

## Preface

**Aims and scope of the workshop.** Information for real life AI applications is usually pervaded by uncertainty and subject to change, and thus demands for non-classical reasoning approaches. At the same time, psychological findings indicate that human reasoning cannot be completely described by classical logical systems. Knowledge representation offers a rich palette of methods for uncertain reasoning both to describe human reasoning and to model AI approaches. Its many facets like qualitative vs. quantitative reasoning, defeasible and analogical reasoning, causal reasoning for action and planning, as well as nonmonotonicity and belief revision, including techniques from machine learning, among many others, have become very active fields of research. Beyond computational aspects, these methods aim to reflect the rich variety of human reasoning in uncertain and dynamic environments.

The aim of this series of workshops is to address recent challenges and to present novel approaches to uncertain reasoning and belief change in their broad senses, and in particular provide a forum for research work linking different paradigms of formal and cognitive reasoning. Previous events of the *Workshop on Dynamics of Knowledge and Belief* (DKB) took place in Osnabrück (2007), Paderborn (2009), Berlin (2011), and Koblenz (2013), previous editions of the *Workshop on KI & Kognition* (KIK) took place in Saarbrücken (2012), Koblenz (2013), and Stuttgart (2014), and a joint workshop took place in Dresden (2015).

**Syllogistic challenge.** At this year's KI conference in Dortmund we organized a challenge on cognitive computational modeling of human syllogistic reasoning. The ultimate goal of cognitive modeling is to explain underlying cognitive processes while approximating the answer distributions generated by humans. The competition is inspired by the observation that so far any existing psychological theory is deviating significantly from the data.

**Focus of the workshop.** This year, again we put a special focus on papers that provide a base for connecting formal-logical models of knowledge representation and cognitive models of reasoning, addressing formal as well as experimental or heuristic issues. Reflecting this focus, the workshop *Formal and Cognitive Reasoning* at KI 2017 was organized jointly by the GI special interest groups *FG Wissensrepräsentation und Schließen* and *FG Kognition*.

This volume contains the papers presented at the DKB/KIK 2017 workshop on formal and cognitive reasoning held on 26-Sep-2017 in Dortmund. There were ten submissions to the workshop. Each submission was reviewed by two program committee members. The committee decided to accept seven papers, two of them as short papers. In consequence, the workshop hosted contributions from diverse fields such as belief change, analysing approaches for knowledge representation and reasoning using computer games, unsupervised text annotation, high-dimensional regression methods, symbolic models of cognition, and syllogistic reasoning.

**Acknowledgments.** The organizers of this workshop would like to thank the organizers of the KI 2017 conference in Dortmund for their excellent support. We also would like to thank the members of the program committee for their help in selecting and improving the submitted papers, and finally all participants of the workshop for their contributions. Our wish is that new inspirations and collaborations between the contributing disciplines will emerge from this workshop.

Christoph Beierle, Gabriele Kern-Isberner, Marco Ragni, Frieder Stolzenburg

## Workshop Organizers and Co-Chairs

Christoph Beierle	FernUniversität in Hagen, Germany
Gabriele Kern-Isberner	TU Dortmund, Germany
Marco Ragni	Universität Freiburg, Germany
Frieder Stolzenburg	Hochschule Harz, Germany

## Program Committee

Thomas Barkowsky	Universität Bremen, Germany
Christoph Beierle	FernUniversität in Hagen, Germany
Gerhard Brewka	Universität Leipzig, Germany
Emmanuelle-Anna Dietz	TU Dresden, Germany
Christian Freksa	Universität Bremen, Germany
Ulrich Furbach	Universität Koblenz-Landau, Germany
Andreas Herzig	IRIT – CNRS, France
Steffen Hölldobler	TU Dresden, Germany
Manfred Kerber	University of Birmingham, UK
Gabriele Kern-Isberner	TU Dortmund, Germany
Gerhard Lakemeyer	RWTH Aachen, Germany
Bernhard Nebel	Universität Freiburg, Germany
Henri Prade	IRIT – CNRS, France
Marco Ragni	Universität Freiburg, Germany
Hans Rott	Universität Regensburg, Germany
Ute Schmid	Universität Bamberg, Germany
Claudia Schon	Universität Koblenz-Landau
Frieder Stolzenburg	Hochschule Harz
Matthias Thimm	Universität Koblenz-Landau, Germany
Paul Thorn	Universität Düsseldorf, Germany
Hans Tompits	TU Wien, Austria
Christoph Wernhard	TU Dresden, Germany