IJCRS 2024 Conference Program

Friday, May 17 - Rough Set School and Tutorials

Remote participation through Zoom (for all sessions):

https://smu-ca.zoom.us/j/82668096577?pwd=5vpda6F86Ebxm2m426bRMnWHn6xwoi.1

Meeting ID: 826 6809 6577   Passcode: 346099

9:00 – 10:30	**Part 1**

- Rough sets: History and what next
  By Dr. Andrzej Skowron, Dr. Dominik Ślęzak

- Fuzzy orthopartitions as models dealing with vague and uncertain information
  By Dr. Stefania Boffa

Chairs: Dr. Dominik Ślęzak, Dr. Zaineb Chelly Dagdia
Location: MCDA suite (S126)

10:30 – 11:00	**Break (snack, beverages provided)**

11:00 – 12:30	**Part 2**

- Near sets with application on Hilbert envelope proximities in modulated irregular
  motion waveforms in infrared video frames
  By Dr. James Peters

- The art, science, and application of three-way decision
  By Dr. Yiyu Yao

Chairs: Dr. Dominik Ślęzak, Dr. Piotr Artiemjew
Location: MCDA suite (S126)

12:30 – 13:30	**Break for lunch (lunch not provided)**

13:30 – 15:00	**Part 3**

- Rough set theory in AI and data science
  By Dr. Usman Qamar

- QMAK (open platform for interaction with machine learning models and
  visualization of classification processes)
  By Dr. Arkadiusz Wojna

Chairs: Dr. Aleksandra Szpakowska, Dr. Piotr Artiemjew
Location: MCDA suite (S126)

Saturday, May 18

Remote participation through Zoom

- **For all sessions at MCDA suite (S126):**
  https://smu-ca.zoom.us/j/82668096577?pwd=5vpda6F86Ebxm2m426bRMnWHn6xwoi.1
  Meeting ID: 826 6809 6577   Passcode: 346099
- **For all sessions at S345:**
  https://smu-ca.zoom.us/j/89996840792?pwd=8AZBV4EYjS7SByfsHIHCHop7a6GwTw.1
  Meeting ID: 899 9684 0792   Passcode: 179848

8:00 – 12:00	**Registration**
	Location: MCDA suite (S126)

8:00 – 9:00	**Break (snack, beverages, coffee provided)**
	Location: MCDA suite (S126)

9:00 – 10:15	**Data Mining Competition Presentation**
	Chair: Dr. Yasushi Akiyama
	Location: MCDA suite (S126) (Please see the presentation details after the campus map.)

10:15 – 10:30	**Break (snack, beverages provided)**
	Location: MCDA suite (S126)

10:30 - 11:15	**IRSS President Forum Talk**
	Speaker: Dr. Duoqian Miao
	Chair: Dr. JingTao Yao Location: MCDA suite (S126)

11:30 – 13:00	**Session 1A**	**Session 1B**
	Workshop – Three-Way Decision (Part 1/3)	Main Track – Granular Computing
	Location: MCDA suite (S126)	Location: S345

13:00 – 14:00	**Lunch and Data Mining Competition Award Announcement**
	Location: MCDA suite (S126)

14:00 – 14:45	**IRSS President Forum Talk**
	Speakers: Dr. Wojciech Ziarko
	Chair: Dr. Chris Cornelis Location: MCDA suite (S126)

14:45 – 15:00	**Break (snack, beverages, coffee provided)**
	Location: MCDA suite (S126)

15:00 – 17:00	**Session 2A**	**Session 2B**
	Workshop – Three-Way Decision (Part 2/3)	Main Track - Rule Induction and Machine Learning (Part 1/2)
	Location: MCDA suite (S126)	Location: S345

18:00 – 21:00	**Dinner - Reception**
	Location: Alexander Keith Brewery

Sunday, May 19

Remote participation through Zoom

- **For all sessions at MCDA suite (S126):**
  https://smu-ca.zoom.us/j/82668096577?pwd=5vpda6F86Ebxm2m426bRMnWHn6xwoi.1
  Meeting ID: 826 6809 6577   Passcode: 346099
- **For all sessions at S345:**
  https://smu-ca.zoom.us/j/89996840792?pwd=8AZBV4EYjS7SByfsHIHCHop7a6GwTw.1
  Meeting ID: 899 9684 0792   Passcode: 179848

9:00 – 12:00	**Registration**	
	Location: MCDA suite (S126)	

9:00 – 10:30	**Keynote Talk**	
	Speakers: Dr. Jaroslaw Was , Dr. Jesus Medina	
	Chair: Dr. Dominik Ślęzak	
	Location: MCDA suite (S126)	

