

<<自助法及其应用>>

图书基本信息

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前言

The publication in 1979 of Bradley Efron's first article on bootstrap methods was a major event in Statistics, at once synthesizing some of the earlier resampling ideas and establishing a new framework for simulation-based statistical analysis. The idea of replacing complicated and often inaccurate approximations to biases, variances, and other measures of uncertainty by computer simulations caught the imagination of both theoretical researchers and Users of statistical methods. Theoreticians sharpened their pencils and set about establishing mathematical conditions under which the idea could work. Once they had overcome their initial skepticism, applied workers sat down at their terminals and began to amass empirical evidence that the bootstrap often did work better than traditional methods. The early trickle of Papers quickly became a torrent, with new additions to the literature appearing every month and it was hard to see when would be a good moment to try to chart the waters. Then the organizers of COMPSTAT 92 invited us to present a course on the topic, and shortly afterwards we began to write this book. We decided to try to write a balanced account of resampling methods, to include basic aspects of the theory which underpinned the methods, and to show as many applications as we could in order to illustrate the full potential of the methods—warts and all. We quickly realized that in order for us and others to understand and use the bootstrap, we would need suitable software, and producing it led us further towards a practically oriented treatment. Our view was cemented by two further developments: the appearance of two excellent books, one by Peter Hall on the asymptotic theory and the other on basic methods by Bradley Efron and Robert Tibshirani; and the chance to give further courses that included practicals. Our experience has been that hands-on computing is essential in coming to grips with resampling ideas, so we have included practicals in this book as well as more theoretical problems. As the book expanded, we realized that a fully comprehensive treatment was beyond us, and that certain topics could be given only a cursory treatment because too little is known about them. So it is that the reader will find only brief accounts of bootstrap methods for hierarchical data, missing data problems, model selection, robust estimation, nonparametric regression, and complex data. But we do try to point the more ambitious reader in the right direction.

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内容概要

This series of high quality upper-division textbooks and expository monographs covers all areas of stochastic applicable mathematics. The topics range from pure and applied statistics to probability theory , operations research, mathematical programming, and optimization. The books contain clear presentations of new developments in the field and also of the state of the art in classical methods. While emphasizing rigorous treatment of theoretical methods, the books contain important applications and discussion of new techniques made possible by advances in computational methods.

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