

<<信息论基础>>

图书基本信息

书名：<<信息论基础>>

13位ISBN编号：9787030344564

10位ISBN编号：7030344561

出版时间：2012-7

出版时间：科学出版社

作者：杨伟豪

页数：412

字数：430000

版权说明：本站所提供下载的PDF图书仅提供预览和简介，请支持正版图书。

更多资源请访问：<http://www.tushu007.com>

<<信息论基础>>

内容概要

《信息论基础(英文版)》作者(杨伟豪)现为香港中文大学网络编码研究所主任,是网络编码理论的提出者之一。

本书原版自2002年出版以来,被哥伦比亚大学、康奈尔大学、麻省理工学院、斯坦福大学等美国著名学府所采用,是信息理论方面的重要教材。

本书首先介绍了信息论的经典内容,然后全面详细地论述了,度量、网络编码、Shannon型与非Shannon型信息不等式等理论,以及熵函数与群论之间的关系。

《信息论基础(英文版)》中配有大量的实例、插图和习题,适合作为通信、电子信息、计算机等专业的高年级本科生和研究生的教材,也可供相关领域的科研人员参考。

<<信息论基础>>

作者简介

杨伟豪(Raymond

w . Yeung)教授1988年毕业于美国康奈尔大学。

获博士学位。

之后曾在AT&T贝尔实验室工作3年，于1

991年加入香港中文大学，现为网络编码研究所主任，是网络编码理论的提出者之一，其主要研究领域为信息理论与网络编码。

他还是IEEE

Fellow和香港工程师学会会士。

书籍目录

1. THE SCIENCE OF INFORMATION
2. INFORMATION MEASURES
 - 2.1 Independence and Markov Chain
 - 2.2 Shannon's Information Measures
 - 2.3 Continuity of Shannon's Information Measures
 - 2.4 Chain Rules
 - 2.5 Informational Divergence
 - 2.6 The Basic Inequalities
 - 2.7 Some Useful Information Inequalities
 - 2.8 Fano's Inequality
 - 2.9 Entropy Rate of Stationary Source
- Problems
- Historical Notes
3. ZERO-ERROR DATA COMPRESSION
 - 3.1 The Entropy Bound
 - 3.2 Prefix Codes
 - 3.2.1 Definition and Existence
 - 3.2.2 Huffman Codes
 - 3.3 Redundancy of Prefix Codes
- Problems
- Historical Notes
4. WEAK TYPICALITY
 - 4.1 The Weak AEP
 - 4.2 The Source Coding Theorem
 - 4.3 Efficient Source Coding
 - 4.4 The Shannon-McMillan-Breiman Theorem
- Problems
- Historical Notes
5. STRONG TYPICALITY
 - 5.1 Strong AEP
 - 5.2 Strong Typicality Versus Weak Typicality
 - 5.3 Joint Typicality
 - 5.4 An Interpretation of the Basic Inequalities
- Problems
- Historical Notes
6. THE \mathbb{H} -MEASURE
 - 6.1 Preliminaries
 - 6.2 The \mathbb{H} -Measure for Two Random Variables
 - 6.3 Construction of the \mathbb{H} -Measure *
 - 6.4 \mathbb{H} Can be Negative
 - 6.5 Information Diagrams
 - 6.6 Examples of Application
- Appendix 6.A: A Variation of the Inclusion-Exclusion Formula
- Problems
- Historical Notes

<<信息论基础>>

7. MARKOV STRUCTURES

- 7.1 Conditional Mutual Independence
- 7.2 Full Conditional Mutual Independence
- 7.3 Markov Random Field
- 7.4 Markov Chain
- Problems
- Historical Notes

8. CHANNEL CAPACITY

- 8.1 Discrete Memoryless Channels
- 8.2 The Channel Coding Theorem
- 8.3 The Convee
- 8.4 Achievability of the Channel Capacity
- 8.5 A Discussion
- 8.6 Feedback Capacity
- 8.7 Separation of Source and Channel Coding
- Problems
- Historical Notes

9. RATE-DISTORTION THEORY

- 9.1 Single-Letter Distortion Measures
- 9.2 The Rate-Distortion Function $R(D)$
- 9.3 The Rate-Distortion Theorem
- 9.4 The Convee
- 9.5 Achievability of $R(D)$
- Problems
- Historical Notes

10. THE BLAHUT-ARIMOTO ALGORITHMS

- 10.1 Alternating Optimization
- 10.2 The Algorithms
 - 10.2.1 Channel Capacity
 - 10.2.2 The Rate-Distortion Function
- 10.3 Convergence
 - 10.3.1- A Sufficient Condition
 - 10.3.2 Convergence to the Channel Capacity
- Problems
- Historical Notes

11. SINGLE-SOURCE NETWORK CODING

- 11.1 A Point-to-Point Network
- 11.2 What is Network Coding?
- 11.3 A Network Code
- 11.4 The Max-Flow Bound
- 11.5 Achievability of the Max-Flow Bound
 - 11.5.1 Acyclic Networks
 - 11.5.2 Cyclic Networks
- Problems
- Historical Notes

12. INFORMATION INEQUALITIES

- 12.1 The Region F_n

<<信息论基础>>

- 12.2 Information Expressio in Canonical Form
- 12.3 A Geometrical Framework
 - 12.3.1 Uncotrained Inequalities
 - 12.3.2 Cotrained Inequalities
 - 12.3.3 Cotrained Identities
- 12.4 Equivalence of Cotrained Inequalities
- 12.5 The Implication Problem of Conditional Independence
- Problems
- Historical Notes
- 13 SHANNON-TYPE INEQUALITIES
 - 13.1 The Elemental Inequalities
 - 13.2 A Linear Programming Approach
 - 13.2.1 Uncotrained Inequalities
 - 13.2.2 Cotrained Inequalities and Identities
 - 13.3 A Duality
 - 13.4 Machine Proving - ITIP
 - 13.5 Tackling the Implication Problem
 - 13.6 Minimality of the Elemental Inequalities
- Appendix 13.A: The Basic Inequalities and the Polymatroidal
- Axioms
- Problems
- Historical Notes
- 14. BEYOND SHANNON-TYPE INEQUALITIES
 - 14.1 Characterizatio of 2 , 3 , and n
 - 14.2 A Non-Shannon-Type Uncotrained Inequality
 - 14.3 A Non-Shannon-Type Cotrained Inequality
 - 14.4 Applicatio
- Problems
- Historical Notes
- 15. MULTI-SOURCE NETWORK CODING
 - 15.1 Two Characteristics
 - 15.1.1 The Max-Flow Bounds
 - 15.1.2 Superposition Coding
 - 15.2 Examples of Application
 - 15.2.1 Multilevel Diveity Coding
 - 15.2.2 Satellite Communication Network
 - 15.3 A Network Code for Acyclic Networks
 - 15.4 An Inner Bound
 - 15.5 An Outer Bound
 - 15.6 The LP Bound and Its Tightness
 - 15.7 Achievability of R_{in}
- Appendix 15.A: Approximation of Random Variables with
- Infinite Alphabets
- Problems
- Historical Notes
- 16. ENTROPY AND GROUPS
 - 16.1 Group Preliminaries

16.2 Group-Characterizable Entropy Functio

16.3 A Group Characterization of \mathbb{R}^n

16.4 Information Inequalities and Group Inequalities

Problems

Historical Notes

Bibliography

Index

版权说明

本站所提供下载的PDF图书仅提供预览和简介，请支持正版图书。

更多资源请访问:<http://www.tushu007.com>