Preface

The field of knowledge representation and reasoning (KR) has brought forth a great variety of sophisticated approaches to represent knowledge and beliefs of humans and agents, and to reason from such representations. While many KR formalisms are explicitly designed to model real-life scenarios including commonsense knowledge, the complexity of such situations often poses a severe challenge to reasoning effectively and efficiently in these formalisms.

A key to break up the complexity of information is to represent and reason in local contexts. Ideally, these local contexts should contain all information relevant to a specific aspect of the problem under consideration, abstracting from irrelevant details, such that the outcomes of local reasoning procedures after merging coincide with what would have been obtained theoretically in the global picture. Examples of such techniques appear in many subareas of KR. In nonmonotonic reasoning and belief revision, syntax splitting is used to reduce the reasoning space. In modular answer set programming, modules take the role of local contexts addressing specific subproblems. Graph structures can be utilized to compose the global picture from local contexts, like in probabilistic networks. Interestingly, humans perform quite well in their everyday lives by recognizing relevant information quickly and reason from local contexts successfully with their limited resources. Therefore, also cognitive aspects of knowledge representation and reasoning are relevant to the investigation of abstract, modularity and splitting techniques.

This volume constitutes the informal joint proceedings of the *Workshop on Theory and Methods for Abstraction* (THEMA 2026) and the *Workshop on Modularity and Splitting Techniques for Knowledge Representation and Reasoning* (MoST 2026).

The workshop on *Theory and Methods for Abstraction* (THEMA 2026) brought together researchers from knowledge representation (KR) and related communities that work on abstraction in their fields. Abstraction has been an ongoing topic in knowledge representation; see, e.g., the work of Giunchiglia and Walsh (1992). There is also interest in the topic across various other disciplines, such as psychology, planning, philosophy, neuro-symbolic reasoning, and explainable AI. At the workshop, diverse perspectives on abstraction were presented and discussed to actively build a community around the topic. Sheila McIlraith (University of Toronto, Canada) and Elena Romanenko (Free University of Bozen-Bolzano, Italy) gave very inspiring invited talks, for which we are very grateful. Blai Bonet (Pompeu Fabra University, Spain) would also have given an invited talk, but due to an earthquake in Venezuela, he was unable to attend. We wish him and his family all the best.

THEMA 2026 welcomed submissions of full papers (up to 13 pages), short papers (up to 6 pages) and extended abstracts (up to 2 pages). The deadline for submissions was on May 4, 2026; the notification deadline was May 28, 2026. Each submission was reviewed by two program committee members and acceptance decisions were based on the reviewers' assessments. We received in total seven submissions, with three full papers and four extended abstracts, all of which were accepted for presentation at the

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workshop. Out of the seven submissions, two appear as full papers and two appear as extended abstracts in this proceedings volume.

The aim of the workshop *Modularity and Splitting Techniques* (MoST 2026) was to bring together researchers from different (sub)fields in KR and related to KR to discuss modularity and splitting techniques for knowledge representation and reasoning. Addressing these issues from all aspects of KR, based on different methodologies using symbolic, qualitative, or quantitative approaches, and discussing modularity and splitting in a broad scientific context helps understand the underlying mechanisms better and foster collaborations across scientific domains.

MoST 2026 welcomed submissions of both full papers (up to 14 pages) and extended abstracts (up to 3 pages). The deadline for submissions was on May 3, 2026; the notification deadline was May 28, 2026. Each submission was reviewed by at least two program committee members, and acceptance decisions were based on the reviewers' assessments. We received five submissions of full papers and one extended abstract, all of which were accepted for presentation at the workshop. Out of the six submissions, four appear as full papers in this proceedings volume.

The THEMA 2026 workshop and the MoST 2026 workshop were, both, held in July 2026, in Lisbon, Portugal, as part of the *Federated Logic Conference FLoC 2026*, particularly associated with the 23rd International Conference on Principles of Knowledge Representation and Reasoning (KR 2026). The organizers of these workshops would like to thank the organizers of FLoC 2026 and KR 2026 for their excellent support.

We also thank the program committee members of THEMA and MoST for their help in selecting and improving the submitted papers, and all workshop participants for their contributions. We hope that new inspirations and collaborations between the contributing disciplines will emerge from these workshops.

July 2026

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Workshop on

Theory and Methods for Abstraction

co-located with KR 2026, Lisbon, Portugal; July 24th, 2026

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Workshop on

Modularity and Splitting Techniques for Knowledge Representation and Reasoning

co-located with KR 2026, Lisbon, Portugal; July 18th, 2026

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