



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,

Professor Ervin Y. Rodin
Campus Box 1040
Washington University in St. Louis
One Brookings Drive
St Louis, MO 63130, U.S.A.

Internet Programming with OmniMark. Edited by Mark Baker. Kluwer Academic, Boston. (2000). 391 pages. \$68.00, NLG 170.00, GBP 48.00.

Contents:

Introduction: Why OmniMark? 1. Hello world. 2. Converting text to HTML. 3. Converting an ASCII to HTML. 4. Finding links in a web page. 5. Displaying the CGI environment variables. 6. Disaster countdown. 7. Hit counter. 8. Database to XML. 9. A game of hangman. 10. Using formatting templates. 11. An embedded language interpreter. 12. Converting complex ASCII tables. 13. Mailing a web form. 14. XML middleware. 15. A client for the middleware application. 16. Database update via the web. 17. A mailbot. 18. Fixing URLs. 19. Link checker. 20. Catalog with shopping cart. 21. From CGI to server. Appendix 1: OmniMark patterns vs. Perl regular expressions. Appendix 2: Configuring your web server to run OmniMark CGI programs. Appendix 3: Long programs. Index.

JavaServer Pages™. By Hans Bergsten. O'Reilly, Sebastopol, CA. (2001). 552 pages. \$39.95.

Contents:

Preface. I. JSP application basics. 1. Introducing JavaServer Pages. 2. HTTP and servlet basics. 3. JSP overview. 4. Setting up the JSP environment. II. JSP application development. 5. Generating dynamic content. 6. Using scripting elements. 7. Error handling and debugging. 8. Sharing data between JSP pages, requests, and users. 9. Database access. 10. Authentication and personalization. 11. Internationalization. 12. Bits and pieces. III. JSP in J2EE and JSP component development. 13. Web application models. 14. Combining servlets and JSP. 15. Developing JavaBeans for JSP. 16. Developing JSP custom actions. 17. Developing database access components. IV. Appendixes. A. JSP elements syntax reference. B. JSP API reference. C. Book example custom actions and classes reference. D. Web-application structure and deployment descriptor reference. E. JSP resource reference. Index.

Computable Analysis: An Introduction. By Klaus Weihrauch. Springer-Verlag, Berlin. (2000). 285 pages. \$38.00, DM 69.00, öS 504.00, sFr 63.00, GBP 24.00.

Contents:

Preface. 1. Introduction. 2. Computability on the Cantor space. 3. Naming systems. 4. Computability on the real numbers. 5. Computability on closed, open and compact sets. 6. Spaces of continuous functions. 7. Computational complexity. 8. Some extensions. 9. Other approaches to computable analysis. References. Index.

Common Waveform Analysis: A New and Practical Generalization of Fourier Analysis. By Y. Wei and Q. Zhang. Kluwer Academic, Boston. (2000). 156 pages. \$120.00, NLG 305.00, GBP 84.00.

Contents:

Preface. 1. ABC of number theory. 2. Square wave analysis. 3. Triangular wave analysis and trapezoidal wave analysis. 4. Frequency analysis based on general periodic functions. 5. Main relations and basic techniques.

Graph Theory. By Russell Merris. John Wiley & Sons, New York. (2001). 237 pages. \$57.50.

Contents:

Preface. 1. Invariants. 2. Chromatic number. 3. Connectivity. 4. Planar graphs. 5. Hamiltonian cycles. 6. Matchings. 7. Graphic sequences. 8. Chordal graphs. 9. Oriented graphs. 10. Edge colorings. Hints and answers to selected odd-numbered exercises. Bibliography. Index. Index of notation.

Computational Vision: Information Processing in Perception and Visual Behavior. By Hanspeter A. Mallot, translated by John S. Allen. The MIT Press, Cambridge, MA. (2000). 296 pages. \$50.00.

Contents:

Preface. I. Fundamentals. 1. Introduction. 2. Imaging. II. Contrast, form, and color. 3. Representation and processing of images. 4. Edge detection. 5. Color and color constancy. III. Depth perception. 6. Stereoscopic vision. 7. Shape from shading. 8. Texture and surface orientation. IV. Motion. 9. Motion detection. 10. Optical flow. 11. Visual navigation. V. Appendix. Glossary of mathematical terms. Mathematical symbols and units. Bibliography. Author index. Subject index.

