45 - 9:45, Tue., June 24, 2025

Room: foyer of Tatry, poster session

An Autonomous Weeding Robot with Novel Unsupervised Domain Adaptation

Khubaib Ahmad, Dewa Made Sri Arsa, Michal Strzelecki, Jonghoon Lee, Hyongsuk Kim

Swin-Editor: Enhancing Consistency in Text-Driven Video Editing

Abdelilah Aitrouga, Youssef Hmamouche, Amal El Fallah Seghrouchni

A Study on Highly Efficient Compact Transformer Features for Histopathological Image Recognition

Didih Rizki Chandranegara, Przemysław Niedziela, Bogusław Cyganek

Designing Graphical User Interfaces for Autistic People

Adam Górski, Aleksandra Świerczek, Grażyna Ślusarczyk

Fuzzy attention module for CNNs in the application of space analysis

Antoni Jaszcz, Adam Zielonka, Michał Wieczorek, Dawid Połap

Dataset Augmentation for Detecting Small Objects in Fisheye Road Images

Aleksandra Kos, Karol Majek, Dominik Belter

Vision Transformer Representations for Efficient Content-Based Image Retrieval

Stanisław Łażewski, Bogusław Cyganek

Intensify of Dermatological Asymmetry Measure of Skin Lesions using PCA Method

Wąs Łukasz, Wiak Sławomir

The role of text and vision modalities in solving Bongard Problems with VLMs

Mikołaj Małkiński, Szymon Pawlonka, Jacek Mańdziuk

Leveraging Vision in Transformers model for Point Cloud Pattern Matching

Patryk Najgebauer, Rafał Grycuk, Rafał Scherer

One Shot, Few Perspectives: Ensemble Learning for Image Segmentation

Katarzyna Prokop, Jakub Siłka, Dawid Połap, Katarzyna Wiltos

Comparison of the effectiveness of optical flow methods in determining the velocity of a UAV

Jakub Walczak, Janusz Furtak

Segmented Medical Image Classification with Deep Convolutional Neural Networks Architectures for WBC Detection

Katarzyna Wiltos, Agnieszka Polowczyk, Alicja Polowczyk, Marcin Wozniak, Michał Wieczorek

10:00–13:30

Science and Business - Part 1

Room: Tatry

10:00-11:00: Shaping the AI Ecosystem: Public Sector Strategies to Empower Science and Business in Poland and the EU

Marek Magryś, Acting Director of ACK Cyfronet AGH

11:00-11:20: End-user perspective – AI in the banking sector. Use cases and challenges of the AI technology revolution

Oscar Adamkiewicz, Head of New Technologies & Innovations, Citi Handlowy

11:20-11:40: Vendor insights – Scaling Intelligence: Google's Approach to Efficient and Sustainable AI

Magdalena Rabiej, Engineering Director / Site Lead, Google Kraków

11:40-12:00: Research perspective

Prof. Przemysław Kazienko, Wrocław University of Science and Technology

12:15-13:30: Panel Discussion: How to bridge the gap between research and industry in the AI era?

Moderator: Prof. Włodzisław Duch

13:30 - 15:00

Lunch, Room: Zakopane

15:00–18:30

Science and Business - Part 2

Room: Rysy

From Pilot to Pivot: Rethinking AI for Scalable Results

Ewa Zborowska, AI Research Director at IDC

Session: Intelligent Medicine – Integrating AI into Modern Healthcare & Pharmacy

Keynote: AI-Enhanced Surgical Simulators for Human and Machine Learning

Ph.D. Przemysław Korzeniowski, Sano Centre for Computational Medicine, Head of Medical Imaging and Robotics

Moderator:

Ph.D. Jan K. Argasiński, Sano Centre for Computational Medicine, Head of Computational Neuroscience

Panelist – research and development:

Ph.D. Przemysław Korzeniowski, Sano Centre for Computational Medicine, Head of Medical Imaging and Robotics

Panelist – healthcare / hospitals:

Paulina Ignatowska-Zaremba, CEO, Fundacja K.I.D.S. Klub Innowatorów Dziecięcych Szpitali

Klaudia Proniewska, Dyrektorka Centrum Medycyny Cyfrowej i Robotyki Collegium Medicum UJ

Panelist – Medtech industry:

Kazimierz Cięciak, Comarch Healthcare

Session: Transforming Energy and Industry Sector with AI – From Data to Decarbonization

Moderator:

Ph.D. Krzysztof Heller, AGH

Anomaly Detection for IoT: The Challenges of Incorporating GenAI

Matthew Gladden, ABB

AI-Powered Satellite Image Analysis for Energy Infrastructure Diagnostics

Artur Groszek, CGI

The potential of using AI in multi-energy systems built by energy communities

Robert Szlęzak, Chairman of the Board, ECN S.A.

