Lecture Notes in Artificial Intelligence

Subseries of Lecture Notes in Computer Science
Edited by J. Siekmann

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Lecture Notes in Computer Science

Edited by G. Goos and J. Hartmanis

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Editorial

Artificial Intelligence has become a major discipline under the roof of Computer Science. This is also reflected by a growing number of titles devoted to this fast developing field to be published in our Lecture Notes in Computer Science. To make these volumes immediately visible we have decided to distinguish them by a special cover as Lecture Notes in Artificial Intelligence, constituting a subseries of the Lecture Notes in Computer Science. This subseries is edited by an Editorial Board of experts from all areas of AI, chaired by Jörg Siekmann, who are looking forward to consider further AI monographs and proceedings of high scientific quality for publication.

We hope that the constitution of this subseries will be well accepted by the audience of the Lecture Notes in Computer Science, and we feel confident that the subseries will be recognized as an outstanding opportunity for publication by authors and editors of the AI community.

Editors and publisher

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A Methodology for Uncertainty in Knowledge-Based Systems

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FOREWORD

The number of publications on the management of uncertainty in expert systems has grown considerably over the last few years. Yet the discussion is far from drawing to a close. Again and again new suggestions have been made for the characterization and combination of uncertain information in expert systems. None of these proposals has been adopted generally.

Most of the methods recommended introduce new concepts which are not founded on classical probability theory. This book, however, written by statisticians, investigates the possibility of giving a systematic treatment using the classical theory. It also takes into account that in many expert systems the available information is too weak to produce reliable point estimates for probability values. Therefore the handling of interval-valued probabilities is one of the main goals of this book.

We have not dealt with all important aspects of these issues in our study. We intend to continue our research on the subject with the aim of solving those problems which still remain unsolved. Also we are aware of the fact that the experience of other researchers may throw new light on some of our statements. Therefore we are grateful for any criticism and for all suggestions concerning possible improvements to our treatment.

We had the opportunity to discuss some parts of our study with Thomas Kämpke, Ulm, and owe valuable suggestions to him.

Since our native tongue is German and we live in a German speaking environment, we had some difficulties as regards the English style. Louise Wallace, Plymouth, has supported us very much in this respect, although she bears no responsibility for remaining imperfections.

Anneliese Hüser and Angelika Lechner, both from Munich, carefully managed the editing of a manuscript which progressed step by step to its final version. Dieter Schremmer, Munich, supported us by drawing the diagrams.

Their help is greatly appreciated.

Munich, January 1990 — Kurt Weichselberger, Sigrid Pöhlmann

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Concepts which can be found in related theories are not included.

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