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Book Reviews

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Book Reviews

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$\beta \sum \wedge \div \lambda \pi \epsilon) \sigma \leq \lambda \approx + o \lambda \$ \alpha \geq \lambda \Gamma \% L \tau o \cap \omega \phi \Delta \epsilon - \beta \mu \div \wedge ? + \rho \approx$

The range of books reviewed is wide, covering theory and applications in operations research, statistics, econometrics, mathematics, computers, and information systems. In addition, we include books in other fields that emphasize technical applications. We list the books and proceedings received; not all books received can be reviewed because space and time are limited. Those who would like to review books are urged to send the editor their names, addresses, and specific areas of expertise. The editor commissions all reviews and does not accept unsolicited book reviews. Readers are encouraged to suggest books that might be reviewed or to ask publishers to send copies of such books to the editor.

DATE, C. J. 1983, *An Introduction to Database Systems – Volume 2*, Addison-Wesley Systems Programming Series, Addison-Wesley Publishing Company, Reading, Massachusetts, 383 pp., \$28.95.

This book picks up where other introductory books on database systems leave off. It is the second and companion volume to Date's widely read *Introduction to Database Systems – Volume I*. Although the two are complimentary, they are completely different in scope, format, readability, and intended audience. Volume I is a classic introduction to database

systems, data models, and DBMS products. It is readable, complete, and consistent with regard to depth and intended audience. Volume II, on the other hand, is a collection of eight topics which are more easily comprehended, viewed individually rather than as a collection. The papers on the different topics relate to each other only by coincidence and proximity. The chapters cover different areas for different target audiences and vary in complexity from a level easy to read by the mildly interested to one that is barely surmountable by the most tireless adher-

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ents of relational database theory.

Three distinct audiences are addressed by various chapters, and thus the book offers a little something for everyone. The chapters on recovery, concurrency, and distributed databases are apparently oriented toward the advanced applications programmer who needs more in-depth knowledge than an introduction to data models normally provides. The chapter on recovery covers the concept of a transaction and its role in checkpoint/recovery, while the chapter on concurrency delves further into record locking and deadlock avoidance. Finally, the chapter on distributed databases carries these notions further in a distributed systems environment.

The chapters on security and database machines make enjoyable reading for the database administrator. Of particular interest in the chapter on security are examples of how statistical queries against a database can be constructed to gain access to protected information unavailable through normal queries. In the chapter on database machines, Date takes the somewhat surprising position that database machines may be of limited use in the future because of their inability to deliver performance advantages in all but a limited set of query types.

The chapters on integrity, data models, and the extended relational model will challenge those concerned with the theory of data models. The chapter on integrity provides a complete (if not tedious) exploration of integrity rules and provides much direction for future integrated data dictionaries. The chapters on data models and the extended relational model are

theoretical extensions of Volume I and provide more substance and detail.

Although one might purchase Volume I to read, Volume II is more suitable for reference. A reader who expects the same level of clarity and simplicity in Volume II that he found in the first volume will be sorely disappointed. However, anyone from one of the groups mentioned who is willing to purchase the book for one or two chapters will find a wealth of valuable, condensed information, comments, opinions, and directions which reflect the depth of Date's expertise in database systems.

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RANDLES, RONALD H. AND WOLFE, DOUGLAS A. 1979, *Introduction to the Theory of Nonparametric Statistics*. John Wiley & Sons, New York, 450 pp., \$24.95.

This is an excellent addition to the literature. The book is intended for use as an intermediate-level graduate text, and from my experience it serves that function very well. The reader is assumed to have a good grasp of the basic concepts of statistical inference and of the advanced calculus. The recommended preparation for a course using this text is a mathematical statistics sequence taught from Mood, Graybill and Boes [1974] or Hogg and Craig [1978], for example. It is useful though not essential for the reader to have studied a text that presents nonparametric methodology with extensive tables and examples along the lines of Hollander and Wolfe [1973], Gibbons [1976] or Conover [1980]. The present

book deals with the subject in a manner distinct from these. Its emphasis is on concepts and theoretical tools. There are no tables. Even though this work presents a thorough treatment of the theory that is the basis for most of the major topics in nonparametrics, it does so at a mathematical level below that of Hájek and Šidák [1967] and Puri and Sen [1971]. These are the authors' intentions as set out in the preface, and they have accomplished these objectives nicely.