Session: Investing in Intelligence – Building Bridges Between Science and Capital

Challenges of Science–Business Collaboration in the Age of Hyper-Innovation

Bartosz Radziszewski, President & Founder, Financial Directors' Club Foundation

Bridging Worlds: Collaboration Models Between Tech Industry and University

Robert Domagała, Senior ISG Technology Consulting Manager, Dell Technologies

When a startup needs help - a project, a spike, a spinoff

Dominik Ślęzak, Co-founded QED Software & University of Warsaw

Session: Practical aspects

Building, deploying, and maintaining an application that uses large language models (LLMs)

Marek Sokoowski, Microsoft

From Scripts to Self-Directed Agents: Degrees of Freedom in AI Automation

Piotr Zając, UiPath

Session 4 - poster session (Room: foyer of Tatry)

18:30–19:00

Session 4: Day of Business and Science Part 3 – Poster Session & Networking

Date/Time: 18:30–19:00, Tue., June 24, 2025

Room: foyer of Tatry, poster session

Automated Fusarium Head Blight Detection using a ResNet18 Model on High-Resolution Hyperspectral UAV Images

Derrick Chan, Hima Vadapalli, Dustin van der Haar

Evaluating Polish linguistic and cultural competency in large language models

Sławomir Dadas, Małgorzata Grębowiec, Michał Perelkiewicz, Rafał Poświata

Enhancing Crop Disease Detection with Deep Learning and Hyperspectral Imaging: A Focus on Fusarium Head Blight

Biniam Temesgen Erdilo, Hima Vadapalli, Dustin van der Haar

System for automatic bug detection in code and programs using LLMs and AI agents

Paweł Kapusta, Piotr Duch, Michał Majchrowicz, Adrian Królik

Impact of Convolutional Neural Network Architectures on Predicting the Viscosity of Water-PVP Solutions

Mohamed Azouz Mrad

Attention U-Net Image Deblurring via Hybrid Loss Optimization

Adam Kwaśnik, Tomasz Lehmann, Przemysław Rokita

A Predictive Model for Mean Opinion Score in Text-to-Image Quality Assessment

Tomasz Lehmann, Przemysław Rokita

Entropic metrics in feature selection for neural network-based data error detection in CMDB

Grzegorz Mzyk, Szymon Niewiadomski

20:00

Social event (Banquet), Room: Tatry

Wednesday, June 25

07:00-8:30

Breakfast, Room: Zakopane

Invited Talk, Chair: **Agnieszka Jastrzebska**, Room: **Tatry**

8:45 - 9:30

Guanpu Chen, Global Nash equilibrium in a class of non-convex multi-player games: Theory, algorithm and application

Session 5 - poster session (Room: foyer of Tatry)

9:45 - 10:45

Session 5: Various Problems of Artificial Intelligence

Date/Time: 9:45 - 10:45, Wed., June 25, 2025

Room: foyer of Tatry, poster session

Magic Numbers: Algorithm for Mitigating Hallucinations in LLMs

Hasse J. Hällström

Lightweight Anomaly Detection for IoT: Evaluating Machine Learning and Deep Learning Models on CICIDS2017

Emanuele Iacobelli, Valerio Ponzì, Adriano Puglisi, Oleksandr Kuznetsov, Katarzyna Nieszporek, Cristian Randieri, Christian Napoli

A survey on algorithms used for drone energy consumption modelling

Agnieszka Jastrzebska, Zofia Łągiewka, Piotr Sieczka, Jacek Zalewski

Extension to LIBLINEAR's Logistic Regression Supporting Elastic-Net Penalty

Jacek Klimaszewski

Enhanced Graph Deviation Networks for Anomaly Detection in Space Telemetry

Matteo Manias, Gabriele Scognamiglio, Adriano Puglisi, Katarzyna Nieszporek, Janusz Starczewski, Christian Napoli

