Relational and Algebraic Methods in Computer Science: Special Issue 2024

The present issue of the journal Fundamenta Informaticae features twelve articles, following an open call for a thematic issue on Relational and Algebraic Methods in Computer Science.

The open call was launched shortly after the RAMiCS 2023 conference, held in Augsburg, Germany, from April 3 to April 6, 2023. It invited contributions on the broad topic of relational and algebraic methods in computer science, welcoming both substantially extended versions of papers presented at RAMiCS 2023 as well as new work from the broader scientific community.

In total, sixteen submissions were received from America, Europe and Asia. Of these, two were rejected after peer review and two were withdrawn by the authors. Among the accepted papers, six are extended versions of contributions that appeared in the proceedings of RAMiCS 2023 (LNCS 13896).

Beginning in 1994 as a Dagstuhl workshop under the acronym RelMiCS (Relational Methods in Computer Science), the series merged in 2011 with the workshop AKA (Applications of Kleene Algebra) into today's conference. Since then, it is the main venue for research on relational and algebraic methods in computer science, emphasizing their role as a bridge between foundational theory and practical application. Rooted in the tradition of relation algebra, the conference's scope has grown to encompass a wide range of topics, including concrete applications in areas such as program verification, database theory, formal specification, algebraic aspects of logic, language and automata theory, and much more.

This thematic issue continues that tradition, presenting a collection of papers that reflect both the richness and diversity of the field.

The selected articles span a broad spectrum of current research in relational and algebraic methods. They include:

- work on theoretical aspects of various algebraic structures;
- relational algebra, both as a tool and as the object of research itself;
- algebraic approaches to logic and language theory;

- and category theory in real-world applications.

Each submission underwent a rigorous peer-review process, in accordance with the standards of Fundamenta Informaticae, ensuring the highest quality of presentation and originality.

We are confident that this collection not only offers a faithful snapshot of current research directions in the RAMiCS community but also provides valuable contributions to the broader theoretical computer science landscape. We hope that readers will find the issue both stimulating and inspiring.

This volume was edited by guest editors Luigi Santocanale (Aix-Marseille University, France) and Roland Glück (Center for Lightweight Production Technology of the German Aerospace Center, Germany), together with the editor-in-chief of the journal, Bartek Klin (University of Oxford, UK).

The editors would like to thank all authors and reviewers for their valuable contributions and collaboration.

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