Preface

For many years, Artificial Intelligence technology has served in a great variety of successful applications. AI research and researchers have contributed much to the vision of the so-called Information Society. As early as the 1980s, some of us imagined distributed knowledge bases containing the explicable knowledge of a company or any other organization. Today, such systems are becoming reality. In the process, other technologies have had to be developed and AI-technology has blended with them, and companies are now sensitive to this topic.

The Internet and WWW have provided the global infrastructure, while at the same time companies have become global in nearly every aspect of enterprise. This process has just started, a little experience has been gained, and therefore it is tempting to reflect and try to forecast, what the next steps may be. This has given us one of the two main topics of the 23rd Annual German Conference on Artificial Intelligence (KI-99) held at the University of Bonn: The Knowledge Society. Two of our invited speakers, Helmut Willke, Bielefeld, and Hans-Peter Kriegel, Munich, dwell on different aspects with different perspectives. Helmut Willke deals with the concept of virtual organizations, while Hans-Peter Kriegel applies data mining concepts to pattern recognition tasks. The three application forums are also part of the Knowledge Society topic: "IT-based innovation for environment and development", "Knowledge management in enterprises", and "Knowledge management in village and city planning of the information society".

But what is going on in AI as a science? Good progress has been made in many established subfields such as Knowledge Representation, Learning, Logic, etc. The KI-99 technical program includes 15 full and 6 short papers out of 32 received; together with the workshop program and poster sessions, we feel the conference reflects the steady growth of the field and represents the forefront of AI research. It was a pleasure to work with the program committee, and especially to choose one of the accepted papers for the Best Paper Award donated by Springer-Verlag. This year, the prize goes to Bernhard Nebel, Freiburg, for his paper "Compilation Schemes: A Theoretical Tool for Assessing the Expressive Power of Planning Formalisms", which will also be published in the special issue of the "KI" journal for this conference.

But within the steady flow of research, new trends emerge from time to time, and an important one, which we as organizers felt should get special attention at KI-99, is the rediscovery of robotics or, more precisely, of robots for AI. We put this interest under the second main topic of the conference: Cognitive Robotics. Three invited speakers present their perspectives: Sebastian Thrun, Pittsburgh, on learning and probabilistic reasoning; Rolf Pfeifer, Zurich, on a general methodology for behavior-oriented AI; Hans-Hellmut Nagel, Karlsruhe, on image processing.

Another flavor of the KI-99 conference is the sharing of a part of the program with the pattern recognition conference DAGM-99 in the form of a joint

invited talk by Takashi Matsuyama on cooperative distributed vision, as well as a common technical session, and a joint technical exhibition.

As applications and scientific questions evolve, so does this conference. We have introduced a new section into the program and into these proceedings, in which short papers are presented that deserve a technical presentation. This provides faster access to ideas and concepts than with the accepted long papers. Another reinvention is that of student posters, which give students the opportunity to present and discuss their work with the scientific community.

The annual AI conference in Germany now has a long tradition, evolving together with the maturing field of AI, reflecting every year a snapshot of the quality of research and development. Over the years, the KI conference has turned out to be one of the largest national Computer Science conferences in Germany. Yet, the trend to specialization and therefore to fragmentation and internationalization of AI raises the question: Do we need a regional event like this, adding another item to the market of proceedings? We as organizers have answered this question with a yes!, together with all who have contributed in one way or another to make this conference and this new volume of LNCS a success.

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July 1999   *Wolfram Burgard*
                                                 Thomas Christaller
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23rd Annual German Conference on Artificial Intelligence (KI-99)

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