



IJCIS: Call for Papers Special Issue



“New Reasoning Models:

Improving Optimization and Decision Support with the Management of Uncertainty and Constraints”

Guest Editors:

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Aims and Scope

This special issue will focus on the topic of methods and practical applications that involve management of uncertainty or constraints in optimization and decision-support problems. In the frame of computational intelligence, fuzzy logic and probabilistic models are two well-known approaches that extend mathematical logics for the management of uncertainty. In this special issue, we would like to include also models deriving from logics for the management of satisfiability of complex constraints. The aim is to give a broader view of the advances in logic-based models and systems, together with its use in practical applications. The focus of the special issue is in the field of optimization problems, including also decision support systems, which deal with sets of constraints or vagueness.

This special issue will be presented to the attendants of the International Conference of the Catalan Association for Artificial Intelligence.

A tentative list of topics is the following one:

- Fuzzy decision support systems
- Argumentation reasoning for decision-making
- Optimization methods
- Constraint satisfaction problems
- Logics for modelling and problem-solving
- Computing with words for decision-making
- Qualitative Reasoning
- Applications of these methods in practical decision or optimization problems.

Relevance to this journal

Formal models and applications of reasoning techniques are of outmost importance in the field of Intelligent Systems.

Being IJCIS focused on fuzzy logic, neural networks evolutionary computation and probabilistic reasoning, we would like to focus this special issue to fuzzy logic and probabilistic reasoning,



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together with other logic-based models for reasoning and optimization. We leave aside the neural networks and evolutionary computation, since they are already being tackled in many other special issues and journals, due to their popularity in the present times. In our opinion, it is important to promote and to show the applicability of logic-based models in the context of decision support and optimization. We would like to focus on the management of uncertainty and the management of complex data in real problems.

We propose to invite the participants at the 23rd International Conference of the Catalan Association for Artificial Intelligence (CCIA2020) to extend their accepted papers or to prepare new ones (<http://ccia2020.udl.cat>). This conference usually gathers about 70 participants and around 40 papers, published in IOS Press proceedings. The conference has 18 topics, among them, this special issue deals with:

- Logic, Reasoning and Fuzzy Logic
- Planning, Optimization, Satisfiability and Constraints
- AI applications
- AI problem solving

This guarantees the possibility of receiving an appropriate number of submissions. We will also open the call to other researchers, especially through the EUSFLAT Association and Association for Constraint Programming (ACP).

In previous editions, special issues were made in other journals like Logic Journal of IGPL or Energies journal.

Main topics and quality control

This special issue is dedicated to a set of best papers in the topic proposed. For reviewing, we will select from the list of Program Committee members of the CCIA conference, those that are experts on that topic (avoiding any conflict of interest with the submissions). In addition, we will invite some experts from other countries to be reviewers as well, to guarantee the quality of the reviews. Papers will be subject to a strict review procedure for final selection to this special issue based on the following criteria:

1. Relevance to the topic of the special issue.
2. Quality and originality in the theory and methodology.
3. Application orientation that exhibits originality and shows the practical use of the methods in various domains like health, environment, business, engineering, etc.
4. Extended papers must contain at least 40% new material (qualitative) relative to the conference paper.

Important Dates

Submission of papers:	31 January 2021
Notification of review results:	10 April 2021
Submission of revised papers:	30 April 2021



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Notification of final review results:

31 May 2021

Submit your paper

All papers have to be submitted via the Editorial Manager online submission and peer review system. Instructions will be provided on screen and you will be stepwise guided through the process of uploading all the relevant article details and files associated with your submission. All manuscripts must be in the English language.

To access the online submission site for the journal, please visit

<https://www.editorialmanager.com/ij-cis/default.aspx>. Note that if this is the first time that you submit to the International Journal of Computational Intelligence Systems, you need to register as a user of the system first.

NOTE: Before submitting your paper, please make sure to review the journal's [Author Guidelines](#) first.

Introduction of the guest editor(s)

Dr. Aida Valls is Associate Professor at the Department of Computer Science and Mathematics in Universitat Rovira i Virgili (URV) in Tarragona (Catalonia), Spain. She received the PhD in Artificial Intelligence from the Polytechnical University of Catalonia in 2002. She is the head of the ITAKA research group and is expert in management of uncertainty (fuzzy logics and qualitative reasoning), decision support systems and data mining. Her work is mainly focused on the treatment of linguistic and semantic information. She has participated in several Spanish and EU research projects, with applications in Tourism, Environment Risk Management and Health Care. She is the author of more than 150 papers in international journals and conferences. She is a member of the associations ACIA since 1996, EUSFLAT since 1999, and the EWG-MCDA since 2000. She was vice-president of the Catalan Association for Artificial Intelligence in 2014–2018. She is currently the Head of the PhD Program in Computer Science and Mathematics of Security at URV and the Coordinator of International Mobility of Computer Science studies at URV.

Dr. Cèsar Fernández is a professor since 2019. He graduated as Telecommunications Engineer in 1987 at the Polytechnical University of Catalunya (Spain), worked as communications engineer in projects related to the European Space Agency at INISEL (Spain) and obtained the PhD in 2001 at the same university. In 2001 he was hired as a postdoctoral researcher at Cornell University (USA), working on constraint programming. Until 2017 he managed the Artificial Research Group at University of Lleida, focused on using machine learning techniques for planning and scheduling industrial operations to optimize energy usage; planning energy purchase decisions for companies;



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and intelligent control tools for thermal storage. As an associate professor at the University of Lleida, among other positions he was vice-director of the Polytechnical School (2000), vice-rector for infrastructures and information technologies (2003–2007) and director of the Computing Research Center (2009–2014). Since 2000, Dr. Fernández has published more than 40 scientific index papers with an H-index of 17 and contributed to more than 30 international conferences, 15 of them rated as A/A+ JCR/CORE. He has managed 4 national and 1 European funded research projects, involving research teams of Spanish universities and research centers and actively participated as a researcher in 10 national and international research projects. He is also a coauthor of the international granted patent EP12382186.

Dr. Mateu Villaret received his Ph.D. degree on Informatics from the Technical University of Catalonia in 2004. He was an assistant professor at University of Girona from 1999 to 2012 and then became associate professor. He cofounded the Logic and Programming research group of the University of Girona and is currently leading it. His main research topic is the use and development of logic-based methods for automated deduction and for combinatorial problem solving. These last years his works focus in planning and scheduling using SAT and SAT Modulo Theories. He has participated in 8 competitive research projects and has managed two of them. He has about 60 scientific publications most of them in JCR indexed journals and A/A+ ranked conferences.