Advances in Distributed and Parallel Knowledge Discovery. Edited by Hillol Kargupta and Philip Chan. AAAI Press/The MIT Press, Menlo Park, CA. (2000). 467 pages. \$45.00.

Contents:

Contributors. Foreword. Preface. Introduction. Distributed and parallel data mining: A brief introduction (Hillol Kargupta and Philip Chan). I. Overviews. 1. Distributed data mining: Scaling up and beyond (Foster Provost). 2. Scalable data mining through fine-grained parallelism: The present and the future (Chandrika Kamath and Ron Musick). II. Distributed data mining techniques. 3. Meta-learning in distributed data mining systems: Issues and approaches. Andreas L. Prodromidis, Philip K. Chan and Salvatore J. Stolfo). 4. Distributed classification with knowledge probing: A new framework for distributed data mining (Yi-ke Guo and Janjao Suttiwaraphun). 5. Collective data mining: A new perspective toward distributed data mining (Hillol Kargupta,

Byung-Hoon Park, Daryl Hershberger and Erik Johnson). 6. Robust order statistics-based ensembles for distributed data mining (Kagan Turner and Joydeep Ghosh). 7. Efficient mining of association rules under inequality constraints in distributed databases (Vincent Ng, David Cheung and Charles Lo). III. Architectural, security, and data issues in distributed data mining. 8. Facilitating data mining on a network of workstations (Srinivasan Parthasarathy and Ramesh Subramonian). 9. The preliminary design of papyrus: A system for high performance, distributed data mining over clusters (Robert Grossman, Stuart Bailey, Ashok Ramu, Balinder Malhi and Andrei Turnisky). 10. Secure distributed database mining: Principles of design (Chris Jones, John Hall and John Hale). 11. Data quality in distributed environments (Beat Wüthrich, Vincent Cho, Joshua Pun and Jian Zhang). IV. Parallel data mining. 12. Parallel out-of-core decision tree classifiers (Mahesh K. Sreenivas, Khaled AlSabti and Sanjay Ranka). 13. Hierarchical parallel algorithms for association mining (Mohammed J. Zaki). 14. Parallel classification on shared memory systems (Mohammed J. Zaki, Ching-Tien Ho and Rakesh Agrawal). Epilogue. 15. Distributed and parallel data mining: Emergence, growth, and future directions (Hillol Kargupta, Chandrika Kamath and Philip Chan). Bibliography. Index.

From Animals to Animats 6: Proceedings of the Sixth International Conference on Simulation of Adaptive Behavior. Edited by Jean-Arcady Meyer, Alain Berthoz, Dario Floreano, Herbert Roitblat and Stewart W. Wilson. The MIT Press, Cambridge, MA. (2000). 540 pages. \$65.00.

Contents:

Preface. I. The animat approach to adaptive behavior. From SAB94 to SAB2000: What's new, animat? (Agnès Guillot and Jean-Arcady Meyer). Elements of viability theory for animat design (Jean-Pierre Aubin). On the role of morphology and materials in adaptive behavior (Rolf Pfeifer). On the relation among morphology, material, and control in morpho-functional machines (Fumio Hara and Rolf Pfeifer). Experience-dependent perceptual categorization in a behaving real-world device (Jeffrey L. Krichmar, James A. Snook, Gerald M. Edelman and Olaf Sporns). The epsilon state count (Bram Bakker and Michiel de Jong). Connecting brains to robots: An artificial animal for the study of learning in vertebrate nervous systems (Karen M. Fleming, Bernard D. Roger, Vittorio Sanguineti, Simon Alford and Ferdinando A. Mussa-Ivaldi).