10:30 – 12:30	**Session 3A**	**Session 3B**
	Workshop – Three-Way Decision (Part 3/3)	Main Track - Rule Induction and Machine Learning (Part 2/2)
	Location: MCDA suite (S126)	Location: S345

12:30 – 13:30	**Lunch and IRSS Meeting**
	Location: MCDA suite (S126)

13:30 – 15:00	**Keynote Talk**
	Speakers: Dr. Lipika Dey , Dr. Ryszard Janicki
	Chair: Dr. JingTao Yao
	Location: MCDA suite (S126)

15:00 – 15:30	**Break (snack, beverages, coffee provided)**
	Location: MCDA suite (S126)

15:30 – 18:00	**Session 4A**	**Session 4B**
	Workshop - Deep Learning and Soft Computing	Special Session – AI and Machine Learning
	Location: MCDA suite (S126)	Location: S345

18:00 – 21:00	**Dinner - Banquette**
	Location: Black Sheep

Monday, May 20

Remote participation through Zoom (for all sessions):

https://smu-ca.zoom.us/j/82668096577?pwd=5vpda6F86Ebxm2m426bRMnWHn6xwoi.1

Meeting ID: 826 6809 6577   Passcode: 346099

9:00 – 10:30	**Keynote Talk**

Speakers: Dr. Jimmy Huang , Dr. Eric Matson
Chair: Dr. Yiyu Yao
Location: MCDA suite (S126)

10:30 – 12:30	**Session 5**

Main Track – Applications
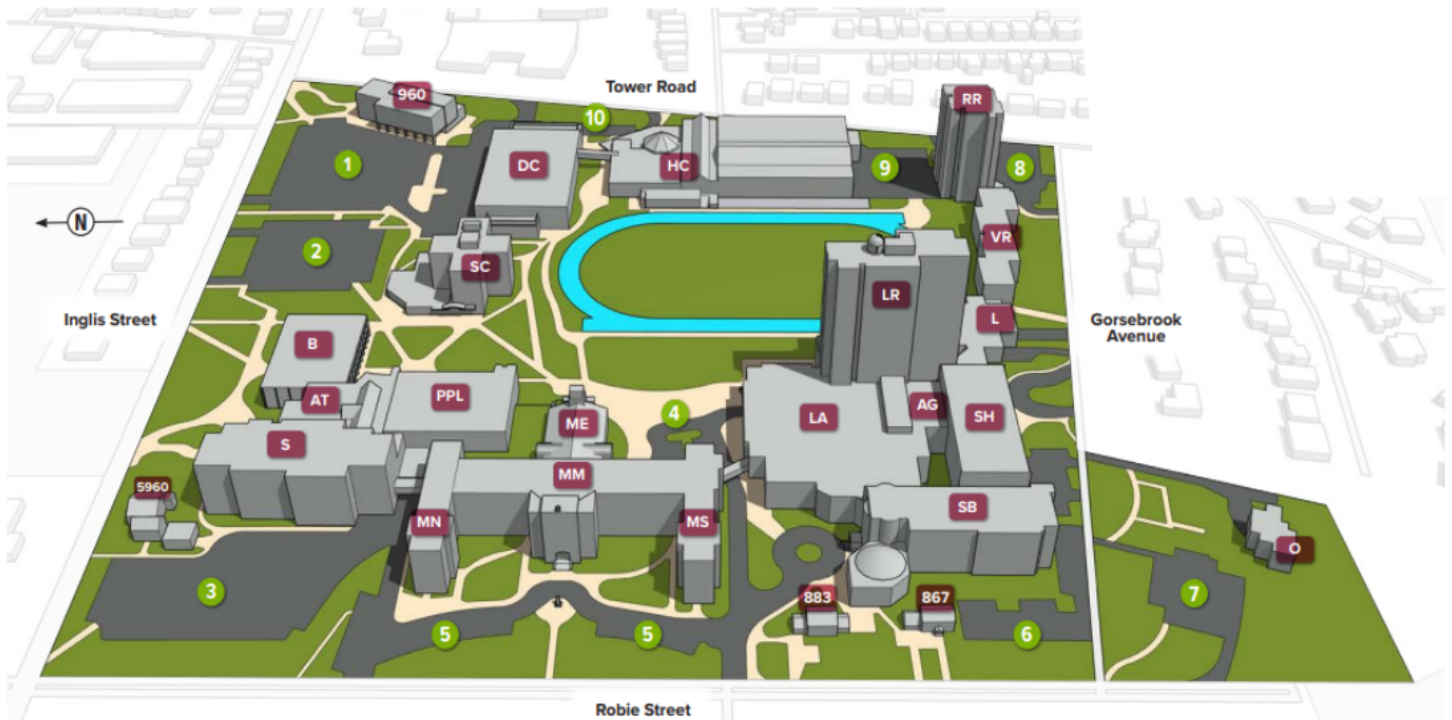Location: MCDA suite (S126)

12:30 -	**Other Activities**

TBA in the morning of the day.
Tickets are required for participation. Please get your tickets in the morning of the day.

