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Book reviews

Computational Methods of Multivariate Analysis in Physical Geography, by P. M. Mather, 1976; 532 pages. (John Wiley, £13.75)

It is a little unfortunate that this worthwhile book, which is written by a geographer, will only be read by geographers! The restriction imposed by the title is unjustified when so many of the multivariate techniques covered have wide application. There are four parts dealing with the essentials of matrix algebra, the analysis of dependence, the analysis of interdependence and classification. In each part there is some attempt at elementary level instruction but this has to make way for the advanced references to recent research papers. These constitute conflicting aims which the author does not resolve and the research orientation predominates.

A third aspect of the book is the use of computer programs including the data and results for illustrative examples. Here the author is more successful and these will prove useful to the practitioner and will certainly give confidence to the user to develop new programs. Particularly valuable are the warnings and general wisdom contained in the papers and the excellent up-to-date bibliography which covers regression methods, trend surface analysis, factor analysis, classification and discriminant methods. The nonlinear least squares section is well done but the binary discriminant section is regrettably thin.

ROBERT W. HIORNS (Oxford)

Software Engineering and Education: Needs and Objectives, edited by A. I. Wasserman and P. Freeman, 1976; 159 pages. (Springer-Verlag, \$9.80)

This volume contains the proceedings of a one day Interface Workshop held at the University of California, Irvine early in 1976. Like Hermann Goering, who is credited with the remark 'when I hear the word culture I reach for my revolver', my heart sinks when I see the word 'interface' used in a nontechnical context. However, despite its pretentious title, this volume makes interesting reading, since it records the views of industrialists and educators on the requirements of education in software engineering. Some seventeen people took part, and since the proceedings run to almost one hundred and sixty pages, it is clear that much of what it presented must be 'position papers' prepared in advance of the meeting and not presented as such at the workshop. Nonetheless, they are still interesting.

The first section presents the industry view of what is required of education in the field of software engineering. The overall impression one gains is that there is no consensus of opinion as to what software engineering is, never mind how it should be taught. As Jim Horning says '... many people have confused the existence of the term with the existence of a discipline', though Bob Graham is perhaps too cynical when he says that '... when industry gets a new graduate, the biggest task is to housebreak the student, that is to kill his spirit so that he can fill out the forms every week ...'.

The second part of the book covers the approach of the academics to education in software engineering. They evidently have a clear idea of what the subject is (more precisely, several different clear

ideas), and the overall impression is of a group of people who perceive a problem and are vigorously attempting to solve it. There is much of interest here for anyone involved in computer education. The third section of the book is a record of the discussions, in which the participants 'exchanged many valuable views in their respective languages'. Verbatim records of discussion, even when edited, do not make good reading, but it is worth persevering with the proceedings and preconceptions for the occasional nuggets of insight and wisdom.

There is still a great confusion between computer science and software engineering. One contributor has as a title 'Software Engineering as a Central Computer Science Discipline', and in the 'Annotated Software Engineering Bibliography', Knuth's *magnum opus The Art of Computer Programming* is described as being 'a necessary part of the library of every serious computer scientist'. Despite these confusions, this volume is an important step in the definition of software engineering, and should be on the bookshelf of anyone concerned with the development of computer education.

D. W. BARRON (Southampton)

Business Data Processing Systems, second edition by L. S. Orliko, Nancy and R. Stern, 1977; 404 pages, workbook 88 pages. (Wiley, £10.70)

This is a readable book written for American computer science courses and would be suitable for the more advanced data processing syllabus of computers and business studies courses in the UK. The monetary examples and problems are in dollars and the text and illustrations orientated towards IBM. The structure and sequence of the chapters appears to be illogical, e.g. the chapters on fundamental concepts (3) and problem definition (14) would be appropriate as 1 and 2, preceding systems studies and the systems analyst. In the systems studies chapter it was noted that examples of a payroll listing and exception report were illustrated and discussed, and the systems analyst chapter contained a section on data collection which in reality was some techniques of fact finding.

It was disappointing to find no chapter devoted to the existence or need for standards. The definition of a feasibility study on page 4 relating to 'whether a company should acquire basic data processing equipment' is too restrictive. The systems flowcharts on page 154 *et seq.* fail to depict an 'edit' (data-vet) program and the input cards are shown as being mechanically sorted to the Master File sequence. There are other criticisms of detail, some of which are misleading unless pointed out. However, the attempt to be 'all things to all people' can be said to be somewhat successful. The price would probably be unacceptable to students, but the book would be a useful addition to the library of books on systems analysis and design. The general layout, presentation and illustrations are clear and to a high standard. The end of chapter questions, glossary of terms used, two case studies and a Student's Workbook (extended end of chapter questions) would help to reinforce the learning.

C. POTTER (Brentwood)