II. Perception and motor control. Designing artificial ears for animat echolocation (Jose M. Carmena, DaeEun Kim and John C.T. Hallam). Reactive maze solving with a biologically-inspired wind sensor (Tim Chapman, Adam Hayes and Mark Tilden). Visual tracking in simulated salamander locomotion (Auke Jan Ijspeert and Michael Arbib). Adaptive image stabilization: A need for vision-based active robotics agents (Francesco Panerai, Giorgio Metta and Giulio Sandini). Neural oscillator networks for rhythmic control of animats (Artur M. Arsenio). On "parts" and "wholes" of adaptive behavior: Functional modularity and diachronic structure in recurrent neural robot controllers (Tom Ziemke). Telerobotic sheepdogs: How useful is autonomous behavior? (Myra Wilson and Mark Neal). Generating interactive robot behavior: A mathematical approach (Rainer Menzner, Axel Steinhage and Wolfram Erlhagen).

III. Action selection and behavioral sequences. Hierarchy and sequence vs. full parallelism in action selection (Joanna Bryson). An embodied model of action selection mechanisms in the vertebrate brain (Fernando Montes Gonzalez, Tony J. Prescott, Kevin Gurney, Mark Humphries and Peter Redgrave). Learning to integrate reactive and planning behaviors for construction (Gerald Chao, Anand Panangadan and Michael G. Dyer). The role of behavioral extinction in animat action selection (Mark Witkowski).

IV. Internal world models for navigation. Detecting novel features of an environment using habituation (Stephen Marsland, Ulrich Nehmzow and Jonathan Shapiro). Extraction and inversion of abstract sensory flow representations (Fredrik Linaker and Lars Niklasson). Micronavigation (Maurizio Piaggio, Antonio Sgorbissa and Renato Zaccaria). Computer simulation of long-range bird navigation (Ulrich Nehmzow and Roswitha Wiltschko). Neural network approach to path integration for homing navigation (DaeEun Kim and John C.T. Hallam). Modeling rodent head-direction cells and place cells for spatial learning in bio-mimetic robotics (Angelo Arleo and Wolfram Gerstner). Active perception and map learning for robot navigation (David Filliat and Jean-Arcady Meyer). A computational model of context processing (Christian Balkenius and Jan Morén). From navigation to active object recognition (Sacha Leprêtre, Philippe Gaussier and Jean-Pierre Cocquerez).

V. Learning. Simulating classical conditioning using a neuro-connector net (Bridget Hallam). First cognitive capabilities in the anticipatory classifier system (Wolfgang Stolzmann, Martin V. Butz, Joachim Hoffmann and David E. Goldberg). Obstacle avoidance for a distributed autonomous swimming robot by interaction-based learning (Saisuke Iijima, Wenwei Yu, Hiroshi Yokoi and Yukimori Kakazu). Evolutionary design of learning state space for small airship control (Keiko Motoyama, Keiji Suzuki, Masahito Yamamoto and Azuma Ohuchi). Multi-agent reinforcement learning with bidding for segmenting action sequences (Ron Sun and Chad Sessions). Partitioning in multi-agent reinforcement learning (Ron Sun and Todd Peterson). Adaptive agents with reinforcement learning and internal memory (Pier Luca Lanzi). Learning in categorizable environments (Josep M. Porta and Enric Celaya). Imitation: Learning and communication (Pierre Andry, Sorin Moga, Philippe Gaussier, Arnaud Revel and Jacqueline Nadel). Utilising a cerebellar model for mobile robot control in a delayed sensory environment (David Collins and Gordon Wyeth). Observation and imitation: Goal sequence learning in neurally controlled construction animats: VI-MAXSON (Frederick L. Crabbe and Michael G. Dyer). A computational model of emotional learning in the amygdala (Jan Morén and Christian Balkenius).

VI. Evolution. Sexual preferences: Dimension and complexity (Patricio Lerena). Visual resolution evolving to a trade-off curve (Rens Kortmann, Eric Postma and Jaap van den Herik). Evolving visually-guided robots able to discriminate between different landmarks (Stefano Nolfi and Davide Marocco). Investigating morphological

symmetry and locomotive efficiency using virtual embodied evolution (Josh C. Bongard and Chandana Paul). Further experiments in the evolution of minimally cognitive behavior: From perceiving affordances to selective attention (Andrew C. Slocum, Douglas C. Downey and Randall D. Beer). Homeostatic adaptation to inversion of the visual field and other sensorimotor disruptions (Ezequiel A. Di Paolo). Measuring progress in coevolutionary competition (Pablo Funes and Jordan B. Pollack). Self-adaptive mutation in classifier system controllers (Larry Bull, Jacob Hurst and Andy Tomlinson).