Saint Mary's University Campus Map

Buildings

AG	Art Gallery
AT	Atrium
B	Burke Building
DC	The Dauphinee Centre
HC	Homburg Centre for Health & Wellness
L	Link Building
LA	Loyola Academic Complex
LR	Loyola Residence
ME	McNally East
MM	McNally Main
MN	McNally North
MS	McNally South
O	The Oaks
PPL	Patrick Power Library
RR	Rice Residence
S	Science Building
SB	Sobey Building
SC	O'Donnell Hennessey Student Centre
SH	Sobeys Inspiration Hub
VR	Vanier Residence
867	867 Robie Street
883	883 Robie Street
960	960 Tower Road
5960	5960 Inglis Street

Parking

1. Arena: General, Meters, Accessible
2. Inglis Street: General, Pay & Display
3. Science: General, Meters, Faculty, Accessible
4. McNally East: Meters, Accessible
5. McNally Main: Faculty, Accessible
6. Sobey/Gorsebrook: General, Faculty, Accessible
7. Oaks: General
8. Rice: General, Meters, Accessible
9. Homburg Members Parking Only
10. Tower Road: Meters, Accessible

Data Mining Competition Presentation: Saturday, May 18, 9:00-10:15 **Chair: Dr. Yasushi Akiyama** **Location: MCDA suite (S126)** **Link: https://smu-ca.zoom.us/j/82668096577?pwd=5vpda6F86Ebxm2m426bRMnWHn6xwoi.1** **Meeting ID: 826 6809 6577   Passcode: 346099**
Team: Bao Beining, Cui Xiangen, Dai Yihong, Shao Shuangrun, Zhao Bingxi From: Beijing Jiaotong Univesity (Weihai)
Team: Pallavi Kumari, Akshita Singhal, Yashwanth Balaji Krishnamurthy, Md Akmam Ul Haque, Nitin Chitharanjan From: Saint Mary's University
Team: Rakshit Gupta, Raoof Naushad, Tejasvi Bhutiyal, Vrushali Prajapati From: Saint Mary's University
Team: Sameer Patel, Kritika Koirala, Neeyati Mehta, Jerry Caleb, Zaid Shaikh From: Saint Mary's University
Team: Rishabh Khevaria, Sivleen Kaur, Aditya Chaudhari, Jeeten Jain From: Saint Mary's University

Session 1A: Saturday, May 18, 11:30-13:00 **Workshop on Uncertainty, Three-way Decision, and Explainable Artificial Intelligence (Part 1/3)** **Chair: Dr. Jimmy Huang** **Location: MCDA suite (S126)** **Link: https://smu-ca.zoom.us/j/82668096577?pwd=5vpda6F86Ebxm2m426bRMnWHn6xwoi.1** **Meeting ID: 826 6809 6577   Passcode: 346099**
Uncertainty Strategy for Satellite Video Object Tracking via Correlation Filter Ziye Wang, Duoqian Miao
Result-fusion-based Temporal-spatial Composite Sequential Three-way Decisions Yi Xu, Qisheng Zhu, Zhengyue Pan, Ziheng Qiu, Xiaojun Sun
Suggestions on the Use of Three-way Decision in Machine Learning Federico Cabitza, Andrea Campagner, Davide Ciucci
Sequential Three-way Detection Method of Hybrid Concept Drift Ruihua Wang, Jianfeng Xu, Hong Rao

Session 1B: Saturday, May 18, 11:30-13:00 **Main Track – Granular Computing** **Chair: Dr. Ryszard Janicki** **Location: S345** **Link: https://smu-ca.zoom.us/j/89996840792?pwd=8AZBV4EYjS7SByfsHIHCHop7a6GwTw.1** **Meeting ID: 899 9684 0792   Passcode: 179848**
Information System in the Light of Interactive Granular Computing Soma Dutta, Andrzej Skowron
A Vector Is a Granule: A Novel Extension of the Variable Precision Rough Set Model Hajime Okawa, Yasuo Kudo, Tetsuya Murai
GBTWSVM: Granular-ball Twin Support Vector Machine Lixi Zhao, Guangming Lang
Fuzzy Granular-balls based Spectral Clustering Yueyang Li, Guangming Lang

