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 joint workshops took place in Dresden (2015) and Dortmund (2017).

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 2018 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 2018 workshop on formal and cognitive reasoning held on 25-Sep-2018 in Berlin. There were seven submissions to the workshop. Each submission was reviewed by two program committee members. The committee decided to accept five papers. In consequence, the workshop hosted contributions from diverse fields such as ontology-based query answering, belief change, probabilistic reasoning, intelligent agents, and non-monotonic reasoning. The program was enriched this year by two interesting keynote talks: Tom Gordon presented a computational model of argument based on argumentation

schemes that overcomes simplifying assumptions in many of the state-of-the-art approaches to computational argumentation and is able to address general problem solving. Ute Schmid provided a brief history of machine learning research followed by a presentation of specific approaches of symbolic machine learning towards explainable AI.

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