# Foreword

This monograph is a revised version of Karsten Konrad's doctoral dissertation. It focuses on a topic of rapidly increasing importance in computer science: the development of inference tools tailored to applications in Natural Language Processing. Technology in mathematical theorem proving has undergone an impressive development during the last two decades, resulting in a variety of attractive systems for applications in mathematical deduction and knowledge processing. Natural Language Processing has become a theme of outstanding relevance in information technology, mainly due to the explosive growth of the World-Wide Web, where by far the largest part of the information is encoded in natural language documents. The book appears at a pivotal moment, when much attention is being paid to the task of adding a semantic layer to the Web, and representation and processing of NL-based semantic information pops up as the primary requirement for further technological progress.

Konrad's book argues for the Model generation paradigm as a framework, which supports specific tasks of natural language interpretation and NL-based inference in a natural way. It presents extensions in several respects: restricted techniques of model generation for higher-order logics, which are useful for the construction of semantic representations, as well as refined methods for minimal model generation. The latter support the use of world knowledge in natural language inference and realize a concept of preferential reasoning. The proposed method is similar in its results to NL applications of weighted abduction, but it obtains these results in a more systematic and transparent way.

Konrad applies his variant of model generation to selected topics in NL semantics: the well-known problem of reference resolution for anaphoric definite noun phrases, and the selection of readings for reciprocal pronouns. His method provides natural and general solutions for a variety of phenomena, which hitherto had to be treated by enumeration of variants. The inference problems are delegated to the KIMBA model generator, an innovative implementation of the inference method in the constraint programming framework.

Certainly the book does not offer final solutions, but it opens a perspective on a fascinating and highly relevant field of future research, and it offers tools to start out with. The book is nicely written, it provides motivation and background to readers who are unfamiliar with part of this interdisciplinary research area. I strongly recommend it to readers both from the NLP and the deduction communities.

Manfred Pinkal