

# IJCRS 2023

All times are in Central European Summer Time (CEST) UTC +2

		05.10.2023		06.10.2023		07.10.2023		08.10.2023				
		MAIN HALL	ROOM A	ROOM B	MAIN HALL	ROOM A	ROOM B	MAIN HALL	ROOM A	ROOM B		
09:00	09:30	REGISTRATION	COFFEE BREAK		REGISTRATION	COFFEE BREAK		REGISTRATION	COFFEE BREAK			
09:30	09:50		WELCOME CEREMONY including OPENING TALK by Tsau Young (T. Y.) Lin (chaired by JingTao Yao)			KEYNOTE 3 by Pradipta Maji (chaired by Shuyin Xia) and KEYNOTE 4 by Tianrui Li (chaired by Tomasz Szmuc)			OPEN MEETING OF IRSS and PANEL ON INTELLIGENT INFORMATICS Jimmy Huang, Pawan Lingras (moderator) Duoqian Miao, Hung Son Nguyen		PROJECT MEETINGS AND NETWORKING	TOUR OF KRAKÓW
09:50	10:10		COFFEE BREAK			COFFEE BREAK			COFFEE BREAK			
10:10	10:30		SESSION 1A	SESSION 1B		SESSION 3A	SESSION 3B		SESSION 5A	SESSION 5B		
10:30	10:50		Distances & Similarities	Foundations 1 (online)		Rough Set Models	Three-way Decisions		Foundations 2	Feature Selection		
10:50	11:10		COFFEE BREAK			COFFEE BREAK			COFFEE BREAK			
11:10	11:40		LUNCH			LUNCH			LUNCH			
11:40	12:00		SESSION 2A	SESSION 2B		SPECIAL CELEBRATION including ANNIVERSARY TALK by Andrzej Skowron (chaired by Dominik Ślęzak)			KEYNOTE 5 by Weronika T. Adrian (chaired by Oliver Lenz) and KEYNOTE 6 by Andrzej Janusz (chaired by Andrea Campagner)			
12:00	12:20		Applications 1	Granular Models		COFFEE BREAK			COFFEE BREAK			
12:20	12:40		COFFEE BREAK			SESSION 4A	SESSION 4B		SESSION 6A	SESSION 6B		
12:40	13:00		COFFEE BREAK			Cybersecurity & IoT	Graphs & Complex Data		Hybrid Approaches	Applications 2 (online)		
13:00	13:20		COFFEE BREAK			COFFEE BREAK			COFFEE BREAK			
13:20	13:40		LUNCH			LUNCH			LUNCH			
13:40	14:00		KEYNOTE 1 by Joel Holland (chaired by Jarosław Wąs) and KEYNOTE 2 by Sheela Ramanna (chaired by Yiyu Yao)			COFFEE BREAK			COFFEE BREAK			
14:00	14:20	WELCOME PARTY		GALA DINNER		SATURDAY PARTY						
14:20	14:40	WELCOME PARTY		GALA DINNER		SATURDAY PARTY						
14:40	15:00	WELCOME PARTY		GALA DINNER		SATURDAY PARTY						
15:00	15:20	WELCOME PARTY		GALA DINNER		SATURDAY PARTY						
15:20	15:40	WELCOME PARTY		GALA DINNER		SATURDAY PARTY						
15:40	16:00	WELCOME PARTY		GALA DINNER		SATURDAY PARTY						
16:00	16:20	WELCOME PARTY		GALA DINNER		SATURDAY PARTY						
16:20	16:50	WELCOME PARTY		GALA DINNER		SATURDAY PARTY						
16:50	17:10	WELCOME PARTY		GALA DINNER		SATURDAY PARTY						
17:10	17:30	WELCOME PARTY		GALA DINNER		SATURDAY PARTY						
17:30	17:50	WELCOME PARTY		GALA DINNER		SATURDAY PARTY						
17:50	18:10	WELCOME PARTY		GALA DINNER		SATURDAY PARTY						
18:10	18:30	WELCOME PARTY		GALA DINNER		SATURDAY PARTY						
18:30	18:50	WELCOME PARTY		GALA DINNER		SATURDAY PARTY						
18:50	19:10	WELCOME PARTY		GALA DINNER		SATURDAY PARTY						
19:10	19:30	WELCOME PARTY		GALA DINNER		SATURDAY PARTY						
19:30	19:50	WELCOME PARTY		GALA DINNER		SATURDAY PARTY						
19:50	20:10	WELCOME PARTY		GALA DINNER		SATURDAY PARTY						
20:10	20:30	WELCOME PARTY		GALA DINNER		SATURDAY PARTY						
20:30	20:50	WELCOME PARTY		GALA DINNER		SATURDAY PARTY						
20:50	21:10	WELCOME PARTY		GALA DINNER		SATURDAY PARTY						
21:10	21:30	WELCOME PARTY		GALA DINNER		SATURDAY PARTY						

