BOOK REPORTS

The Book Reports section is a regular feature of *Computers & Mathematics with Applications*. It is an unconventional section. The Editors decided to break with the longstanding custom of publishing either lengthy and discursive reviews of a few books, or just a brief listing of titles. Instead, we decided to publish every important material detail concerning those books submitted to us by publishers, which we judge to be of potential interest to our readers. Hence, breaking with custom, we also publish a complete table of contents for each such book, but no review of it as such. We welcome our readers' comments concerning this enterprise. Publishers should submit books intended for review to the Editor-in-Chief,

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Reliability and Robustness of Engineering Software (Edited papers presented at the *1st Int. Conf.*, Como, Italy, Sept. 1987). Edited by C. A. Brebbia and G. A. Keramidas. Elsevier, Amsterdam, The Netherlands. 538 pages. $175.50.

Contents:
1. Quality and reliability
2. Software validation
3. System design
4. Structural applications
5. Other applications
6. Groundwater and hydraulic applications
7. Finite element software
8. Boundary element software

Advanced Engineering Mathematics. By Michael D. Greenberg. Prentice-Hall, Englewood Cliffs, N.J. (1988). 946 pages. $55.00.

Contents:
1. Systems of linear equations; introduction
2. Vector space
3. Matrices, determinants and linear equations
4. The eigenvalue problem
5. Extension to complex case (optional)
6. Differential calculus of functions of several variables
7. Vectors in 3-space
8. Double and triple integrals; surfaces and volumes
9. Scalar and vector field theory
10. Fourier series
11. Fourier integral, Fourier transform
12. Laplace transform
13. Introductory concepts
14. Diffusion equation
15. Laplace equation
16. Wave equation
17. Bessel and Legendre functions (optional)
18. Functions of a complex variable
19. Conformal mapping (optional)
20. The complex integral calculus
21. Series expansion and the residue theorem

Parallel Complexity Theory. By Ian Parberry. Wiley, New York (1987). 200 pages. $22.95.

Contents:
1. Introduction

2. Combinatorial circuits
3. Designing a parallel machine model
4. Variants of the model
5. Space and parallel time
6. Parallel computations with shared-memory machines
7. Programming techniques for feasible networks
8. The AKS sorting network
9. Simultaneous resource bounds
10. More on universal machines
11. Unbounded fan-in parallelism
12. Conclusion

Cognitive Engineering in the Design of Human–Computer Interaction and Expert systems. Edited by Gavriel Salvendy. Elsevier, Amsterdam, The Netherlands (1987). 592 pages. $144.00.

Contents:
1. Theories of interface design
2. Methodologies of interface design
3. Applications of interface design
4. Software design
5. Human factors in speech technology and telecommunications
6. Design of graphic dialogues
7. Knowledge acquisition for knowledge-based systems
8. Design, evaluation and use of expert systems

An Introduction to Splines for use in Computer Graphics & Geometric Modeling. By Richard H. Bartels, John C. Beatty and Brian A. Barsky. Morgan Kaufmann (1987). 476 pages. $38.95.

Contents:
1. Introduction
2. Preliminaries
3. Hermite and cubic spline interpolation
4. A simple approximation technique—uniform cubic B-splines
5. Splines in a more general setting
6. The one-sided basis
7. Divided differences
8. General B-splines
9. B-spline properties
10. Bezier curves
11. Knot insertion
12. The Oslo algorithm
13. Parametric vs geometric continuity
14. Uniformly-shaped beta-splines
15. Geometric continuity, reparametrization and the chain rule
16. Continuously-shaped beta-splines
17. An explicit formulation for cubic beta-splines
18. Discretely-shaped beta-splines
19. B-spline representations for beta-splines
20. Rendering and evaluation
21. Selected applications