Literature

Telegraphic reviews
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Telegraphic reviews are brief reports about the books that have been previously listed in Books received for review but have not been selected for the full-length review format. A telegraphic review is intended to provide limited information in a timely manner about the content and the prospective audience of the book. The reviews are based on a selective reading of the books and reflect an opinion independent of the book publishers. Price information is subject to change.

Alpaydin, E. (2004). **Introduction to Machine Learning.** Cambridge, MA: MIT Press. $50.00. xxx + 414 pp. ISBN 0-262-01211-1. This book is an excellent text about machine learning that is designed for the advanced undergraduate or beginning graduate student in computer science. The author does a good job of introducing the reader to the major research contributions drawn from statistics, pattern recognition, neural networks, and signal processing. After an introductory chapter, the rest of the book consists of 15 chapters. The topics for these chapters are: supervised learning, Bayesian decision theory, parametric methods, multivariate methods, dimensionality reduction, clustering, nonparametric methods, decision trees, linear discrimination, multilayer perceptrons, local models, hidden Markov models, assessment of classification algorithms, multiple learners, and reinforcement learning. Exercises are provided for each of these chapters.

Bhatia, R. (2005). **Fourier Series.** Washington, DC: Mathematical Association of America. $46.00. x + 120 pp. ISBN 0-88385-740-5. In 1822, Fourier published his classic treatise on the topic of heat conduction and provided a rich set of mathematical problems that motivated generations of mathematicians. The series that goes by his name has proved to be both a powerful tool and a stimulus for further mathematical development. The author of this book has sought to cover both the Fourier series and subsequent mathematics that was instigated by the series. The book is most suitable for mathematicians with a solid background in mathematical analysis, complex variable theory, and differential equations. The monograph is rigorous, but reads more like an expanded set of lecture notes than a comprehensive text.

Malle, B. F. (2004). **How the Mind Explains Behavior: Folk Explanations, Meaning, and Social Interaction.** Cambridge, MA: MIT Press. $38.00. viii + 314 pp. ISBN 0-262-13445-4. The author of this monograph attempts to understand the mental models that individuals build about others. Malle begins with a review of attribution theory in social psychology. He further argues that people build theories about others because they are puzzled about the behavior of others; yet, once the mental models are constructed, the models are influential in guiding verbalizations and behavior. Although attribution theory and the "folk theory of mind" are appealing ideas to some psychologists, other psychologists find this type of theorizing as insubstantial speculation. This book does not advance the "folk theory of mind" closer towards a rigorous science.

Mandelbrot, B., and Hudson, R. L. (2004). **The (Mis)Behavior of Markets: A Fractal View of Risk, Ruin, and Reward.** New York, NY: Basic Books. $27.50. xxiv + 328 pp. ISBN 0-465-04355-0. This book resulted from the collaboration of two quite different writers. Benoit Mandelbrot is an applied mathematician and the inventor of fractals. Richard Hudson is a former *Wall Street Journal*, editor. Their respective roles appear to be one of Hudson providing the text for the concepts that originated with Mandelbrot. The central goal is to explain the behavior of capital markets in terms of fractals. After a suitable introduction, the authors argue that the random walk conceptualization of markets does not capture crucial features of market behavior. Due to the interconnection of all other economic activities, the authors contend that market prices are turbulent and are better represented by a factual analysis. Although this book is designed for the non-technical reader, the points raised are excellent and need careful consideration by economists.

Parker, J. (2005). **R.L. Moore: Mathematician & Teacher.** Washington, D.C.: The Mathematical Association of America. $45.95. xiv + 387 pp. ISBN 0-88385-550-X. R. L. Moore (1182–1974) had enormous influence on American mathematics of the 20th century. He initiated his own school of topology that became a fertile research area. He directed 50 students towards their Ph.D., and these former students in turn trained more than 1600 doctoral descendants. He also taught in a highly idiosyncratic fashion. Moore prohibited his students from using textbooks, and he supplied only brief lectures on various topics in his courses in order to create a wide-open problem-solving environment. Students were thrust into an environment designed to have them create mathematics without being influenced by prior work. In this book, the life and work of Moore is carefully described. Moore was a controversial figure who did not always get along with other faculty members and did not accept all students who wished to study with him. The author explores both Moore's positive and negative characteristics. This book is the definitive biography of a major figure in mathematics.

Paulos, J. A. (2004). **A Mathematician Plays the Stock Market.** New York, NY: Basic Books. $14.95. viii + 216 pp. ISBN 0-465-05481-1. John Paulos is a gifted writer whose work captures the excitement of mathematical research. In this entertaining volume he examines the world of stock market investment. Amusing stories and vignettes are skillfully used to penetrate the complexities of equity trading. The book is accessible to a wide audience and is deceptively simple. Nonetheless, Paulos beautifully draws insights from psychology, economics, and mathematics to demystify the stock market. Although it is easy to make a mistake in the financial world, the purchase of this book is a sound investment.

Schott, J. R. (2005). **Matrix Analysis for Statistics (2nd ed.).** Hoboken: NJ: Wiley. $94.95. xiii + 456 pp. ISBN 0-471-66983-0. This book is a sophisticated and self-contained text about matrix analysis. The volume is written in a theorem/proof format. The proofs are clear, and comments are provided to set the context for the theorems. Although the book covers many familiar topics, it also included a number of advanced topics that are useful for statistical analyses. Among the more advanced topics covered are the Moore–Penrose gen-eralized inverse, the distribution of quadratic forms, and matrix derivatives. In this second edition, more than 100 exercises have been added. Also there is a new chapter devoted to matrices partitioned into the 2×2 form. This text is a recommended resource for researchers wishing to expand their command of matrix analysis.

Straley, T. H., Sward, M. P., and Scott, J. W. (Eds.) (2005). **Leading the Mathematical Sciences Department: A Resource for Chairs.** Washington, DC: Mathematical Association of America. $49.95. xviii + 185 pp. ISBN 0-88385-174-1. The intended audience for this book is clear from the title. However, the underlying premise of the book is questionable. Usually a department chair is a senior faculty member who has considerable experience both as a teacher and as a researcher. That experience and the knowledge of the local culture of the university form the basis for administrative leadership. The editors of this book believe that essays written by past chairs and administrators can be helpful to newly appointed chairs. The essays included in the book originated from a workshop held in 2002 as part of the Mathematics Association of America's Professional Enhancement Program. Yet, for an appropriate senior faculty member, who has been selected to become a department chair, the material provided in this book is not likely to be new or helpful.

Schaal, S., Ijspeert, A., Billard, A., Vijayakumar, S., Hallam, J., and Meyer, J-A. (Eds.) (2004). **From Animals to Animats 8.** Cambridge, MA: MIT Press. xi + 530 pp. $85.00. ISBN 0-262-69341-0. This book is a collection of the 53 papers that were presented at the Eighth International Conference on the Simulation of Adaptive Behavior. The papers deal with general adaptive behavior (21 papers), perception (8 papers), motor control and navigation (13 papers), and social behavior (11 papers). Although the articles provide a picture of the current developments in robotics and the simulation of adaptive behavior, these papers appear to be works in progress. The completed and polished research is likely to be published later in a journal article or a book. Consequently, it is difficult to recommend this book for individual. Libraries, however, might wish to purchase the book because the collection of papers can provide students with a useful glimpse at ongoing robotics research projects.