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<<概率、统计与随机过程>>

图书基本信息

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作者：(美) Henry Stark (美) John W.Woo

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前言

Preface While significant changes have been made in the current edition from its predecessor, the authors have tried to keep the discussion at the same level of accessibly, that is, less mathematical than the measure theory approach but more rigorous than formula and recipe manuals. It has been said that probability is hard to understand, not so much because of its mathematical underpinnings but because it produces many results that are counter intuitive. Among practically oriented students, Probability has many critics. Foremost among these are the ones who ask, “ What do we need it for? ” This criticism is easy to answer because future engineers and scientists will come to realize that almost every human endeavor involves making decisions in an uncertain or probabilistic environment. This is true for entire fields such as insurance, meteorology, urban planning, pharmaceuticals, and many more. Another, possibly more potent, criticism is, “ What good is probability if the answers it furnishes are not certainties but just inferences and likelihoods? ” The nswer here is that an immense amount of good planning and accurate predictions can be done even in the realm of uncertainty. Moreover, applied probability—often called statistics—does provide near certainties: witness the enormous success of political polling and prediction. In previous editions, we have treaded lightly in the area of statistics and more heavily in the area of random processes and signal processing. In the electronic version of this book, graduate-level signal processing and advanced discussions of random processes are retained, along with new material on statistics. In the hard copy version of the book, we have dropped the chapters on applications to statistical signal processing and advanced topics in random processes, as well as some introductory material on pattern recognition. The present edition makes a greater effort to reach students with more expository examples and more detailed discussion. We have minimized the use of phrases such as, “ it is easy to show ”, “ it can be shown ”, “ it is easy to see... , ” and the like. Also, we have tried to furnish examples from real-world issues such as the efficacy of drugs, the likelihood of contagion, and the odds of winning at gambling, as well as from digital communications, networks, and signals. The other major change is the addition of two chapters on elementary statistics and its applications to real-world problems. The first of these deals with parameter estimation and the second with hypothesis testing. Many activities in engineering involve estimating parameters, for example, from estimating the strength of a new concrete formula to estimating the amount of signal traffic between computers. Likewise many engineering activities involve making decisions in random environments, from deciding whether new drugs are effective to deciding the effectiveness of new teaching methods. The origin and applications of standard statistical tools such as the t-test, the Chi-square test, and the F-test are presented and discussed with detailed examples and end-of-chapter problems.

Finally, many self-test multiple-choice exams are now available for students at the book Web site. These exams were administered to senior undergraduate and graduate students at the Illinois Institute of Technology during the tenure of one of the authors who taught there from 1988 to 2006. The Web site also includes an extensive set of small MATLAB programs that illustrate the concepts of probability. In summary then, readers familiar with the 3rd edition will see the following significant changes:A new chapter on a branch of statistics called parameter estimation with many illustrative examples;A new chapter on a branch of statistics called hypothesis testing with many illustrative examples;A large number of new homework problems of varying degrees of difficulty to test the student ’ s mastery of the principles of statistics;A large number of self-test, multiple-choice, exam questions calibrated to the material in various chapters

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内容概要

《国外电子与通信教材系列：概率、统计与随机过程（第四版）（英文版）》从工程应用的角度，全面阐述概率、统计与随机过程的基本理论及其应用。
全书共11章，首先简单介绍概率论，然后各章分别讨论随机变量、随机变量的函数、均值与矩、随机矢量、统计（包括参数估计和假设检验）、随机序列、随机过程基础知识和深入探讨，最后讨论了统计信号处理中的相关应用。
书中给出了大量电子和信息系统相关实例，每章给出了丰富的习题。

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编辑推荐

斯塔克、伍兹编著的《概率统计与随机过程（第4版英文版）》从工程应用的角度，全面阐述概率、统计与随机过程的基本理论及其应用。
适合作为电子信息类专业本科生和研究生的“随机信号分析”或“随机过程及其应用”课程的双语教学教材，也可供从事相关技术领域研究的科技人员参考。

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