VII. Collective behaviors. Unorthodox optimal foraging theory (Anil K. Seth). Talk is cheap: Evolved strategies for communication and action in asymmetrical contests (Jason Noble). Go ahead, make my day: Robot conflict resolution by aggressive competition (Richard T. Vaughan, Kasper Stoy, Gaurav S. Sukhatme and Maja J. Mataric). Using information theory approach to study the communication system and numerical competence in ants (Zhanna Reznikova and Boris Ryabko). Effective learning approach for planning and scheduling in multi-agent domain (Sachiyo Arai and Katia Sycara).

VIII. Applied adaptive behavior. Issues of robot-human interaction dynamics in the rehabilitation of children with autism (Kerstin Dautenhahn and Iain Werry). An evolutionary approach to guiding students in an educational game (Elizabeth Sklar and Jordan Pollack). Author index.

Visual Quantum Mechanics: Selected Topics with Computer-Generated Animations of Quantum-Mechanical Phenomena. By Bernd Thaller. Springer-Verlag, New York. (2000). 283 pages. \$69.95, DM 139.00, öS 1015.00, sFr 126.50, GBP 48.00 (CD-ROM included).

Contents:

Preface. 1. Visualization of wave functions. 2. Fourier analysis. 3. Free particles. 4. States and observables. 5. Boundary conditions. 6. Linear operators in Hilbert spaces. 7. Harmonic oscillator. 8. Special systems. 9. One-dimensional scattering theory. Appendix A. Numerical solution in one dimension. Appendix B. Movie index. Appendix C. Other books on quantum mechanics. Index.

Understanding the Linux Kernel. By Daniel P. Bovet and Marco Cesati. O'Reilly, Sebastopol, CA. (2001). 684 pages. \$39.95.

Contents:

Preface. 1. Introduction. 2. Memory addressing. 3. Processes. 4. Interrupts and exceptions. 5. Timing measurements. 6. Memory management. 7. Process address space. 8. System calls. 9. Signals. 10. Process scheduling. 11. Kernel synchronization. 12. The virtual filesystem. 13. Managing I/O devices. 14. Disk caches. 15. Accessing regular files. 16. Swapping: Methods for freeing memory. 17. The Ext2 filesystem. 18. Process communication. 19. Program execution. Appendix A. System startup. Appendix B. Modules. Appendix C. Source code structure. Bibliography. Source code index. Index.

The Oracle PL/SQL CD Bookshelf: 7 Bestselling Books on CD-ROM. O'Reilly, Sebastopol, CA. (2000). \$89.95 (CD-ROM with bonus book included).

Contents:

Oracle PL/SQL Programming, 2nd edition (Steven Feuerstein and Bill Pribyl). *Oracle PL/SQL: Guide to Oracle8i Features* (Steven Feuerstein). *Oracle Built-in Packages* (Steven Feuerstein, Charles Dye and John Beresniewicz). *Advanced Oracle PL/SQL Programming with Packages* (Steven Feuerstein). *Oracle Web Applications: PL/SQL Developer's Introduction* (Andrew Odewahn). *Oracle PL/SQL Language Pocket Reference* (Steven Feuerstein, Bill Pribyl and Chip Dawes). *Oracle PL/SQL Built-ins Pocket Reference* (Steven Feuerstein, John Beresniewicz and Chip Dawes).

Oracle PL/SQL Programming: Guide to Oracle8i Features. By Steven Feuerstein. O'Reilly, Sebastopol, CA. (1999). 248 pages. \$29.95 (diskette included); book included as bonus book in *The Oracle PL/SQL CD Bookshelf: 7 Bestselling Books on CD-ROM* (see above).

Contents:

Preface. 1. Oracle8i: A bounty for PL/SQL developers. 2. Choose your transaction? 3. Invoker rights: Your schema or mine? 4. Native dynamic SQL in Oracle8i. 5. Building up with PL/SQL 8.1. 6. New trigger features in Oracle8i. 7. New and enhanced built-in packages in Oracle8i. 8. Deploying fine-grained access control. 9. Calling Java from PL/SQL. 10. More goodies for Oracle8i PL/SQL developers. Appendix: What's on the companion disk? Index.

