CALL FOR PAPERS

Workshop on Three-Way Data Analytics

The 13th International Workshop on Three-Way Decision
in
The 2027 International Joint Conference on Rough Sets (IJCRS 2027)

INTRODUCTION

Three-way decision (3WD) is a theory of thinking in threes, problem solving in threes, and computing in threes. Originally formalized by Professor Yiyu Yao in the early 2010s as a decision-theoretic extension of probabilistic rough sets, 3WD has progressively evolved into a general methodology for reasoning, learning, information processing, and decision-making in complex systems.

The development of 3WD has revealed a broader methodological perspective, that is, many real-world problems cannot be adequately characterized by binary thinking. Complex data analytics often requires distinguishing between what is sufficiently supported, what is sufficiently unsupported, and what remains uncertain. Between information that can be immediately processed and information that should be deferred for further investigation.By introducing a third option, 3WD provides a principled way to represent uncertainty, fuzzy, and incomplete knowledge. In this sense, three-way thinking provides not merely a decision rule, but a general paradigm for preparing and analyzing data in threes.

As we approach IJCRS 2027, three-way decision has become increasingly connected with several important research directions in rough sets and granular computing. Recent theoretical developments and applications have extended 3WD beyond its original probabilistic interpretation toward three-world thinking, multi-level and multi-granularity information processing, dynamic and sequential decision-making, and intelligent data analytics. These developments motivate a broader exploration of three-way data analytics, in which triadic structures, three-way representations, and three-way reasoning are systematically integrated into the data analytics pipeline.

This workshop aims to provide a forum for researchers to investigate the emerging intersection of three-way decision, rough sets, granular computing, and data analytics. Particular attention will be devoted to how three-way thinking can contribute to the analysis of complex, uncertain, heterogeneous, dynamic, and large-scale data. The workshop welcomes both foundational theoretical studies and application-oriented research that demonstrates the usefulness of three-way approaches in contemporary data-driven systems.

TOPICS

We invite submissions of original and previously unpublished research on three-way decision, including but not limited to the following topics:

- Three-way reasoning, thinking in threes, trilevel thinking, triadic thinking
- Methodology of three-way decision, tripartite methods, three-way learning
- Three-way decision for explainable artificial intelligence

- Three-way decision and granular computing
- Three-way decision and rough sets
- Three-way decision and fuzzy sets
- Three-way classification
- Three-way concept-cognitive learning
- Three-way feature selection
- Three-way clustering
- Three-way conflict analysis
- Three-way formal concept analysis
- Three-way recommendation
- Three-way dynamic learning, incremental learning, and dynamic modeling
- Three-way decision in deep learning and three-way decision in machine learning
- Three-way decision in analyzing incomplete data
- Three-way decision in big data analysis and data mining
- Three-way multi-label learning and label distribution learning
- Three-way ensemble learning
- Three-way group decision making
- Three-way decision in multi-criteria decision making
- Three-way decision in bioinformatics
- Sequential three-way decision and applications
- Movement-based three-way decision
- Three-way decision for network group of forecasts
- Three-way decision with interval sets and orthopairs
- Visual three-way computing and three-way visual computing
- Three-way quotient space analysis
- Uncertainty reasoning and three-way decision
- Three-way stream computing and concept drift
- Multi-scale three-way decision

- Double-quantitative three-way decision
- Multi-granulation three-way decision
- Fuzzy three-way decision and three-way fuzzy decision
- Three-way decision in management science
- Three-way decision in smart agriculture
- Three-way decision in information security and privacy protection

3WD WORKSHOP/SPECIAL SESSION HISTORY

The First International Symposium on Three-Way Decisions and Granular Computing (ISTDGC 2013) was held at Chengdu, China, in 2013. The Second International Workshop on Three-Way Decisions, Uncertainty, and Granular Computing (TWDUG 2014) took place at Shanghai, China, in 2014. The subsequent international workshops/special sessions on three-way decision were held at Tianjin, China, in 2015; Santiago, Chile, in 2016; Olsztyn, Poland, in 2017; Quy Nhon, Vietnam, in 2018; Debrecen, Hungary, in 2019; Havana, Cuba, in 2020; Suzhou, China, in 2022; Halifax, Canada, in 2024; Chongqing, China, in 2025; and Cádiz, Spain, in 2026.

PAPER SUBMISSION

Please follow the paper submission guidelines of IJCRS 2027.

IMPORTANT DATES

Please follow the timeline of IJCRS 2027.

WORKSHOP CHAIRS

Dr. Zhen Wang (Weihai Institute of Beijing Jiaotong University, China)
Dr. Stefania Boffa (IUML University, Italy)

CONTACT INFORMATION

Dr. Zhen Wang
Email: zhew@bjtu.edu.cn
Dr. Stefania Boffa
Email: stefania.boffa@iulm.it