The text contains 12 chapters with a good number of exercises at the end of each of the several sections within each chapter. The 16-page appendix is a concise collection of related results from mathematics and statistics. The bibliography gives 10 pages of relevant references, and the index runs another nine pages. After some preliminaries and an introduction to distribution-free statistics, 50 pages are devoted to U-Statistics (chapter 3). This is a most welcome contribution and represents one of the most useful coverages of this important topic available today. The chapter's only shortcomings are its failure to include related results on non-normality in some special cases where regularity conditions are not met, and too little discussion of variance estimation using sample components.

The main-line topics of asymptotic relative efficiency, point and interval estimation, and linear rank statistics for one- and two-sample location and scale problems are covered in six chapters in the central portion of the book. There is relatively less coverage of correlation and regression problems and of results for the one- and two-way layout in the final

chapter. Another distinctive feature of this text is that it contains results on distribution-free rank-like tests and some treatment of adaptive procedures. These topics are not treated in other texts, and in the past, anyone wanting to cover these contributions by the authors and their co-workers did so through a sequence of journal articles.

The treatment of point estimation in Chapter 7 is mainly a detailed study of the Hodges-Lehmann class. This is an excellent vehicle for establishing asymptotic properties and their close relationship to the associated test statistics that are inverted. There is, in addition, a final 15-page section on influence curves and M-estimation. The authors do a creditable job with this, but some may want to supplement this chapter with the relevant related results on L-Statistics and minimum distance estimation.

The book is very well written and is remarkably free of typographical errors. The authors and publishers can be proud of the careful use of mathematical notation which sometimes (of necessity) becomes quite complex. The major omission some may see is that there is no treatment of goodness of fit. This should not prevent this superb collection of basic theoretical tools from becoming widely adopted as a text and a reference book by those who work in developing and applying the variety of methodologies for nonparametric problems.

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SRIVASTAVA, UMA KANT; SHENOY, G. V.; AND SHARMA, SUBHASH, C. 1983, *Quantitative Techniques for Managerial Decision Making*, Halsted Press, John Wiley and Sons, New York, 923 pp., \$29.95.

The authors state that this book contains sufficient material for a sequence of courses lasting two to three semesters. I agree with the authors about the quantity of material, but I doubt that copies will last that long because of the poor quality of the binding (pages 435 to 462 of my review copy have already come loose), and the paper is so thin that when the book is open to page 279 I can clearly read the words on both pages 280 and 281 without turning the page. Also, the poor quality of the paper causes subscripts and exponents to be almost illegible in many places.

This book is expressly written for *Indian* students of management, economics, accountancy, and commerce in order to develop "contextually relevant" teaching

materials for *Indian* students. This purpose is exemplified by the many examples and problems in the text which deal with state owned and operated enterprises and which deal with situations that would arise in a developing nation.

This book is actually two separate texts bound as one. The first 11 chapters (340 pages) consist of a well-written introduction to elementary statistics. The examples used to illustrate each new concept are presented in an exceptionally clear manner which will help the reader to master the concept. This portion of the book is comparable to many chapters in the first two-thirds of *Probability and Statistics for Engineers and Scientists* by Walpole and Myers [1978].

The second portion of this book (10 chapters and 322 pages) consists of an introduction to standard operations research techniques. The last three chapters which introduce (a) sequencing models, (b) integer, dynamic, and goal programming, and (c) simulation of management systems are too brief and meager to be of much value to the student. They would have to be supplemented by a considerable amount of additional material in order to be useful. This portion of the book is comparable to selected chapters in *Introduction to Operations Research*, third edition, [1980] by Hillier and Lieberman (H&L). (In fact, problem 16, page 465 is identical to the prototype example used in Chapter 2, Section 1 of H&L's text to introduce linear programming. Problem 15, page 465 is the same as H&L's problem 2, page 60. Problem 28, page 471 is the same as H&L's regional planning problem on pages 27, 28, and 29.)

The primary strength of the text lies in the clarity of the explanations of concepts and the copious number of examples. The exercises at the end of the chapters are sufficient in quantity, but they are concentrated at the "easy" end of the spectrum, and the text could be improved by the inclusion of problems in the intermediate and advanced levels of difficulty.

Overall this is a rather good text, and I expect that it could be used successfully in Indian universities. It is probably not usable in most American universities for reasons discussed above for one very important political reason: in most US schools, statistics and operations research are taught by different academic departments, and the texts for each of these courses would be selected by different professors.

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