<b>SESSION 1A Distances &amp; Similarities, 05.10.2023 (Thursday), 11:40 - 13:40</b>
Session chair: András Pataricza
<b>Searching of potentially anomalous signals in cosmic-ray particle tracks images using rough k-means clustering combined with eigendecomposition-derived embedding</b> Tomasz Hachaj, Marcin Piekarczyk, Jarosław Wąs
<b>Decision rule clustering - Comparison of the algorithms</b> Agnieszka Nowak-Brzezińska, Igor Gaibei
<b>Clusters Evolution Before, During and After the Pandemic</b> Raavee Kadam, Pawan Lingras
<b>Classifying token frequencies using angular Minkowski p-distance</b> Oliver Urs Lenz, Chris Cornelis
<b>On k-NN class weights for optimising G-mean and F1-score</b> Grzegorz Góra, Andrzej Skowron
<b>Towards ML Explainability with Rough Sets, Clustering, and Dimensionality Reduction</b> Marek Grzegorowski, Andrzej Janusz, Grzegorz Śliwa, Łukasz Marcinowski, Andrzej Skowron

<b>SESSION 1B Foundations 1 (online) , 05.10.2023 (Thursday), 11:40 - 13:40</b>
Session chair: Stefania Boffa & A Mani
<b>Deterministic and Nondeterministic Decision Trees for Decision Tables with Many-valued Decisions from Closed Classes</b> Azimkhon Ostonov, Mikhail Moshkov
<b>Paraconsistent Logics: A Survey Focussing on the Rough Set Approach</b> Bidhan Saha, Mohua Banerjee, Soma Dutta
<b>Hexagons of Opposition in Linguistic Three-Way Decisions</b> Stefania Boffa, Davide Ciucci
<b>Algebraic Models for Qualified Aggregation in General Rough Sets, and Reasoning Bias Discovery</b> A Mani
<b>Algebraic, Topological, and Mereological Foundations of Existential Granules</b> A Mani
<b>Rough Fuzzy Concept Analysis via Multilattice</b> G Nguepy Dongmo, BB Koguep Njionou, L Kwuida, M Onabid

<b>SESSION 2A Applications 1, 05.10.2023 (Thursday), 14:40 - 16:20</b>
Session chair: Michinori Nakata
<b>Application of federated learning to prediction of patient mortality in vasculitis disease</b> Jan G Bazan, Pawel Milan, Stanisława Bazan-Socha, Krzysztof Wójcik
<b>Navigational Strategies for Mobile Robots Using Rough Mereological Potential Fields and Weighted Distance to Goal</b> Aleksandra Szpakowska, Piotr Artiemjew, Wojciech Cybowski
<b>Rule-based action mining from survival data</b> Marek Hermansa, Marek Sikora, Beata Sikora, Łukasz Wróbel
<b>Rough Set Theory as Guiding Heuristics in IT System Diagnosis</b> András Földvári, András Pataricza
<b>Using Rough Sets for Assessment of Uncertain Properties of Pyrowear 53 Ring Gears External Carburized Layers after High Pressure Gas Quenching</b> Łukasz Rauch, Krzysztof Bzowski, Maciej Pietrzyk, Jakub Łazarski, Ivan Milenin

<b>SESSION 2B Granular Models, 05.10.2023 (Thursday), 14:40 - 16:20</b>
Session chair: Salvatore Greco
<b>Unsupervised KeyPhrase Extraction Based on Multi-granular Semantics Feature Fusion</b> Jie Chen, Hainan Hu, Shu Zhao, Yanping Zhang
<b>Multi-Granularity Feature Fusion for Transformer-based Single Object Tracking</b> Ziye Wang, Duoqian Miao
<b>Multi-granularity network for time series forecasting on multivariate time series data</b> Zongqiang Wang, Yan Xian, Guoyin Wang, Hong Yu
<b>Adaptive Multi-Granularity Aggregation Transformer for Image Captioning</b> Daitianxia Li, Ye Wang, Qun Liu
<b>Granular Spectrum of Covering Rough Sets - Extended Abstract</b> Piotr Wasilewski, Dominik Ślęzak

