

Chengdu/Jiuzhaigou, China  
21-26 June, 2009

**MCDM 2009**  
The 20th International Conference  
on Multiple Criteria Decision Making



# MCDM 2009

**Programme**

**Chengdu/Jiuzhaigou, China**  
**June 21-26, 2009**

## **Welcome to**

### **The 20th MCDM Conference Chengdu/Jiuzhaigou, China**

The International Conference on Multiple Criteria Decision Making has emerged as the global forum dedicated to the sharing of original research results and practical development experiences among researchers and application developers from different multiple criteria decision making related areas such as multiple criteria decision aiding, multiple criteria classification, ranking, and sorting, multiple objective continuous and combinatorial optimization, multiple objective metaheuristics, multiple criteria decision making and preference modeling, fuzzy multiple criteria decision making.

The theme for MCDM 2009 is "New State of MCDM in 21st Century". The conference seeks solutions to challenging problems facing the development of multiple criteria decision making, and shapes future directions of research by promoting high quality, novel and daring research findings. With the MCDM conference, these new challenges and tools can easily be shared with the multiple criteria decision making community. MCDM 2009 will invite a number of well-known MCDM scholars to deliver keynote speeches which include their experiences with the remarkable MCDM history, important contributions to MCDM and/or creative thinking towards the future development of MCDM. As the tradition of MCDM Conference Series, the main conference sessions on June 22-26, 2009 have an equal emphasis on all aspects of MCDM related topics that will affect scientific, social and economic development of the 21st century. Moreover, MCDM 2009 creates new tutorial and workshop programs on June 21, 2009 before the main conference. The tutorial program of this conference will cover emerging MCDM technologies and the state-of-the-art of MCDM developments. The workshop program will focus on new research challenges and initiatives.

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# Session

## Opening

Co-chairs: Yong Shi and Shouyang Wang (5 minutes)

Honorary Chair: Siwei Cheng (15 minutes)

President of the International Society on MCDM: Wallenius Jyrki (10 minutes)

The President of UESTC (10 minutes)

Prof. Wei Zhang, NSFC (10 minutes)

Conference group photo (20 minutes)

## Tutorial Topics and Speakers

1. “Evolutionary Multi-Criterion Optimization (EMO): Principles, Methodologies, and Applications to Portfolio Optimization” by Ralph Steuer (University of Georgia, USA) and Kalyanmoy Deb (Indian Institute of Technology Kanpur, India/Helsinki School of Economics, Finland)
2. “An Introduction to MCDM and Interactive Solution Approaches”, by Murat Köksalan, Middle East Technical University, Turkey and Jyrki Wallenius, Helsinki School of Economics, Finland)
3. “Nonlinear Multiobjective Optimization” by Kaisa Miettinen (University of Jyväskylä, Finland)
4. “MCDM Applications and New MCDM books”, by Gu Ji-fa (Chinese Academy of Sciences, China) and Gwo-Hshiung Tzeng (Chiao Tung University/Kainan University, Taiwan)

## Keynote Speakers (Alphabetically) and Their Topics

1. James Dyer (the University of Texas at Austin, USA): “Geoffrion’s Interactive Approach to Multi-Criterion Optimization: A Retrospective”
2. Yacov Haimes (the University of Virginia, USA): “Harmonizing the Omnipresence of MCDM in Technology, Society, and Policy”
3. Po-Lung Yu (Chiao Tung University, Taiwan/University of Kansas, USA): “Dynamic MCDM in Changeable Spaces: from Habitual Domains to Innovation Dynamics?”
4. Milan Zeleny (Fordham University, USA): “MCDM at 37: In Search of New Paradigms...”

5. Stan Zions: (State University of New York at Buffalo, USA): “From Golf Caddy to Graduate Student to Ski Instructor the Slow Way: An Academic Career with Lots of International Experience – It’s Downhill All the Way Some War Stories and Lessons Learned along the Way”

## Workshops

Workshop Sessions 01: Workshop on Evolutionary Methods for Multi-Objective Optimization and Decision Making

Organizers: Kalyanmoy Deb and Eckart Zitzler

Workshop Sessions 02: Workshop on mining text, semi-structured, web, or multimedia data

Organizers: Gang Kou and Zhongfang Zhou

Workshop Sessions 03: Workshop on Knowledge Management and Business Intelligence

Organizers: Gil-Sang Jang, Jongwon Lee, and Heeseok Lee

Workshop Sessions 04: Workshop on Data Mining based Extension theory

Organizers: Wenwei Chen, Chunyan Yang, Xingsen Li and Baiqing Sun

Workshop Sessions 05: Workshop on Intelligent Knowledge Management

Organizers: Lingling Zhang, Tiejia Ma and Xiaofei Zhou

Workshop Sessions 06: The 9th International Workshop on Meta-synthesis and Complex Systems