Introduction to AI Robotics. By Robin R. Murphy. The MIT Press, Cambridge, MA. (2000). 466 pages. \$50.00.

Contents:

Preface. I. Robotic paradigms. 1. From teleoperation to autonomy. 2. The hierarchical paradigm. 3. Biological foundations of the reactive paradigm. 4. The reactive paradigm. 5. Designing a reactive implementation. 6. Common sensing techniques for reactive robots. 7. The hybrid deliberative/reactive paradigm. 8. Multi-agents. II. Navigation. 9. Topological path planning. 10. Metric path planning. 11. Localization and map making. 12. On the horizon. Bibliography. Index.

Securing Windows NT/2000 Servers for the Internet. By Stefan Norberg. O'Reilly, Sebastopol, CA. (2001). 199 pages. \$29.95.

Contents:

Preface. 1. Windows NT/2000 security. 2. Building a Windows NT bastion host. 3. Building a Windows 2000 bastion host. 4. Setting up secure remote administration. 5. Backing up and restoring your bastion host. 6. Auditing and monitoring your perimeter network. 7. Maintaining your perimeter network. A. Well-known ports used by Windows NT/2000. B. Security-related knowledge base articles. C. Build instructions for OpenSSH on Cygwin. Index

Characters and Automorphism Groups of Compact Riemann Surfaces. By Thomas Breuer. Cambridge University Press, Cambridge, U.K. (2000). 199 pages. \$39.95.

Contents:

Preface. Notation. 1. Compact Riemann surfaces. 2. Group characters. 3. Automorphisms of compact Riemann surfaces. 4. Generation of groups. 5. Classification for small genus. 6. Classification for fixed group: Real characters. 7. Classification for fixed group: Nonreal irrationalities. Appendix A. Abelian invariants. Appendix B. Irreducible characters. Appendix C. Maillet's determinant. References. Index.

Java™ Message Service. By Richard Monson-Haefel and David A. Chappell. O'Reilly, Sebastopol, CA. (2001). 220 pages. \$34.95.

Contents:

Preface. 1. Understanding the messaging paradigm. 2. Developing a simple example. 3. Anatomy of a JMS message. 4. Publish-and-subscribe messaging. 5. Point-to-point messaging. 6. Guaranteed messaging, transactions, acknowledgments, and failures. 7. Deployment considerations. 8. J2EE, EJB, and JMS. 9. JMS providers. A. The Java Message Service API. B. Message headers. C. Message properties. D. Message selectors. Index.

Information Dynamics: Foundations and Applications. By Gustavo Deco and Bernd Schürmann. Springer-Verlag, New York. (2001). 281 pages. \$49.95, DM 109.00, öS 796.00, sFr 94.00, GBP 37.50.

Contents:

Preface. 1. Introduction. 2. Dynamical systems: An overview. 3. Statistical structure extraction in dynamical systems: Parametric formulation. 4. Applications: Parametric characterization of time series. 5. Statistical structure extraction in dynamical systems: Nonparametric formulation. 6. Applications: Nonparametric characterization of time series. 7. Statistical structure extraction in dynamical systems: Semiparametric formulation. 8. Applications: Semiparametric characterization of time series. 9. Information processing and coding in spatiotemporal dynamical systems: Spiking networks. 10. Applications: Information processing and coding in spatiotemporal dynamical systems. Epilogue. Appendix A. Chain rules, inequalities and other useful theorems in information theory. Appendix B. Univariate and multivariate cumulants. Appendix C. Information flow of chaotic systems: Thermodynamical formulation. Appendix D. Generalized discriminability by the spike response model of a single spiking neuron: Analytical results. References. Index.

SQL in a Nutshell: A Desktop Quick Reference. By Kevin Kline with Daniel Kline. O'Reilly, Sebastopol, CA. (2001). 214 pages. \$29.95.

