index and included as appendices are the relevant IEEE papers it refers to.

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LESLIE ANN GOLDBERG
Efficient Algorithms for Listing Combinatorial Structures.
Cambridge University Press, 1993. £27.95, 160 pp. hardbound. ISBN 0 521 45021 7.

This book examines various issues concerning the design of efficient algorithms to list certain classes of combinatorial object such as graphs with specific properties. Two concepts of 'efficient listing algorithm' are proposed, the strongest being that the delay between the generation of successive objects is polynomial in the size of the structure being enumerated, e.g. an efficient listing algorithm for unlabelled graphs would enumerate all graphs with n nodes with the delay between the appearance of each graph being bounded by a polynomial in n. Efficient listing algorithms are useful in practice since they provide a means of generating test data and such methods have been applied to solve problems in fields such as electrical engineering and automatic program optimisation.

The book introduces the basic ideas underlying the study of listing algorithms and then proceeds to give a survey of paradigms for the construction of efficient enumeration algorithms. Chapter 3 examines the issue of applying these techniques to specific problems presenting methods for listing graphs with properties that can be captured by first order sentences, hamiltonian graphs, graphs containing a complete subgraph of a given size, and graphs with chromatic number at most k. The concluding chapters discuss directions for further work and related results.

Dr Goldberg's book is lucidly written and gives an excellent presentation of her research on a problem that is both of practical and combinatorial importance. The text is largely self-contained and requires only a basic background in discrete mathematical topics in order for it to be accessible. The results and methods presented in this book will be of interest to anyone working in the areas of combinatorics, efficient algorithms and computational complexity theory.

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RICHARD A. HENLE and BORIS W. KUVSHINOFF
Desktop Computers. Oxford University Press, 1993. £19.50, softbound. ISBN 0 19 507031 3.

Desktop Computers aims to cover *all* aspects of modern personal computing—from office stand-alone machines through engineering workstations to networks. It has a short account of the history of companies and machines but the main chapters of the book cover hardware fundamentals, operating systems, networking and peripherals. There is mention also of different types of software available for such systems.

A general overview is followed by the main sections on the specifics of machines such as the IBM PS/2 and the Apple ranges, machine architectures and comparison of operating systems such as MS-DOS, OS/2, UNIX and Macintosh System 7. The section on peripherals is quite comprehensive and includes monitors, input devices, printers, modems, storage and some special purpose devices. I was somewhat disappointed by the section on networks, however, as it only covered some networking principles and the use of X-Windows, without really getting to grips with the subject: areas such as Novell systems could have been given more than a passing mention.

The authors aim at 'demystification of computer terminology' and use of the book by novices, yet there is no glossary or explanation of computing terms. A reader must be at least moderately computer literate to fully understand the points being made in the text. The organization of the text and chapters also leaves something to be desired, but I found the chapters on specifics such as hardware and operating systems better than the general overview at the beginning of the book. The comprehensive index was easy to use.

Desktop Computers does in some respects come close to achieving its ambitious aims, but often at the expense of clarity, with detail obscuring the main points. It is hard to see whether the book was intended as a text or as a guide to help a prospective purchaser. It does not cater fully for either use. For someone who is computer literate yet knows little about desktop systems, the book, although relatively up-to-date in content at present, would seem a little late to be of great use. And despite the price buyers should note that it will have a relatively short shelf-life as technology develops.

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ENID MUMFORD
Designing Human Systems for Health Care—The ETHICS Method. The 4C Corporation. 1993, £10, 145 pp. softbound, ISBN 90 74687 01 6

As can be seen from the title, this short but thorough book looks at health care systems using the ETHICS system methodology previously developed by the author. ETHICS stands for the Effective Technical and Human Implementation of Computer-based Systems.

The general theme of the book is trying to show computer systems designers the importance of including the human element into system design. The particular instance this is applied to here is the design of systems intended for health care services. The book begins with

an introduction to the ETHICS system and looks at how change should be managed, comparing this with how it is usually managed and the problems that result.