<b>SESSION 3A Rough Set Models, 06.10.2023 (Friday), 11:40 - 13:40</b> Session chair: Jan Bazan
<b>Selected approaches to conflict analysis inspired by the Pawlak model - case study</b> Małgorzata Przybyła-Kasperek, Rafat Deja, Alicja Wakulicz-Deja
<b>Challenges in Descriptor-Based Information Systems and Machine Learning by Rule Generation</b> Hiroshi Sakai, Michinori Nakata
<b>Multi-heuristic Induction of Decision Rules</b> Beata Zielosko, Evans Teiko Tetteh, Diana Hunchak
<b>Algebraic formulations and geometric interpretations of decision-theoretic rough sets</b> Jianfeng Xu, Duoqian Miao, Li Zhang, Yiyu Yao
<b>Valuation Precision Rough Set Model and Generalized <math>\gamma</math>-Decision Valuation</b> Soma Dutta, Dominik Ślęzak
<b>Interrelationship between Discernibility and Monotonicity in Attribute Reduction</b> Dominik Ślęzak, Soma Dutta

<b>SESSION 3B Three-way Decisions, 06.10.2023 (Friday), 11:40 - 13:40</b> Session chair: Hong Yu
<b>Three-way conflict analysis for three-valued situation tables with rankings and reference tuples</b> Shuting Liu, Mengjun Hu, Zhifei Zhang, Guangming Lang
<b>Three-way social network analysis: Triadic measures at three levels</b> Yingxiao Chen, Yiyu Yao, Ping Zhu
<b>Cognitive and Social Decision Making: Three-way Decision Perspectives</b> Yiyu Yao, JingTao Yao
<b>New models of three-way conflict analysis for incomplete situation tables</b> Chengmei Lin, Qimei Xiao, Huiying Yu, Guangming Lang
<b>Granular-ball Three-way Decision</b> Xin Yang, Yanhua Li, Shuyin Xia, Xiaoyu Lian, Guoyin Wang, Tianrui Li
<b>Normal fuzzy three-way decision based on prospect theory</b> Yanhua Li, Jiafen Liu, Yihua Zhong, Xin Yang

<b>SESSION 4A Cybersecurity &amp; IoT, 06.10.2023 (Friday), 16:50 - 18:10</b> Session chair: Marcin Michalak & Piotr Synak
<b>Preventing Text Data Poisoning Attacks in Federated Machine Learning by an Encrypted Verification Key</b> Mahdee Jodayree, Wenbo He, Ryszard Janicki
<b>Improving Detection Efficiency: Optimizing Block Size in the Local Outlier Factor (LOF) Algorithm</b> Czesław Horyń, Agnieszka Nowak-Brzezińska
<b>A New Data Model for Behavioral Based Anomaly Detection in IoT Device Monitoring</b> Marcin Michalak, Antoni Jamiolkowski, Błażej Adamczyk, Maksym Brzęczek, Marek Hermansa, Iwona Kostorz, Łukasz Wawrowski
<b>Deriving Volumetric Anomalies from Huge Log Event Data Sets using Approximate SQL Engine (Extended Abstract)</b> Janusz Borkowski, Agnieszka Chądzyńska-Krasowska, Joel Holland, Marcin Kowalski, Dominik Ślęzak, Piotr Synak, Arkadiusz Wojna, Jakub Wróblewski

<b>SESSION 4B Graphs &amp; Complex Data, 06.10.2023 (Friday), 16:50 - 18:10</b> Session chair: Churn-Jung Liao
<b>A Causal Disentangled Multi-Granularity Graph Classification Method</b> Yuan Li, Li Liu, Penggang Chen, Youmin Zhang, Guoyin Wang
<b>Link Prediction for Attribute and Structure Learning Based on Attention Mechanism</b> Renjuan Nie, Guoyin Wang, Qun Liu, Chengxin Peng
<b>A Python Toolkit for Information Systems over Ontological Graphs</b> Krzysztof Panczerz
<b>Mining Inter-sequence Patterns with Itemset Constraints</b> Anh Nguyen, Ngoc-Thanh Nguyen, Loan TT Nguyen, Bay Vo

<b>SESSION 5A Foundations 2, 07.10.2023 (Saturday), 11:40 - 13:40</b> Session chair: Soma Dutta
<b>Two-sorted Modal Logic for Formal and Rough Concepts</b> Prosenjit Howlader, Churn-Jung Liao
<b>Kryszkiewicz's Relation for Indiscernibility of Objects in Data Tables Containing Missing Values</b> Michinori Nakata, Norio Saito, Hiroshi Sakai, Takeshi Fujiwara
<b>Aggregation Operators on Shadowed Sets Deriving from Conditional Events and Consensus Operators</b>

