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Book reviews

Introductory Experiments in Digital Electronics, Books 1 and 2 by P. R. Rony, D. G. Larsen and J. A. Titus, 1979; 494 pages and 412 pages respectively. (*Prentice-Hall*, £8.40 each).

A large billboard poster reminds me daily that 'chips' are a threat to our jobs. The answer is—become an author on 'chips'. There is no end to the number of books being written on this topic, and the two volumes being reviewed are the 15th and 16th respectively in a list of books prepared by the Blacksburg Continuing Education series. All are apparently written to the same formula and if the present volumes are a guide the reader will not be spared practical advice even on such matters as use of pliers, wire strippers and screwdrivers.

To make these comments is not to criticise this style of presentation. Both the present volumes are well set out into units, with each unit having a clearly defined set of objectives, many detailed examples, and follow-up questions. Although the authors aver that professional computing people would benefit from their books, clearly a style which produces nearly 900 pages of text at this level of detail is mainly directed towards the student and novice. Apart from the occasional aside to alternative modules, both books, as is clearly stated in their titles, centre on the Intel 8080A and its associated 'add on' devices (often quoted with the part number).

The books are bound as paperbacks, and there must be some concern about their survival once in the hands of a body of enthusiastic students. So much is centred on the 8080A module that it is difficult to judge how well prepared a student of these books would be in applying the detailed techniques to alternative systems. But not to worry, because this then becomes the justification for yet another book, hence confirming my view that writing on microtechnology is indeed a growth industry.

D. H. REES (Harpenden)

Digital Image Processing by William K. Pratt, 1978; 750 pages. (*John Wiley and Sons*, £20·80)

In many branches of science, taking measurements, or making observations, involves the production of what has recently come to be known as 'imagery' of one kind or another. The term 'imagery' is used (in preference to the word 'image') because often the display may not correspond to a 'visual' image of the scene in the normal sense. For example, radar imagery, though apparently similar in appearance to a photographic image of the scene may not correspond to a true visual representation because the effects of radar 'shadowing' or radar 'layover' produce distortions. Recently particular branches of science, in which large amounts of imagery are recorded (either on film or on magnetic tape), have expanded enormously in importance and in scope: in the fields of remote sensing and of medicine, the digital processing of imagery (a process which involves sophisticated techniques of pattern recognition, texture analysis, design of software classifiers and so on) has become almost mandatory as data mountains are being built up and automatic routine processing has become essential. Meteorology, space physics, astronomy, electron microscopy provide further examples of scientific disciplines in which imagery processing is important. In the commercial and industrial fields applications are also increasing: archiving or transmission of passport photographs and fingerprints, are examples. Techniques of texture analysis have important applications in non-destructive industrial testing.

Pratt's encyclopaedic book is thus both timely and topical. The subject matter brings together relevant aspects of physics, electrical engineering, computer science, mathematics and statistics and the book is intended to serve as a text for postgraduate courses in digital image processing as well as a reference book for practitioners. It deals with four basic topics: the mathematical representation of continuous images and the basic physics involved; the discrete image; two-dimensional signal processing techniques, including transforms; and a fourth topic: applications. The latter is discussed in Parts 4-6 of the book and covers image enhancement and restoration, image analysis and image coding.

The standard of scholarship throughout is excellent and the quality of printing and presentation is superb though, unfortunately, there are no colour plates—a pity because some of the author's own outstanding research work has involved the processing of coloured images. The book is a monumental 750 pages long. No price is given on the review copy (another priceless treasure) but the reviewer understands that the cost is such as to make it unlikely to be within the price range of a typical third year or postgraduate student (at any rate in the UK). This is a great pity. However, there is ample scope for considerable reduction in size in subsequent editions since there is considerable overkill, especially in presenting examples of processed images in the figures. It will undoubtedly find its way into the libraries and deservedly so. It deserves also to be widely used as a text book.

J. O. THOMAS (London)

A Management Guide to the Structured Methodology, by E. Somogyi, G. Taylor, and M. Naughton, 1979; 116 pages. *Langton Information Systems Series, Input Two-Nine*, £9·95)

This is a high level overview of the methodology developed by Langton Information Systems for the design and implementation of software. It covers a wide spectrum of fashionable topics, including Constantine's Structured Design, structured programming, testing strategies, walkthroughs, the Chief Programmer Team, and others. None of these topics is covered in any depth; some of the opinions, presented as fact, are very misleading.

The large (A4) pages are used wastefully, with limited text, large blank spaces, and poorly explained diagrams. At nearly £10·00 for 116 pages paperbound this seems poor value for money. Not recommended.

MARTYN THOMAS (Bath)

Principles of Programming, by E. B. James, 1978; 93 pages. (*Pitman*, £2·50)

The Calderbank volume (Science Paperbacks) has been the reviewer's most favoured FORTRAN text because it is cheap and compact, but it suffers many shortcomings and the marketplace has been waiting for something better for several years.

The new James book could be just that. It is cheap and slim but unfortunately of A4 area! It contains a lot of sound commonsense but some terrible advice (e.g. on the use of CONTINUE and COMMON). Furthermore it would be better without its chapter 'Surveying FORTRAN' and that on 'Programming quality' lacks substance and conviction.

Nonetheless it is neatly printed, thoughtfully put together and offers excellent value for money, but any student working with it will still need the attention of a good teacher to curb his dirty programming habits.

D. L. FISHER (Leicester)