The concept of signature can be extended to networks (i.e., undirected graphs composed of a set of vertices connected selectively by edges, which may work or fail). Chapter 6 studies applications of signatures to network reliability, including the linkage between signatures and dominations.

Chapter 7 is devoted to applications in reliability economics, including the determination of optimal systems. The ratio of a measure of performance (e.g., reliability or expected lifetime) to a measure of cost is used as a criterion function. Both measures can be computed using signatures, and thus the signatures allow us to derive the optimal systems under different criterions.

The final chapter presents a retrospective overview on system signatures, some additional related literature, and open questions for future research. Among these open questions, the author proposes studying the extensions of signature representations to systems with nonidentically distributed components or with dependent components, new ordering properties based on signatures, and the determination of the limiting monotonicity of the failure rate function of the system. The author offers (with tongue in cheek) two kinds of prizes for new results on signatures: a 50-cent prize for solutions to easy problems and a 1-dollar prize for solutions to hard ones, and he promises that even results that are considered merely "not bad" by his heirs will be seriously considered for an award!

Jorge NAVARRO
Universidad de Murcia

REFERENCES

Barlow, R. E., and Proschan, F. (1975), *Statistical Theory of Reliability and Life Testing*, New York: Holt, Rinehart and Winston.

Samaniego, F. J. (1985), "On Closure of the IFR Class Under Formation of Coherent Systems," *IEEE Transactions on Reliability*, R-34, 69–72.

Vacation Queueing Models: Theory and Applications.

Naishuo TIAN and Zhe George ZHANG. New York: Springer, 2006. ISBN 0-387-33721-0. viii + 385 pp. $119.00.

This book provides a comprehensive, up-to-date treatment of various queueing systems with server vacations. A server vacation is defined as a period of temporary service unavailability. A vacation policy is usually determined by a vacation startup and termination rule and by the distribution of the length of the vacations. Starting with an overview of the classical vacation queueing theory, the authors consider single- and multiserver vacation queueing systems with renewal input and quasi-birth–death vacation queues. The book can be used as a reference on vacation queueing systems by both researchers and practitioners. This is not an introductory textbook, however. A solid background in queueing theory, including acquaintance with both classical transform techniques and matrix analytic techniques, is a prerequisite.

Chapter 2 focuses on exhaustive vacation policies. Classical models, such as $M/G/1$ queueing systems with multiple and single exhaustive vacations and N-policy, are complemented with multiple-adaptive, discrete-time, bulk-server and finite exhaustive vacation systems. The authors also touch on exhaustive vacation queues with Markovian arrivals. Chapter 3 covers $M/G/1$ queues with nonexhaustive vacation policies, including gated, limited, decrementing, and Bernoulli policies.

The remainder of the book deals with nonstandard vacation queueing systems. $GI/M/1$ type queues are considered in Chapter 4. Vacation policies investigated again include the multiple and single vacation policies, as well as N-policy. As in Chapter 2, bulk-service, discrete-time, and finite vacation queues are studied as well. Chapters 5 and 6 treat multiserver queueing systems, quasi-birth–death multiserver systems (Chap. 5), and systems with renewal input (Chap. 6). The different servers of the multiserver systems either leave simultaneously for vacations (synchronous vacations) or leave independently of each other (asynchronous vacations). Practitioners may find Chapter 7 particularly appealing. The entire chapter is devoted to optimization problems related to various vacation queues; for example, an optimal threshold is determined for an $M/G/1$ queue with a threshold vacation policy. Finally, some applications of vacation systems are considered in Chapter 8. In particular, the authors consider vacation queues to model flexible production systems, a telephone service center, and ATM networks.

There are only a few alternatives to this book. Although some introductory queueing theory books, such as that by Bose (2001), include basic vacation queueing theory, an extensive treatment of vacation systems can be found only in Takagi's series of monographs on queueing systems (1991, 1993). Volumes 1, 2, and 3 of that series cover $M/G/1$ queueing systems, finite buffer $M/G/1$ queueing systems, and discrete-time $M/G/1$ queueing systems, respectively. Major parts of all three volumes deal with queueing systems with vacations. However, apart from some overlap in Chapters 2 and 3, *Vacation Queuing Models* is complementary to this series.

Dieter FIEMS
Ghent University

REFERENCES

Bose, S. K. (2001), *An Introduction to Queueing Systems*, Dordrecht: Kluwer Academic.

Takagi, H. (1991, 1993), *Queueing Analysis, a Foundation of Performance Evaluation*, Vols. 1–3, Amsterdam: North-Holland.

TELEGRAPHIC REVIEWS

Bootstrap Methods: A Guide for Practitioners and Researchers (2nd ed.).

M. R. CHERNICK. Hoboken, NJ: Wiley, 2008. ISBN 978-0-471-75621-7. xviii + 369 pp. $116.95.

This second edition (with a slightly changed title), like the first, is aimed at applied researchers and data analysts who do not necessarily have a strong mathematics background. The topics of confidence interval construction, regression inference, and time series analysis are discussed, along with other mainstream statistical topics. There is a very extensive bibliography, but it might have been more useful had the bibliography been ordered alphabetically by author and not stratified by year.

The first edition suffered from typographical errors, and unfortunately this is still the case. There are several instances of different symbols meaning the same thing and at least one case where the same symbol means different things. Overall, the applications are interesting, demonstrating the great power of bootstrap methods in applications. The bibliography is a fantastic compilation, but the many typographical errors that lead to conceptual errors hurt the overall presentation.

Michael SHERMAN
Texas A&M University

Controlled Markov Processes and Viscosity Solutions (2nd ed.).

Wendell H. FLEMING and H. Mete SONER. New York: Springer, 2006. ISBN 0-387-26045-5. xvii + 429 pp. $79.95.

According to the Preface, "this book is intended as an introduction to optimal stochastic control for continuous time Markov processes and to the theory of viscosity solutions." It is no doubt the definitive text on the subject written by two recognized experts in the field. This second edition differs considerably from the first edition, particularly in the addition of chapters on applications to finance and differential games. Especially through the work on portfolio optimization, the field has received extra interest in recent years. Furthermore, the