Session 2A: Saturday, May 18, 15:00-17:00
Workshop on Uncertainty, Three-way Decision, and Explainable Artificial Intelligence (Part 2/3)
Chair: Dr. Mengjun Hu
Location: MCDA suite (S126)
Link: https://smu-ca.zoom.us/j/82668096577?pwd=5vpda6F86Ebxm2m426bRMnWHn6xwoi.1
Meeting ID: 826 6809 6577   Passcode: 346099

Approximate Criterion Reduction in Multi-Criteria Trilevel Ranking Analysis
Chengjun Shi, Mengjun Hu, Qiaoyi Li, Yiyu Yao

Three-way Hybrid Sampling using Granular Balls for Imbalanced Classification
Qin Xie, Qinghua Zhang, Nanfang Luo, Guoyin Wang

Three-way Bibliometrics Analytics for Supporting Literature Review
Langwangqing Suo, Hai-Long Yang, Yiyu Yao

Identifying Important Concepts in the Concept Lattice based on Concept Indices and Complex Network Analysis
Kuo Pang, Zhen Wang, Li Zou, Mingyu Lu

A Machine-People-Government Triangular Model of Smart Agriculture
Chuanlei Zhang, Yiyu Yao

Three-way Decision of Granular-ball Rough Sets based on Fuzziness
Zhuangzhuang Liu, Taihua Xu, Jie Yang

Session 2B: Saturday, May 18, 15:00-17:00
Main Track – Rule Induction and Machine Learning (Part 1/2)
Chair: Dr. Ryszard Janicki
Location: S345
Link: https://smu-ca.zoom.us/j/89996840792?pwd=8AZBV4EYjS7SByfsHIHCHop7a6GwTw.1
Meeting ID: 899 9684 0792   Passcode: 179848

Greedy Algorithm for Construction of Deterministic Decision Trees for Conventional Decision Tables from Closed Classes
Azimkhon Ostonov, Mikhail Moshkov

Consideration of Detecting Data and Functional Dependency in Tabular Data with Missing Values by the Obtained Rules
Hiroshi Sakai, Michinori Nakata, Dominik Ślęzak, Junzo Watada

Dealing with Missing Values Meaning Unknown in Probabilistic Approximations
Michinori Nakata, Hiroshi Sakai, Takeshi Fujiwara

Attribute Ranking Method Based on Conditional Comparison Matrices
Bich Khue Vo, Hung Son Nguyen

RIONIDA: A Novel Algorithm for Imbalanced Data Combining Instance-Based Learning and Rule Induction
Grzegorz Góra, Andrzej Skowron

Simulating Functioning of Decision Trees for Tasks on Decision Rule Systems
Kerven Durdymyradov, Mikhail Moshkov

Session 3A: Sunday, May 19, 10:30-12:30 **Workshop on Uncertainty, Three-way Decision, and Explainable Artificial Intelligence (Part 3/3)** **Chair: Dr. Yiyu Yao** **Location: MCDA suite (S126)** **Link: https://smu-ca.zoom.us/j/82668096577?pwd=5vpda6F86Ebxm2m426bRMnWHn6xwoi.1** **Meeting ID: 826 6809 6577   Passcode: 346099**
Three-way Cost-Performance Approximate Attribute Reduction Jialin Hou, Yiyu Yao
The Visual Analysis of Three-way Decision based on Decision-theoretic Rough Set: A Perspective of Fusing Two-way Decision Pair Jing Tu, Hong Rao, Jianfeng Xu, Duoqian Miao, Yuanjian Zhang
Granular Approximations of Partially-Known Concepts Qiaoyi Li, Chengjun Shi, Han Yang, Yiyu Yao
Triangular Fuzzy Number Intuitionistic Fuzzy Covering Rough Sets and Applications to Decision Making Zhongling Bai, Jiang Chen, Xianyong Zhang
Three-way Conflict Analysis with Negative Feedback Yucong Yan, Xiaonan Li
A New Three-way Conflict Analysis Model Based on Decision-Theoretic Rough Set Theory Ping Liu, Guangming Lang