Contents:

Preface. 1. SQL, vendor implementations, and some history. 2. Foundational concepts. 3. SQL statements command reference. 4. SQL functions. 5. Unimplemented SQL99 commands. Appendix—SQL99 and vendor-specific keywords. Index.

Windows 2000: Quick Fixes. By Jim Boyce. O'Reilly, Sebastopol, CA. (2001). 285 pages. \$29.95.

Contents:

Preface. 1. Installing and booting Windows 2000. 2. Configuring hardware. 3. Configuring system software and components. 4. Configuring the Windows 2000 interface. 5. Printing. 6. The command console. 7. Network configuration. 8. Sharing and accessing network resources. 9. Using and troubleshooting TCP/IP. 10. Using and sharing dial-up networking connections. 11. Web services and security. 12. Users, policies, certificates, and security. 13. Backup, recovery, and repair. Index.

Finite Analytic Method in Flows and Heat Transfer. By Ching Jen Chen, Richard Bernatz, Kent D. Carlson and Wanlai Lin. Taylor & Francis, New York. (2000). 332 pages. \$69.95.

Contents:

Preface. I. Introduction to computational fluid dynamics. 1. Introduction. 2. Governing equations. 3. Classification of PDEs. 4. Well-posed problems. 5. Numerical methods. 6. The finite difference method. II. The finite analytic method. 7. Basic principles. 8. The one-dimensional case. 9. The two-dimensional case. 10. The three-dimensional case. 11. Stability and convergence. 12. Hyperbolic PDEs. 13. Explicit finite analytic method. III. Numerical grid generation. 14. Introduction to grid generation. 15. Elliptic grid generation. 16. Equations in ξ and η coordinates. 17. Diagonal cartesian method. 18. FA method on DC coordinates. IV. Computational

considerations. 19. Velocity, pressure and staggered grids. 20. Nonstaggered grid methods. 21. Boundary conditions. V. Applications of the FA method. 22. Turbulent flows. 23. Turbulent heat transfer. 24. Complex domain flows. 25. Conjugate heat transfer. A. The one-dimensional case. B. The two-dimensional case.

XML in a Nutshell: A Desktop Quick Reference. By Elliotte Rusty Harold and W. Scott Means. O'Reilly, Sebastopol, CA. (2001). 480 pages. \$29.95.

Contents:

Preface. I. XML concepts. 1. Introducing XML. 2. XML fundamentals. 3. Document type definitions. 4. Namespaces. 5. Internationalization. II. Narrative-centric documents. 6. XML as a document format. 7. XML on the Web. 8. XSL transformations. 9. XPath. 10. XLinks. 11. XPointers. 12. Cascading stylesheets (CSS). 13. XSL formatting objects (XSL-FO). III. Data-centric documents. 14. XML as a data format. 15. Programming models. 16. Document object model (DOM). 17. SAX. IV. Reference. 18. XML 1.0 reference. 19. XPath reference. 20. XSLT reference. 21. DOM reference. 22. SAX reference. 23. Character sets. Index.

Knowledge Management: Classic and Contemporary Works. Edited by D. Morey, Mark Maybury and Bhavani Thuraisingham. The MIT Press, Cambridge, MA. (2000). 435 pages. \$45.00.

Contents:

Preface. Acknowledgments. Introduction: Can knowledge management succeed where other efforts have failed? (Margaret Wheatley). I. Strategy. Introduction: Strategy: Compelling word, complex concept (Gordon Petrash). 1. Classic work: The leader's new work: Building learning organizations (Peter Senge). 2. Reflection on "A leader's new work: Building learning organizations" (Peter Senge). 3. Developing a knowledge strategy: From management to leadership (David J. Skyrme). 4. Building intangible assets: A strategic framework for investing in intellectual capital (Patricia Seemann, David De Long, Susan Stucky and Edward Guthrie). 5. Knowledge sharing is a human behavior (William Ives, Ben Torrey and Cindy Gordon). II. Process. Introduction: Sharing and building context (Bipin Junnarkar). 6. Classic work: Theory of organizational knowledge creation (Hiroataka Takeuchi and Ikujiro Nonaka). 7. Reflection on knowledge management from Japan (Hiroataka Takeuchi and Ikujiro Nonaka). 8. Knowledge management: Linking theory with practice (Rüdiger Reinhardt). 9. Tacit knowledge, unarticulated needs, and empathic design in new product development (Dorothy Leonard). 10. Enabling complex adaptive processes through knowledge management (Rudy Ruggles and Ross Little). 11. Knowledge sharing shifts the power paradigm (Carol Willett). 12. From capitalizing on company knowledge to knowledge management (Michel Grundstein). 13. Evolution through knowledge management: A case study (Barbara Lawton). III. Metrics. Introduction: Metrics: Separating KM fact from fiction (Edward Swanstrom). 14. Classic work: The balanced scorecard: Learning and growth perspective (Robert S. Kaplan and David P. Norton). 15. Measuring intangibles and intellectual capital (Karl-Erik Sveiby). 16. New measures for a new era (Laurie J. Bassi and Mark E. Van Buren). 17. Managing organizational knowledge by diagnosing intellectual capital (Nick Bontis). 18. Knowledge sharing metrics for large organizations (Laurence Lock Lee). Appendix. Contact the authors. Index.