The subsequent chapters look at the following topics: Chapter 2 discusses participation, what it is and why it is a good thing to have, plus a look at different types of participation and some of the problems with the approaches. Chapter 3 looks in more detail at the structure and objectives of the ETHICS method. Chapter 4 breaks down the process of system design into four main parts, setting objectives, socio-technical systems design, system implementation and evaluation; suggesting actions and objectives for each part. A summary of why ETHICS is suitable for use in such a system design follows.

Chapter 5 is a case study of the QUICKethics approach. QUICKethics is an acronym for QUality Information from Considered Knowledge. It is a system used to assist groups of managers, medical staff, nurses and other health care staff to document and prioritise their information needs prior to introducing a ward management information system. The case study looks at how effective QUICKethics was during the introduction of such a system into Trafford Hospital.

The book has two appendices. The first is the work book on how to use the ETHICS method which was given to the nurses in the case study. The second gives an example of how to use the variance analysis tool to identify problems in specific areas.

Overall the book is relatively easy to work through. The general introduction may prove long winded to someone who is already aware of the importance of user participation. However, the descriptions of the ETHICS and QUICKethics methods would be of use to anyone who has not come across them before.

The inclusion of the actual work booklet and the approachable, non-technical nature of the book make it highly suitable for any Nursing Manager who will have to deal with the introduction of a computer system in their department. Coming at a particularly good time given the current state of NHS information systems, this book should be read and the methodologies at least considered by Nursing Managers everywhere.

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BRUNO CODENOTTI and MAURO LEONCINI
Introduction to Parallel Processing. Addison Wesley, 1993, £21.95, 360 pp softbound, ISBN 0 201 56887 X

In the United States and Europe there are, currently, major initiatives under the heading of High Performance Computing which are intended to introduce parallel processing to a wider audience and to promote its use in a wider range of applications. There is therefore a need for textbooks aimed at persuading potential users moving into parallel computing of the advantages and to alert them to the special kinds of problems they will encounter when they do so on. The approach taken in this book is based on computation theory.

This book is divided into six chapters dealing with introductory concepts through parallel computation models, parallel algorithms, parallel architectures to a chapter on VLSI algorithms and architectures. The book concentrates on the algorithmic and complexity aspects of parallel computing. Thus the title could be regarded as slightly misleading. However, accepting the authors' definition of parallel processing it gives an up-to-date evaluation and explanation of these topics.

The second chapter deals with RAM models, Turing machines and complexity costs. Unfortunately, much of the material has little to do with parallel processing.

In Chapter 3 parallel computation models are considered and the basic underlying principles are introduced. The ideas are then illustrated using examples based on matrices and a detailed treatment of Boolean circuits. The most interesting section is devoted to the parallel random access machine (PRAM) in which there is an infinite collection of processors each of which has access to a local memory. All processors can read and write to a global memory. This model is of particular interest because it has been shown that it may provide a unified model for parallel computing. The authors use an Algol-based notation which is surprising given the number of languages which are currently competing for places in the parallel processing world.

The fourth chapter deals with parallel algorithms and shows how they relate to the earlier parallel models of computation. This gives an insight into how to develop algorithms using techniques such as vectorisation and recursive doubling and leads on to a section on combinatorial algorithms.

Chapter 5 deals with parallel architectures and currently available machines; there are sections dealing with pipeline parallelism, SIMD parallelism and examples of algorithms on such machines; these are followed by consideration of MIMD parallelism and the problems in designing algorithms for such machines, and, in particular, the problems associated with synchronisation and dynamic process creation.

The final chapter is on VLSI algorithms and architectures. It gives a detailed description of the problems and the techniques used to construct circuits based on VLSI technology and the trends in this area are discussed.

This book contains much useful information for those currently engaged in the field of parallel computing. It gives a detailed analysis of many algorithms and the approaches used in their construction. However, I am somewhat sceptical as to whether this is a text which could, as the title claims, be recommended as an introduction to parallel processing.

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