Session 3B: Sunday, May 19, 10:30-12:30 **Main Track – Rule Induction and Machine Learning (Part 2/2)** **Chair: Dr. Chris Cornelis** **Location: S345** **Link: https://smu-ca.zoom.us/j/89996840792?pwd=8AZBV4EYjS7SByfsHIHCHop7a6GwTw.1** **Meeting ID: 899 9684 0792   Passcode: 179848**
Interfacing with a Machine Learning Framework to Detect Drug-Related Harms on Social Media Andrew Fisher, Vijay Mago
Privacy-Preserving Federated Learning: Insights and Perspectives Ankit Chouhan, Jingtao Yao
On Complexity of Deterministic and Nondeterministic Decision Trees for Decision Tables with Many-valued Decisions from Closed Classes Azimkhon Ostonov, Mikhail Moshkov
Distance-Based Fuzzy-Rough Sets & Their Application To The Classification Problem Amrit Kumar, Niladri Chatterjee
Study of Dependency Degree and Bayesian Networks for Conflict Scenarios Małgorzata Przybyła-Kasperek, Rafal Deja
Interactive Machine Learning and Data Labeling -- Can Rough Sets Help? Dominik Ślęzek

Session 4A: Sunday, May 19, 15:30-18:00   **Workshop on Applications of Deep Learning and Soft Computing**   **Chairs: Dr. Yasushi Akiyama**   **Location: MCDA suite (S126)**   **Link: https://smu-ca.zoom.us/j/82668096577?pwd=5vpda6F86Ebxm2m426bRMnWHn6xwoi.1**   **Meeting ID: 826 6809 6577   Passcode: 346099**
Aspect-Based Sentiment Analysis in the LLM Era   Nikita Neveditsin, Pawan Lingras, Vijay Mago
Lung Cancer Risk Prediction Model Trained with Multi-source Data   Shijie Sun, Hanyue Liu, Ye Wang, Hong Yu
Advancing ITS Applications with LLMs: A Survey on Traffic Management, Transportation Safety, and Autonomous Driving   Dingkai Zhang, Huanran Zheng, Wenjing Yue, Xiaoling Wang
Automated Brain Tumor Classification with Deep Learning   Venkata Kandula, Yan Zhang
Clinical Medical Test Decision-making of Liver Disease using Granular-ball Rough Set   Fanxin Xu, Zuqiang Su, Guoyin Wang
Cross-domain Structural Damage Identification based on Deep Domain Adaptation Algorithm   Hao Wang, Baoli Wang, Caixia Cui, Pengling Wang

Session 4B: Sunday, May 19, 15:30-18:00   **Special Session on General Rough Set Perspectives on Foundations of AI and Machine Learning**   **Chair: Dr. Sheela Ramanna**   **Location: S345**   **Link: https://smu-ca.zoom.us/j/89996840792?pwd=8AZBV4EYjS7SByfsHIHCHop7a6GwTw.1**   **Meeting ID: 899 9684 0792   Passcode: 179848**
On Tolerance-based Rough Set Operators and Their Covering Generalizations   Piotr Wasilewski, Dominik Ślęzak
Rough Algebraic Semantics of Concepts in Distributed Cognition Perspective   Mani A
Mapper-Based Rough Sets   Mauricio Restrepo, Chris Cornelis
Representing Pedagogic Content Knowledge Through Rough Sets   Mani A
Description logic for rough concepts   Krishna Manoorkar, Andrea De Domenico, Alessandra Palmigiano
Parametrized γ-Decision Valuation for Variable Precision Rough Set Model   Soma Dutta, Dominik Ślęzak
Generalized Multi-adjoint Fuzzy Rough Set   Nicolas Madrid, Jesús Medina, Eloisa Ramírez Poussa

Session 5: Monday, May 20, 10:30-12:30
Main Track - Applications
Chairs: Dr. Eric Matson
Location: MCDA suite (S126)
Link: https://smu-ca.zoom.us/j/82668096577?pwd=5vpda6F86Ebxm2m426bRMnWHn6xwoi.1
Meeting ID: 826 6809 6577   Passcode: 346099

Cross-Weighting Knowledge Distillation for Object Detection

Zhaoyi Li, Zihao Li, Xiaodong Yue

Hyp-DAN: Hyperbolic Distance-aware Attention Networks

Fuchuan Xiang, Jianhang Tang, Shaobo Li, Guoyin Wang, Ji Xu

Multimodal Propaganda Detection in Memes with Tolerance-based Soft Computing Method

Siddharth Kelkar, Srinivasa Ravi, Sheela Ramanna, Anand Madasamy

Optimizing Rough Set Flow Graph Inference

Jun Wang, Cory Butz

A Method of Multi-USV Reward Design Using Fuzzy Control

Jianfeng Xiao, Qun Liu, Xin Huang