Principles of Computational Fluid Dynamics. By Pieter Wesseling. Springer-Verlag, Berlin. (2001). 644 pages. \$89.00, DM 169.00, öS 1,234.00, sFr 146.00, GBP 58.50.

Contents:

Preface. 1. The basic equations of fluid dynamics. 2. Partial differential equations: Analytic aspects. 3. Finite volume and finite difference discretization on nonuniform grids. 4. The stationary convection-diffusion equation. 5. The nonstationary convection-diffusion equation. 6. The incompressible Navier-Stokes equations. 7. Iterative methods. 8. The shallow-water equations. 9. Scalar conservation laws. 10. The Euler equations in one space dimension. 11. Discretization in general domains. 12. Numerical solution of the Euler equations in general domains. 13. Numerical solution of the Navier-Stokes equations in general domains. 14. Unified methods for computing incompressible and compressible flow. References. Index.

Designing Web Audio. By Josh Beggs and Dylan Thede. O'Reilly, Sebastopol, CA. (2001). 382 pages. \$34.95.

Contents:

Preface. 1. The art of sound design. 2. The science of sound and digital audio. 3. Capturing original source material. 4. Optimizing your sound files. 5. Introduction to streaming media. 6. Encoding, serving, and streaming sound with RealAudio. 7. Designing multimedia presentations with SMIL and RealSystem G2. 8. Playing, serving, and streaming MP3. 9. Interactive sound design with Flash and Shockwave. 10. MIDI: Quick and easy audio for the Web. 11. Designing audio web sites with Beatnik. A. Creating the ultimate web sound studio: Buyers guide and web resources. B. Audio format comparison. Glossary. Index.

Handbook of Numerical Analysis, Volume VII. Edited by P. G. Ciarlet and J. L. Lions. Elsevier, Amsterdam. (2000). 1020 pages. \$183.50, NLG 350.00.

Contents:

General preface. Solution of equations in \mathbb{R}^n (Part 3). Gaussian elimination for the solution of linear systems of equations (Gérard Meurant). Foreword. 1. Numerical solution of general linear systems. 2. Error analysis.

3. Vector and parallel algorithms for general systems. 4. Gaussian elimination for sparse linear systems. 5. Parallel algorithms for sparse matrices. References. Subject index.

Techniques of scientific computing (Part 3). The analysis of multigrid methods (James H. Bramble and Xuejun Zhang). Preface. 1. Introduction. 2. Abstract theory. 3. Applications. 4. Appendix. References. Subject index. Wavelet methods in numerical analysis (Albert Cohen). Preface. 1. Basic examples. 2. Multiresolution approximation. 3. Multiscale decomposition of function spaces. 4. Nonlinear approximation and adaptivity. Notations. References. Subject index. Finite volume methods (Robert Eymard, Thierry Gallouët and Raphaële Herbin). 1. Introduction. 2. A one-dimensional elliptic problem. 3. Elliptic problems in two or three dimensions. 4. Parabolic equations. 5. Hyperbolic equations in the one-dimensional case. 6. Multidimensional nonlinear hyperbolic equations. 7. Systems. References. Subject index.

