

Preface

The international conference on “Facets of Uncertainties and Applications” (ICFUA 2013) was organized under the joint collaboration of the Operational Research Society of India (the Calcutta chapter) and Department of Applied Mathematics, University of Calcutta.

The conference aimed at contributing to better understanding between practitioners (both the theoreticians and researchers involved in applications) dealing with uncertainties, mainly of nonprobabilistic category. These papers, but one, presented at the conference, focus on various types of uncertainties which are essentially nonprobabilistic in nature. These types include vagueness, roughness, incompleteness, ambiguity, and such other features. Various mathematical formalisms have emerged during the past few decades to deal with such uncertainties, for example, fuzzy set theory, rough set theory, soft set theory, uncertainty theory. Papers compiled here are of two categories: invited articles presented at the plenary sessions and contributed articles read at regular sessions of the said conference. Invited articles are from experts of high standing in the field, while contributed articles are by senior and young researchers. The papers deal with the state of the art of the theories as well as their applications.

The scope of the conference included the following topics:

- Modeling different types of uncertainty (nonprobabilistic)
- Logic of uncertainty (fuzzy logic and rough logic)
- Rough sets and fuzzy sets in approximate reasoning
- Rough fuzzy hybridization and applications
- Analysis of complex systems and complex network
- Applications of fuzzy sets and rough sets in optimization and decision-making problems
- Image and speech signal processing, prediction, and control
- Robotics

- Expert systems
- Biology and medicine
- Business and management
- Noncomputational mathematics
- Complex system analysis
- Risk management
- Environment engineering
- Data mining
- Other applications

The program of the conference was organized mainly along four tracks:

- Uncertainty modeling
- Logic of uncertainty
- Hybridization of uncertainties
- Role of uncertainties in real problems

Each track contained a plenary session followed by three concurrent parallel sessions. Both the plenary and parallel sessions provided participants ample opportunity to exchange ideas on further research, research collaboration, and training.

The conference was highly interactive and intensive in nature and attracted budding researchers and young faculties working in related disciplines. The conference attracted more than 80 participants from India and abroad. The exchange among these participants has provided them with a comprehensive overview of the techniques and approaches being applied to uncertainty theory and applications.

The program committee for this conference consisted of:

- Didier Dubois, University Paul Sabatier, Toulouse
- Baoding Liu, Tsinghua University, China
- Andrzej Skowron, Warsaw University, Poland
- Roman Slowinski, Poznan University of Technology, Poland
- Dominik Slezak, University of Warsaw, Poland
- Piero Pagliani, Research group on Knowledge and Communication, Italy
- Davide Ciucci, Italy
- Manoranjan Maiti, Vidyasagar University, India
- Amit Konar, Jadavpur University, India
- Mohua Banerjee, IIT Kanpur, India

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