

This is a well organized book, and refers to a field of increasing importance. This is brought home in the Preface where the Editor starts by saying: "Expert systems and knowledge-based systems (KBS) now form a market worth annually billions of dollars, yen and ECUs (European Currency Units)." This is certainly a fast developing and already vast field of information science, or perhaps "information technology" is a better name for this aspect of it. It is daunting to think what sort of books will be appearing on the subject in the next decade.

Computers and thought, by M Sharples, David Hogg, C Hutchinson, S Torrance and David Young, MIT Press, Cambridge, MA, pp 401 £22.50 (cloth), £13.95 (paperback).

Reviewed by: Professor FH George, Bureau of Information Science, Seer Green, Bucks, UK.

This book has the subtitle "A Practical Introduction to Artificial Intelligence", and the stated aim of the book is "... to introduce people with little or no computing background to artificial intelligence (AI) and cognitive science".

The book itself arose from a 10-week course for first year arts undergraduates at Sussex University which was given the same title as this book. Not surprisingly, the book starts by asking what AI is. The answer is couched in broad terms, and interestingly neither here nor anywhere in the book is the word 'cybernetics' mentioned, although the roots of AI are closely related to cybernetics. AI is seen as having roots in psychology, philosophy and computer science, and having associations with linguistics, mathematics and logic: all of this can be readily agreed. Chapter 1 then picks up the cybernetic issue of "the mind as a machine", and states the assumption that "the human mind acts like a computer". This would seem to be an unhappy way of putting the matter. It would be better to assume that the computer (some "machine") can be made to behave like a human mind. Nonetheless, Chapter 1 gets the reader off to a reasonable start.

The book represents an elementary approach to the subject which is quite appropriate to its use, and the general impression is a good one. Chapter 2 is entitled "Performance without knowledge". Chapter 3 is "Stored Knowledge", Chapter 4 is "Search", and Chapter 5 is on "Natural Language", and this involves a syntactical analysis, as well as an introduction to semantics and pragmatics. Chapter 6 is entitled "Reasoning", and is concerned with logic and semantic networks, and this chapter has an appendix which deals with POP-II and relates inference making with a semantic net. The next chapters follow up the same approach and discuss "Rule-Based Knowledge" (Chapter 7), "Models of Cognition" (Chapter 8), "Computer Vision" (Chapter 9), and then, in the last two chapters, "AI and the Philosophy of Mind" and "Artificial Intelligence"—What Next?".

The book finishes with two appendices and a glossary, the first a POP-II reference guide and the second an automated tourist guide. This provides a listing in POP-II of the answers to a characteristic problem from everyday life, and is well produced. Finally, the glossary of no less than 205 terms which are central to AI is extremely useful. There are times when one wonders whether this introduction to the subject is not a shade too simplistic, but it is not easy for an outsider to decide exactly how the students for which the course was designed were able to digest it; the proof of the pie is in the eating, and we do not know how it "went down". Altogether a well-produced and interesting book that almost certainly meets a particular need.

Perspectives in artificial intelligence—Volume 2: Machine translation by JA Campbell and J Cuenca, Ellis Horwood, Chichester, 1989 pp 211, £34.95.

Reviewed by: Professor FH George, Bureau of Information Science, Seer Green, Bucks, UK.

This is the second volume of articles that, with Volume 1, make up the set of papers given at the Conference of Artificial Intelligence (AI) at the Second World Basque Congress in September 1987. The two volumes deal, as the Basque Congress required that they dealt, with viewpoints on basic issues and current research matters.

This volume divides into four parts. The first part is called "Machine Translation", part two is on "Natural Language Programming", part three is "Databases", and finally part four is on

“Computer-aided instruction”. The very first paper by J. Slocum deals with machine translation, and is very practically oriented. The second deals with EUROTRA, which is a machine translation procedure between the nine languages of the European Community, and finally the third article of part one is “Current projects at GETA on or about machine translation”, presented by Ch Boitet from the University of Grenoble. Some examples of the translations achieved are provided.

Part two starts with a paper on the Basque language. This is followed by a paper dealing with the integration of a temporal framework with the NL knowledge-acquisition system. Then we come to GUAI which is a natural language interface generator, and finally, in part two we have “A practical natural language interface to databases”, describing a Japanese language interface system. The system was implemented in an object-oriented language called MINERVA, and has actually been used for supermarket, library and real-estate information, and seems to show considerable promise.

Part three is simply “Databases”, with four papers, and it involves the integration of AI with database systems, and especially with expert systems. One of the most interesting papers is by Yasdi and Ziarko from the University of Regina in Canada. It has a good summary of its main features:

- “1 The conceptual schema and its associated rules are represented in predicate logic which can be adapted to any other application.
- 2 The conceptual schema is based on the semantic model, which is close to natural language.
- 3 Database design procedure starts with a naive description of an application and proceeds in the form of a dialogue between the system and the user.
- 4 We adapt a learning mechanism by which the design knowledge can be acquired from example; either rules can be generated from examples or new design rules can be added explicitly to the existing ones.”

Finally, we have “Computer-aided Instruction” with just two papers. The first is on CAPRA which is made up of modules: a tutor, an expert system to build programmes, an interface for natural language dialogue, and a student model. This work, primarily on problem solving, makes good and clear reading. The last paper deals with the differences between expert systems and “intelligent tutoring systems”.

The book as a whole is well-presented and well produced. The subject matter is not quite as widespread as the title of the book suggests, but is in fact rather specialized in its subject matter. All but two of the contributions are European based; of the other two, one is from Canada and one from the USA. A book well placed in the Ellis Horwood series in AI, where one of the authors is also an editor of the series. Taken together, Parts one and two of this subject matter make for a more general approach, but it is still very much concerned with applications, which casts some doubt on the appropriateness of the title. Even so, both volumes are an essential part of any AI professional’s library.

Computing by Peter Saleniaks (Ed.), Ellis Horwood, Chichester, 1988, pp 230, £24.95.

Reviewed by: Professor FH George, Bureau of Information Science, Seer Green, Bucks, UK.

This book is made up of articles presented at the annual conference of the Young Professionals Group (YPG) of the British Computer Society. It was held in Reading at the university in March 1988. There are 12 articles and they divide up into three groups. Part one is entitled “Technology” and contains five papers; Part two is called “Applications” and contains four papers; and finally Part three contains three papers.

The opening part on technology underlines the fact that computer technology has developed at an enormous rate, resulting in ever faster and larger computers. But in spite of this, Iann Barron believes that computer architecture will not be adequate to meet the huge accumulating demands from fields like signal processing and artificial intelligence.

The fifth generation of computers is Brian Oakley’s topic. He makes the point that the so-called Moore’s law has been used for predicting future computer performance. This law states that the complexity on a chip doubles every year and the question is put as to whether this rate of growth of