Chapters 5, 6 and 7 are the three applications chapters that deal with engineering design manufacture and testing, planning and project management and industrial computer vision. The chapters discuss the issues important and relevant to industry, and conclude that advances in both hardware and software will push AI techniques into the forefront of industrial applications arena.

Chapter 8 highlights the important aspect of uncertainty, temporal and spatial reasoning, and their current development. The chapter argues that the utility of the various approaches development for AI reasoning should be examined in the context of knowledge engineering and of end use, and that there is a need to identify the suitability of the formalism in user terms by analysing the efficiency of the interaction, minimizing the ambiguity and making the computed solution accurate to that required by the application.

Chapter 9 examines the use of discrete mathematics such as set theory, logic, etc., in describing physical laws and logistic constraints of the real-world problems under consideration in engineering AI applications. The theory helps in constructing abstract data structures, the relations aid the study of problem structure, and predicate calculus, for example, is used to generate rules which embody knowledge about the problem. The chapter helps to develop an understanding of the range of problems faced by the AI system builder and the underlying mathematical concepts at the heart of many AI systems such fuzzy logic.

Chapter 10 presents an overview of the current and new computer architectures for executing AI applications. It illustrates the factors that have influenced current designs and those that are likely to influence future systems. In the first part of the chapter, sequential implementations written in languages such as Lisp are described, and a survey of available sequential Lisp platforms is given, with the effect of VLSI and RISC processor architectures on future systems highlighted. The second part considers parallel implementations, and examines several parallel processing systems. The chapter concludes by introducing a different computational paradigm, called *connectionism* or *neural networks*, and its possible impact on AI processing in the future.

To all researchers interested in the application of AI techniques in engineering, I would say you must read this book. It not only provides the engineer with sufficient information to appreciate the potential of real-life engineering applications, but it also gives a good understanding of AI in general, and knowledge based systems in particular. I only wish there was an additional chapter on neural networks to make the AI tour complete.

On object-orieted database systems by K. R. Dittrich, U. Dayal and A. P. Buchmann (Eds.), Springer-Verlag, Berlin, 1991, pp. 422 (hardcover), DM98, ISBN 0-387 53496-2.

As explained in the preface, this book contains papers that were presented at the First International Workshop on Object-Oriented Database Systems held in Asilomar, California, and subsequently revised. Unfortunately, the preface does not provide the date for this workshop, information that would be helpful to the reader. It appears from the papers that it was probably held in 1986. The papers, with the clear exception of the Introduction, were probably written in the 1985–1987 period.

The subject matter is extremely important. Object-oriented databases have been developed as research prototypes and commercial products. They are more appropriate than relational databases in certain applications. Along with deductive databases, object-oriented databases are a prime candidate for third-generation database systems.

The 23 papers in the book are divided into eight parts. Part I (Introduction) contains one paper; 'Object-Oriented Database Systems: The Notion and the Issues' by K. R. Dittrich. It is an up-to-date (1990–1991) introduction to the basic concepts and issues concerning object-oriented databases. Part II (Data Model Concepts) contains five papers. The topics are PROBE, the connections between views and objects, inheritance issues, procedures in Postgres, and constraint handling. Part III (Language Issues) contains three papers on the languages GALILEO, Trellis and Godal. Part IV (Interfaces) contains two papers on the interfaces PROTEUS and ERIC. Part

V (Application Support) contains three papers. They deal with shared object hierarchies, support for a mechanical CAD system, and methodology for designing information systems. Part VI (Architecture) contains five papers. The topics include the EXODUS system, storage systems for object-oriented databases, ObServer, the Data Model Compiler, and various design issues. Part VII (Implementation Aspects) contains three papers dealing with GemStone, Cactis, and the Darmstadt Database Kernel System. Part VIII (Conclusions) contains a summary by U. Dayal. It is a discussion of important research issues for the extended DBMS and persistent programming language approaches to object-oriented databases.

This book provides a good look at the state-of-the-art in object-oriented databases around 1986. Many of the pioneers of object-oriented databases have papers in this volume. The ideas expressed in the papers continue to be important. However, the reader will have to look elsewhere for the present state-of-the-art in object-oriented databases.