Essentials of Programming Languages, Second Edition. By Daniel P. Friedman, Mitchell Wand and Christopher T. Haynes. The MIT Press, Cambridge, MA. (2001). 389 pages. \$55.00.

Contents:

Foreword. Preface. Acknowledgments. 1. Inductive sets of data. 2. Data abstraction. 3. Environment-passing interpreters. 4. Types. 5. Objects and classes. 6. Objects and types. 7. Continuation-passing interpreters. 8. Continuation-passing style. A. The SLLGEN parsing system. B. For further reading. Bibliography. Index.

Causation, Prediction, and Search, Second Edition. By Peter Spirtes, Clark Glymour and Richard Scheines; with additional material by David Heckerman, Christopher Meek, Gregory F. Cooper and Thomas Richardson. The MIT Press, Cambridge, MA. (2000). 543 pages. \$55.00.

Contents:

Preface to the second edition. Preface. Acknowledgments. Notational conventions. 1. Introduction and advertisement. 2. Formal preliminaries. 3. Causation and prediction: Axioms and explications. 4. Statistical indistinguishability. 5. Discovery algorithms for causally sufficient structures. 6. Discovery algorithms without causal sufficiency. 7. Prediction. 8. Regression, causation, and prediction. 9. The design of empirical studies. 10. The structure of the unobserved. 11. Elaborating linear theories with unmeasured variables. 12. Prequels and sequels. 13. Proofs and theorems. Notes. Glossary. References. Index.

The Logic of Knowledge Bases. By Hector J. Levesque and Gerhard Lakemeyer. The MIT Press, Cambridge, MA. (2000). 282 pages. \$45.00.

Contents:

Preface. Acknowledgments. Part I. 1. Introduction. 2. A first-order logical language. 3. An epistemic logical language. 4. Logical properties of knowledge. 5. The TELL and ASK operations. 6. Knowledge bases as representations of epistemic states. 7. The representation theorem. 8. Only-knowing. Part II. 9. Only-knowing and autoepistemic logic. 10. On the proof theory of \mathcal{OL} . 11. Only-knowing-about. 12. Avoiding logical omniscience. 13. The logic \mathcal{EOC} . 14. Knowledge and action. Epilogue. References. Index.

Exploring Randomness. By Gregory J. Chaitin. Springer-Verlag, London. (2001). 164 pages. \$34.95, DM 69.00, öS 504.00, sFr 61.00, GBP 24.50.

Contents:

Preface. I. Introduction. Historical introduction—A century of controversy over the foundations of mathematics. What is LISP? Why do I like it? How to program my universal Turing machine in LISP. II. Program size. A self-delimiting Turing machine considered as a set of (program, output) pairs. How to construct self-delimiting Turing machines: The Kraft inequality. The connection between program-size complexity and algorithmic probability: $H(x) = -\log_2 P(x) + O(1)$. Occam's razor: There are few minimum-size programs. The basic result on relative complexity: $H(y | x) = H(x, y) - H(x) + O(1)$. III. Randomness. Theoretical interlude—What is randomness? My definitions. Proof that Martin-Löf randomness is equivalent to Chaitin randomness. Proof that Solovay randomness is equivalent to Martin-Löf randomness. Proof that Solovay randomness is equivalent to strong Chaitin randomness. IV. Future work. Extending AIT to the size of programs for computing infinite sets and to computations with oracles. Postscript—Letter to a daring young reader.

Empirical Methods for Exploiting Parallel Texts. By I. Dan Melamed. The MIT Press, Cambridge, MA. (2001). 195 pages. \$32.95.

Contents:

Acknowledgements. 1. Introduction. I. Translational equivalence among word tokens. 2. A geometric approach to mapping bitext correspondence. 3. Application: Alignment. 4. Application: Automatic detection of omissions in translations. II. The type-token interface. 5. Models of co-occurrence. 6. Manual annotation of translational equivalence. III. Translational equivalence among word types. 7. Word-to-word models of translational equivalence. 8. Automatic discovery of non-compositional compounds. 9. Sense-to-sense models of translational equivalence. 10. Summary and outlook. A. Annotation style guide for the Blinker Project. Notes. References. Index.

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