

# Lecture Notes in Computer Science

Edited by G. Goos and J. Hartmanis

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K. P. Jantke (Ed.)

## Analogical and Inductive Inference

International Workshop AI '86  
Wendisch-Rietz, GDR, October 6–10, 1986  
Proceedings

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## FOREWORD

The present volume contains written versions of articles presented at the International Workshop on Analogical and Inductive Inference (AII'86) held in Wendisch-Rietz, GDR, October 6 - 10, 1986.

The discussion during the workshop centered around two basic approaches to learning algorithms, namely inductive inference and analogical reasoning. Both fields represent exciting problems and promising concepts of invoking deeper mathematical results for considerable advances in intelligent software systems. Hence analogical and inductive inference may be understood as a firm mathematical basis of a large variety of problems in artificial intelligence.

Whereas inductive inference is a well-developed mathematical theory with a history of more than 20 years and lots of publications including some excellent survey papers, analogical reasoning, although its basic ideas have excited several scientists in the past, is still in the stage of cruising for its appropriate concepts. This situation is obviously reflected by the present volume. On the one hand, concerning inductive inference the organizers were able to invite a quite general and basic key note paper by Bob Daley. Additionally, some of the inductive inference papers contain particular technical results and reflect the state of the art very well. On the other hand, a careful inspection of the papers devoted to analogical reasoning exhibits the ongoing process of forming the basic concepts of the field. I hope that the workshop could really contribute to this development.

#### IV

Besides the presentation of papers the workshop included a round table discussion on the further development of analogical and inductive inference particularly asking for future applications. It is completely impossible to reflect this charged and controversial discussion in the present volume. Among the central ideas discussed there is Jan Grabowski's proposal to investigate so-called sensible inductive inference algorithms, i.e. algorithms which heavily depend on the way of presenting information. It is well-known from inductive inference research that there are some basic methods which work very well in a lot of cases, but which also fail or work considerably inefficient under certain circumstances. The investigation of sensibility could help to make these effects more explicit. E.g., it seems that the ideas presented by Steffen Lange in the present volume are leading to highly sensible inductive inference algorithms.

I gratefully acknowledge the help given by a lot of colleagues, esp. Bob Daley, Jan Grabowski, Carl Smith and Rolf Wiehagen, by their evaluating discussions, their hints and proposals for selecting and preparing the papers for the volume presented. I am particularly indebted to Hans-Rainer Beick, Steffen Lange, and Frank Brudnachowski for their careful work which made the successful workshop possible.

Klaus P. Jantke, Berlin

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