



Preface

This volume constitutes the proceedings of the *Doctoral Consortium of the 22nd International Conference on Principles of Knowledge Representation and Reasoning*. The doctoral consortium took place as part of the 22nd International Conference on Principles of Knowledge Representation and Reasoning (KR 2025) in Melbourne, Australia, in the time of November 11-17, 2025.

The Doctoral Consortium (DC) is a student mentoring program designed to bring together PhD students and senior researchers from the area of KR. The primary aims of the consortium are:

- to provide a forum for students to present their current research, and receive feedback from other students and senior researchers;
- to promote contacts among PhD students working in similar areas;
- to support students with information and advice on academic, research, and industrial careers.

The DC is primarily intended for PhD students who have a concrete research proposal and preliminary results but still have sufficient time before completing their dissertations to benefit from the feedback and mentoring provided by the consortium.

This year's Doctoral Consortium featured eleven selected PhD students presenting research proposals spanning a wide range of KR topics, including ontologies, non-monotonic reasoning, argumentation, symbolic–neural integration, planning, belief change, and formal verification. Each student was paired with a senior researcher acting as a *mentor*, providing individual feedback and engaging in discussions during and after the session. Notably, students whose submissions were not formally included in the proceedings were also able to participate in the consortium and receive valuable feedback from mentors.

All submissions in this volume were reviewed and given feedback by senior members of the KR community, who provided valuable comments to improve both the written papers and the presentations. The papers included in this volume are:

1. *Towards Weak Assumption-Based Argumentation* — Lydia Blümel
2. *Equivalence and Splitting Techniques for Ranking Functions in Knowledge Representation and Belief Change* — Alexander Hahn
3. *Automatically Verifying and Repairing General Game Descriptions* — Yifan He
4. *A Rule-Based Approach to Specifying Preferences over Conflicting Facts and Querying Inconsistent Knowledge Bases (Extended Abstract)* — Robin Jean
5. *Practical Planning with Ontologies* — Duy Nhu

6. *Integrating Ontology and Graph Neural Network for Explainable Malware Detection* — Monday Onoja
7. *Assessing the Quality of Samplers: A Statistical Distance Framework* — Uddalok Sarkar
8. *Efficient Volume Computation for SMT Formulas* — Arijit Shaw
9. *Splitting Techniques for Conditional Belief Bases for Nonmonotonic Reasoning* — Lars-Phillip Spiegel
10. *Towards Transparent Recommender Systems via Argumentation Frameworks* — Elena Stefancova

We sincerely thank all mentors and reviewers for their thoughtful feedback and dedication to supporting the next generation of KR researchers. We also thank the KR 2025 organizers, and the Local Arrangement Chairs for their help in making the Doctoral Consortium possible.

KR 2025 Doctoral Consortium Chairs

Shqiponja Ahmetaj
Kai Sauerwald

KR 2025 General Chair

Magdalena Ortiz

KR 2025 Local Arrangement Chairs

Son Tran
Richard Dazeley
Xiao Liu
Patanamon Thongtanunam

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