Stefania Boffa, Andrea Campagner, Davide Ciucci, Yiyu Yao
<b>Pawlak, Belnap and the magical number seven</b> Salvatore Greco, Roman Słowiński
<b>A note on NP-hardness of deriving the simplest ensembles of rough-set-based decision models from the data -- the cases of decision bireducts and generalized decisions (Extended Abstract)</b> Dominik Ślęzak
<b>Symmetry of Attribute Decompositions Based on Generalized Decision Functions (Extended Abstract)</b> Dominik Ślęzak

<b>SESSION 5B Feature Selection, 07.10.2023 (Saturday), 11:40 - 13:40</b> Session chair: Beata Zielosko
<b>An Acceleration Method for Attribute Reduction Based on Attribute Synthesis</b> Chengzhi Shi, Taihua Xu, Fuhao Cheng, Xibei Yang, Jianjun Chen
<b>Attribute Reduction Based on the Multi-annulus Model</b> Yan Liu, Jingjing Song, Taihua Xu, Jianjun Chen
<b>Monte Carlo Feature Filtering</b> Krzysztof Mnich, Witold R Rudnicki
<b>Resilient feature subsets selection with approximate decision reducts and clustering for <math>p</math>-resilient <math>\epsilon</math>-constraint ensemble blending</b> Marek Grzegorowski, Eyad Kannout, Michał Grodzki, Hung Son Nguyen
<b>Robust Aggregative Feature Selection to gain insight into the data</b> Radosław Piliszek, Witold R Rudnicki
<b>Reduction of binary attributes: rough set theory versus formal concept analysis</b> Piotr Wasilewski, Janusz Kacprzyk, Sławomir Zadrozny

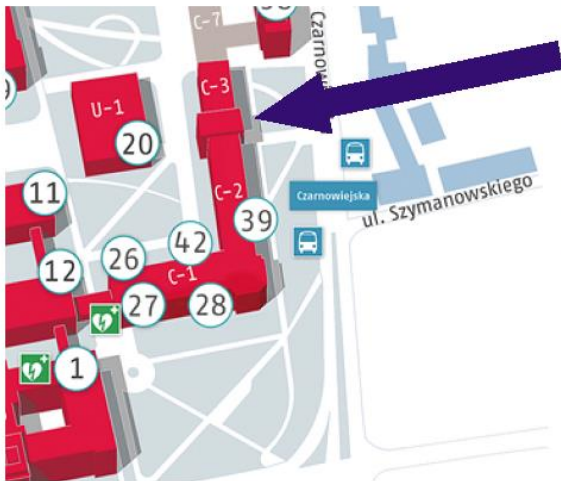
<b>SESSION 6A Hybrid Approaches, 07.10.2023 (Saturday), 16:50 - 18:10</b> Session chair: Marcin Szczuka
<b>Crisp-Fuzzy Concept Lattice Based on Interval-Valued Fuzzy Sets</b> Tong-Jun Li, Yi-Qian Wang
<b>Rough-Fuzzy Hybrid Approach to Attribute Importance and Ranking</b> Sinh Hoa Nguyen, Hung Son Nguyen
<b>A Probabilistic Rough Set Model Based on Bayesian Learning</b> Yoshifumi Kusunoki
<b>On Several New Dempster-Shafer-inspired Uncertainty Measures Applicable for Active Learning</b> Daniel Kaluża, Andrzej Janusz, Dominik Ślęzak

<b>SESSION 6B Applications 2 (online), 07.10.2023 (Saturday), 16:50 - 18:10</b> Session chair: Tomasz Hachaj
<b>Clustering methods for adaptive e-commerce user interfaces</b> Adam Wasilewski, Mateusz Przyborowski
<b>A Novel Hybrid Wind Speed Interval Prediction Model using Rough Stacked Autoencoder and LSTM</b> Qiuyu Mei, Hong Yu, Guoyin Wang
<b>Time Factor in Diachronic Embedding for Temporal Knowledge Graph Completion</b> Thuy-Anh Nguyen Thi, Hieu Cong Nguyen, Xuan-Hieu Phan, Quang-Thuy Ha
<b>Handling intra-class dissimilarity and inter-class similarity for imbalanced skin lesion images classification</b> Shengdan Hu, Zhifei Zhang, Jiemin Yang

**Contributions** can be downloaded from <https://ijcra2023.agh.edu.pl/contributions.zip>

Password to archive will be sent to participants in e-mail.

The conference will be held in building C-2. The entrance is from Czarnowiejska street.



Room A - building C2 / 224 - 2nd floor

Room B - building C2 / 221 - 2nd floor

Lunch Room - building C2 / 429 - 4th floor