Organizers: Jifa Gu, Yoshiteru Nakamori, Huanchen Wang, Jingyuan Yu, Xijin Tang, and Xiaoji Zhou

Workshop Sessions 07: Workshop on Risk Correlation Analysis and Risk Measurement

Organizers: Jianping Li, Lean Yu and Yi Peng

Workshop Sessions 08: Workshop on Optimization-based Data Mining Method and Applications

Organizers: Yingjie Tian , Chunhua Zhang , Zhixia Yang and Kun Zhao

Workshop Sessions 09: Workshop on Topics in Risk Analysis with Multiple Criteria Decision Making

Organizers: Chongfu Huang and Haibo Wang

Workshop Sessions 10: Workshop on Applications of Decision Theory and Method to Financial Decision Making

Organizers: Yong Zeng and Yongkai Ma

Workshop Sessions 11: Workshop on New Frontiers of Hybrid MCDM Techniques for Problems-Solving

Organizers: Gwo-Hshiung Tzeng

## **Main conference sessions**

Main conference sessions 01 :

Multi-Criteria Decision Making: Theory and Method

Main conference sessions 02:

Multi-Criteria Decision Making and Its Applications

Main conference sessions 03:

Multi-Criteria Decision Making and Finance

Main conference sessions 04:

Risk Management

Main conference sessions 05:

Multi-Criteria Decision Making and Engineering Management

Main conference sessions 06:

Multi-Criteria Decision Making and Decision Support

Main conference sessions 07:

Multi-Criteria Decision Making in Management Sciences

Main conference sessions 08:

Multi-Criteria Decision Making and Its Social Impacts

Main conference sessions 09:

Nonlinear Multiobjective Optimization

Main conference sessions 10:

Multiobjective Decision Making and Data Mining

## **Information and Registration Desk**

The information and registration desk is where you can go to ask questions during the conference sign in and collect your registration pack (including conference proceedings).

# Committee & Chairs

## Honorary Chairs

- Siwei Cheng, Director of Research Center on Fictitious Economy and Data Science, Chinese Academy of Science, China
- Po Lung Yu, Institute of Information Management, National Chiao Tung University, Taiwan, and School of Business, University of Kansas, Kansas, USA.
- Jifa Gu, Academy of Mathematics and Systems Science, Chinese Academy of Sciences, Beijing, China
- Weixuan Xu, Institute of Policy and Management, Chinese Academy of Sciences, China

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- Yi Peng, University of Electronic Science and Technology of China, Chengdu, China
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- Jianping Li, Chinese Academy of Sciences, China
- Gushan Shi, Chinese Academy of Sciences, China
- Zhongfang Zhou, University of Electronic Science and Technology of China, Chengdu, China

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- Gang Kou, University of Electronic Science and Technology of China, Chengdu, China

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- Jianping Li, Chinese Academy of Sciences, China
-

### **Workshops Chairs**

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- Yi Peng, University of Electronic Science and Technology of China, Chengdu, China

### **Publicity Chairs**

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13. Southwest JiaoTong University (China)

## Using Fuzzy Logic in MCDM Tasks for the Improvement of Passengers' Coach Environment Parameters

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### ABSTRACT

The main idea of this research is to use fuzzy logic controller and intelligent agents to create an algorithm and coordination mechanism for MCDM tasks of climate parameters control system to save electrical energy and keep high comfort level in the object. Interest is concentrated on the climate parameters optimization in passengers' interior of railway coach. The article presents mathematical problem using fuzzy logic controller in mechatronic system for climate parameters optimal control. The methods of the problem solving and structure of problem solving algorithm are given in the article. A special interest for investigations and further development is devoted to intelligent heating, ventilation and air condition systems (HVAC) allowing more flexible regulation of the system's compressor, fan and heater operation, and, therefore, improvement of efficiency and energy saving. In the paper there is described elaborated control system computer model with fuzzy logic controller support. The model was created using Matlab computer program.

The provided results prove that the use of fuzzy logic in MCDM tasks with application of the proposed algorithms can be useful for solving HVAC technology control problems in the public electric transport. Usage of the created models and algorithms in the climate parameters control system in the passengers' interior will raise possibility to increase efficiency of electro energy usage, so exploitation costs of transport will reduce as well as passengers' comfort level will be increased. The elaborated system model can be used for sustaining microclimate in different facilities, public electric transport vehicles and buildings.

**Keywords:** MCDM; Fuzzy logic; HVAC system; environmental parameters; modeling

# Author List of Main Conference

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Xue,Jinyun	June 23 S4				



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