Hybrid Retrieval in RAG: A Comparison of Semantic, Lexical and Reranking Methods

Gabryel Marcin, Kocić Milan, Gabryel Aleksandra

AI-Driven Tourist Destination Recommendation Systems: A Neural Network Approach

Jakub Nowak, Marcin Jamro, Tomasz Nowak, Magdalena Scherer, Sumit Hazra

Use of graph-based knowledge organization to improve the results of Retrieval Augmented Generation for narrative texts

Michał Podstawski, Mariusz Kamola

Using frequent subgraph mining in flat layout quality classification

Barbara Strug

Session 6 - online (Room: Tatry)

9:45 - 11:30

Session 7: Various Problems of Artificial Intelligence 2

Date/Time: 9:45 - 11:30, Wed., June 25, 2025

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

Evaluating Scalability in Open-Set Face Recognition Systems

Ander Galván, Marivi Higuero, Marina Martínez, Jasone Astorga, Jorge Sasiain, Eduardo Jacob

Optimizing OpenMax Parameters for Open-Set Face Recognition

Marivi Higuero, Ander Galván, Jasone Astorga, Asier Atutxa, Eduardo Jacob

Some Regularized Tools for Dimensionality Reduction

Jan Kalina

Forecasting Air Quality: A Comparative Study of Various Time Series Approaches

Satya Dev Pasupuleti, Simone A. Ludwig

Channel Attention for Fusarium Head Blight Detection in Hyperspectral Images

Lily Akpanke, Dustin Van der Haar, Hima Vadapalli

11:30 - 11:35

Coffee break

Session 7 - poster session (Room: foyer of Tatry)

11:00 - 12:00

Session 7: Bioinformatics, Biometrics and Medical Applications

Date/Time: 11:00 - 12:00, Wed., June 25, 2025

Room: foyer of Tatry, poster session

Novel Method for ICG Data Augmentation By Using Noise-Based Approach

Paulina Brzęczek, Ilona Karpziel, Rafał Grycuk

A Statistical Reconstruction Algorithm for CT with a Flying Focal Spot Using Direct, Interpolation-Free Projections

Robert Cierniak, Jacek Smolag

A modified method for an iterative reconstruction algorithm utilizing a back-projection correlation approach in multi-focus low-dose tomography

Piotr Pluta, Jakub Sosnowski

Emotions and App-supported Artificial Intelligence as a Helpful Tool in Psychiatry

Ana Starcevic, Ilona Karpziel, Mirella Kluza, Filip Starcevic

Dermoscopy-specific XAI for melanoma recognition

Grzegorz Surówka

Analysis of Respiratory Sinus Arrhythmia with Neural Networks

Julian Szymanski, Patryk Orkisz, Higinio Mora

A method for verifying dynamic signatures based on signature regions

Marcin Zalaśiński, Adam Słowik, Tomasz Szczepanik

Session 8 - online (Room: Rysy)

11:35 - 13:00

Session 8: Various Problems of Artificial Intelligence 3

Date/Time: 11:35 - 13:00, Wed., June 25, 2025

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

Fine-tuned Data Augmentation Techniques for Digit Recognition in AIoT

Marcelo Walter, Juliano Ribeiro, Alexandre Nodari, Gabriel Costa, Leonardo Nunes, Marcelo Pellenz, Edson Scalabrin

LoRa Device Identification: A Lightweight Alternative to CNN-Based Methods

ICAISC 2025

Wellington P. de Lima, Marcelo E. Pellenz, Marco A. S. Teixeira, Antonio Marcos Alberti

Privacy-Preserving Inference for Public Neural Networks

Mihail-Iulian Plesa, Robert Poenaru, Sebastian Irimia, Simona David, Tudor Farcasanu

Deterministic and Nondeterministic Decision Trees for Decision Rule Systems from Closed Classes

Kerven Durdymyradov, Mikhail Moshkov

A Hybrid Handcrafted and Deep Transfer Learning-Based Framework for COVID-19 Detection Using Voice Analysis

Reynold Navarro Mazo, Rodrigo Colnago Contreras, Monique Simplicio Viana, Önsen Toygar, Rodrigo Capobianco Guido

One Channel is All You Need: Optimizing Hyperspectral Data for Crop Disease Detection

John-Albert Buitenhuis, Hima Vadapalli, Dustin van der Haar

Is It Large Enough? A Prompt Learning for Large Multi-Modal Models

Sanyam Jain, Vijeta Sharma

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 26

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

Krakow 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