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PREFACE

This volume contains all the papers presented at the Fourth International Workshop on Analogical and Inductive Inference (AII'94) and the Fifth International Workshop on Algorithmic Learning Theory (ALT'94) which were held October 10-11, 1994, and October 13-15, 1994, respectively, at Reinhardsbrunn Castle, Germany. This twin conference was motivated by our efforts to concentrate research work in the area called algorithmic or computational learning theory, and by the intention to extend and intensify the communication within the relevant scientific community. The series of workshops on Analogical and Inductive Inference, which was established in 1986 (cf. Lecture Notes in Computer Science 265), is the first international conference series in learning theory. Subsequently, the series COLT (founded 1988 in the USA), ALT (1990, Japan), and EURO-COLT (1993, Europe) entered the ring. Nowadays, it seems more important to integrate than to diversify the conference business. The coordinated organization of AII'94 and ALT'94 is intended to be one step in this direction. AII and ALT will be amalgamated and held jointly in the future under the single title of Algorithmic Learning Theory. The present volume of common proceedings is understood as a prelude to this amalgamation.

This volume contains the papers presented at AII'94 followed by those of ALT'94.

For AII'94, there were four invited papers by distinguished scientists: "Towards Efficient Inductive Synthesis from Input/Output Examples" by Janis Barzdins, Riga, "Deductive Plan Generation" by Wolfgang Bibel, Darmstadt, "From Specifications to Programs" by Nachum Dershowitz, Urbana-Champaign, IL, and "Average Case Analysis of Pattern Language Learning Algorithms" by Thomas Zeugmann, Fukuoka. For ALT'94 there were three such invited papers: "Towards Realistic Theories of Learning" by Naoki Abe, Tokyo, "A Unified Approach to Inductive Logic and Case-Based Reasoning" by Michael M. Richter, Kaiserslautern, and "Three Decades of Team Learning" by Carl H. Smith, College Park, MD.

There were 24 papers submitted to AII'94 and 51 to ALT'94. Of these 14 were selected for AII'94, 12 from the AII'94 submissions and two from the ALT'94 submissions. 24 papers were selected for ALT'94 from the 51 submitted. The moving of the two papers from ALT'94 submissions to AII'94 presentations was nicely facilitated by cooperation and discussion between the respective program committees. In the proceedings, the submitted papers selected for each subconference follow the invited papers for that subconference.

Among the large number of interesting papers, it seems remarkable to us that one distinguished author has been successful in getting five accepted papers into this volume: Steffen Lange, Leipzig, Germany, did exceptional research work together with several co-authors in formal language learning. Four of his papers were selected for ALT'94 and one for AII'94.

On behalf of the Steering Committee for the ALT series, the Program Committee for AII'94, and the Program Committee for ALT'94, we express our sincere gratitude to all those who made this twin conference on Algorithmic Learning Theory possible. The referees for both workshops provided a significant basis for the program committees' decisions. Erwin Keusch, as the Local Arrangements Chairman, Ingo Müller, and further members of the Algorithmic Learning Theory Group at HTWK Leipzig did an important job behind the scenes. Last but not least, Springer-Verlag provided excellent support in preparing this volume.

The workshops were supported by the German Computer Science Society (GI) and ALT'94 was held in cooperation with the Japanese Society for Artificial Intelligence (JSAI). Substantial support for AII'94 has been provided by the Volkswagen Foundation.

October 1994

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