CAUGHT IN THE NET

Networks & Distributed Computation: Concepts, Tools and Algorithms
M Raynal
North Oxford Academic Publishers, London; 1987; 166 pages; £25.00

This book, according to the publishers, is written to be used as a textbook for undergraduates. It is said that it will be of interest to professional scientists.

The design and analysis of computer systems involving large scale concurrency (simultaneous occurrence of events) poses a set of problems. Problems which generally do not need to be addressed in the design of sequential (following in succession) systems. In particular, interprocess communication and synchronisation are central issues in the design of distributed systems and take on a different character to their components in centralised systems. The author sets out to deal with these issues in detail and to develop a coherent framework within which to present and analyse a wide variety of algorithms (a procedure or set of rules for solving a problem, especially by computer) to distributed systems.

The field and scope of distributed systems is increasing rapidly. This particular increase in the application of computer science in ever more diverse areas is in essence the results of developments in both theoretical and practical aspects of the discipline. Comparing a traditional system (generally called centralised operating systems) with a distributed system reveals a clear difference. In a distributed system the entities that form it co-operate in the achievement of a common aim by exchanging messages (there being no central management or memory bank to act as a locus for exchange), and as a result, there is no global state in the system that can be detected instantly by any one of these entities. To some extent, the author points out, this can be seen as a relativistic perception of computer systems and data-processing applications. He also highlights the view that with the many other developments in the computer field the control of distributed systems and of the application developed specifically on machine networks is based on a knowledge of concepts, tools, algorithms and specific methods.

To this end he uses the book to introduce these elements. The book is in three parts and each covers a particular aspect. The first uses two examples taken from the field of networks and applications. These are used to illustrate the problems caused by distribution and tools utilised to solve those problems. Algorithmic elements, essential to all designers or users of distributed applications are dealt with in the second. The third part covers the distribution of "expressions and synchronisation constraints with various hypothesis of reliability, and the contribution of a prior knowledge of the construction of applications and specific distributed systems". Not my words—the author's! The author is a Professor at the University of Rennes, France. How much the style of the book owes to the translator we may never know. Possibly not a lot if it is remembered that it is a specialist book aimed at a specific readership.

This is a little sad because there is much in this book of great interest to a wider audience. Particularly as computers, and the application of the same, are destined to become a greater part of everyone's lives (An explanation here and there in layman's language?)

The book is worth reading, even if you are not a computer specialist, and some parts are beyond you, if only to obtain a 'feel' of what is ahead.

A well constructed book, amply illustrated, with many references.

Dr CW Painter (Fellow)
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Manufacturing Intelligence
P K Wright and D A Bourne Addison—Wesley publishing; 1988; £22.95.

This book attempts to assess actual research and practise towards a full development and implementation of manufacturing intelligence in the factory. It is divided into four parts.

Part 1
The machine tool industry—which reviews the economic and social influences on manufacturing industry and shows how the focus has changed from mass to batch production. The authors state that two challenges must be overcome: the integration of machines into cohesive flexible system; the elimination of dependancy on human expertise in machine tool operation, which is made possible through the substitution of software for human skills.

Part 2
Building intelligent machines—develops general principles for construction of intelligent machines and offers practical guides. This is achieved by considering three principal elements which are: the manufacturing brain, eye and hand. Each of these separate sections maintains a very descriptive approach concentrating upon hierarchical