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Book reviews

Computer Simulation of Dynamic Systems, by R. J. Kochenburger, 1972; 530 pages. (*Prentice Hall International*, £7·75)

The author has produced a good teaching text book which basically poses two questions, the second being consequential upon an affirmative answer being given to the first. The two questions are—will the problem under consideration benefit from a computer simulation approach? And, should this simulation be by analog, digital or hybrid techniques?

In the main, the text is concerned with answering the second question in detail, although the possibility of the existence of an answer in the negative to the first question is discussed in some detail.

Whilst a knowledge of flowcharting and FORTRAN IV programming is assumed, for the digital sections of the text, no comparable assumptions regarding the analog-hybrid sections are made. Consequently, a fair amount of introductory analog programming is covered in some detail. However, this is handled very well indeed and, as an example of the authors modern approach to the subject, the state variable technique is introduced in the first chapter. However, one unfortunate slip can not be allowed to pass without comment. The author states on page 4 '. . . s indicates the operation d/dt, . . .'; on page 96 'It is often convenient to employ the operator p to represent the operation d/dt'; and on page 142 '. . . based upon the operator $p = d/dt$. $F(s)$ will be described as the Laplace transform . . .'. The use of s for the Laplace transform variable and p for the operator d/dt is the correct version and the last two statements are the preferred definitions.

Another minor irritation is the symbol for the analog summer-integrator introduced on page 51. This is slightly non-standard but is sufficiently close to the existing international standard that it should cause no concern.

Since the simulations in question are those of dynamical systems, the consideration of digital integration techniques, their stability and utility are covered in detail. The z-transform analysis and difference equation approaches are exceedingly well done, in the space available in this section, and the extension of the usual digital integration routines to the construction and use of more complex operational modules is to be welcomed. Timing and stability considerations are also kept well to the fore in this section.

From the parallel-hybrid standpoint, the sections on non-linear operation and implicit function generation are workman-like and thorough. The digital treatment of implicit function generation contains a wealth of detail on automatic gain control, errors and convergence of iterations. The flowcharts are explicit and clear throughout and the difficulties are highlighted.

The discontinuous functions on both digital and parallel hybrid techniques are handled by means of excellent case studies which include diagrams, flowcharts and circuits wherever appropriate.

The treatment of the boundary-value problem is adequate whilst that of optimisation is by contrast a little on the thin side from both the digital and hybrid points of view. What material has been included in the chapters on the 'Simulation of Random Disturbances and Their Effects' and 'Distributed Parameter Systems', is good and well presented although the reviewer would like to have seen a little more on alternative methods of digital generation of pseudo-random disturbances in the first of these.

The final chapter on 'Parallel and Serial Computers: Hybrid Computers' is perhaps the weakest in the book. It is a great pity that the full hybrid material contained therein had not been introduced earlier and the results used in the remainder of the text.

All in all, however, the reviewer liked the book and feels that a high recommendation for advanced student usage is in order.

B. GIRLING (London)

Electronic Data Processing and Computers for Commercial Students, by E. A. Bird, 1972; 192 pages. (*William Heinemann Ltd.*, £2·90)

This is a well written book for students who require a superficial and general appreciation of most aspects associated with computers, including their application.

The text is readable and anyone with an interest in this subject will find this book easy to come to terms with.

It is particularly refreshing to find a British book published which covers this basic groundwork as opposed to the many American editions that we are accustomed to, and I am sure students will find the inclusion of various specimen past examination papers particularly helpful.

The book is divided into eight sections and contains clear and concise diagrams.

I regret that the author did not include a bibliography for students who may wish to do further reading; also no reference is made to the important area of Data Communications, otherwise I am pleased to recommend this book.

D. A. STURT (London)