

Preface to the Supplementary Volume of The Third International Joint Conference on Conceptual Knowledge Structures

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CONCEPTS continues a long tradition of research on conceptual structures, formal concept analysis, and conceptual learning. Emerging from the convergence of the International Conference on Conceptual Structures (ICCS), the International Conference on Formal Concept Analysis (ICFCA), and Concept Lattices and Their Applications (CLA), it brings together researchers interested in the representation, analysis, and use of concepts for knowledge discovery and reasoning.

The convergence of the three conference series also integrated the various publication traditions. While CLA proceedings were usually published in the CEUR Workshop Proceedings volume, with an invitation to submit extended versions to the Intl. Journal of Approximate Reasoning (IJAR), ICFCA and ICCS proceedings were published in the LNAI series of Springer, occasionally accompanied with supplementary proceedings in CEUR. This volume is of the latter form. It presents a collection of high-quality contributions that further illustrate the breadth and diversity of current research on conceptual structures. Together, the three volumes provide a comprehensive snapshot of a field that continues to evolve while remaining firmly anchored in its foundational questions. Across the contributions collected here, a common concern emerges: how to represent, structure, and explore knowledge in ways that remain formally rigorous and meaningful in practice. The volume reflects the vitality of research on conceptual structures. It reports on work concerning lattices, closure systems, implication bases, distributivity, and conceptual representations that sit alongside advances in concept mining, visualization, and interactive exploration. Together, these contributions reinforce the role of conceptual methods as tools for organizing and reasoning about complex information.

The range of applications represented is equally noteworthy. From cultural heritage and enterprise architecture to education, argumentation, social media, and human–robot interaction, the papers demonstrate the versatility of conceptual approaches across diverse domains. Several contributions also engage with contemporary challenges in artificial intelligence, including explainability, AI perception, and human–AI interaction.

The conference received 42 submissions in the Proceedings Track and 18 in the Journal track. All papers were reviewed by three reviewers, and the program chairs were responsible for the acceptance decisions. In the Journal track, ten papers were accepted for presentation and publication in the Intl. Journal on Approximate Reasoning. In the Proceedings track, 18 long and 7 short papers were accepted for presentation and publication in the Springer LNAI volume. In addition to these papers, the Program Committee identified eight high-quality contributions (one from the journal track and seven from the proceedings track) for presentation and publication in the Supplementary Proceedings. Following the withdrawal of two accepted papers after notification, this CEUR Workshop Proceedings

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volume brings together the remaining six contributions. These papers broaden the scientific scope of the conference, reflecting the diversity of ongoing research in conceptual structures and providing additional perspectives on both theoretical developments and practical applications.

The included papers cover theoretical results—such as lattice and conceptual representations or closure systems—and practical innovations in concept mining, visualization, and data analysis.

Taken together, the papers in this volume illustrate a community that continues to bridge theory and application, formal reasoning and human understanding. We hope they will stimulate further advances and foster new connections across the broad landscape of conceptual structures research. We thank all authors, reviewers, Program Committee members, and organizers whose efforts made this volume possible.

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