
An Introduction To Minimax Theorems And Their Applications To Differential Equations

Variational Methods in Nonlinear Analysis

A Course on Large Deviations with an Introduction to Gibbs Measures

Topics on Perfect Graphs

An Introduction to Decision Theory

Fixed Point Theorems with Applications to Economics and Game Theory

Introduction to Minimax

Optima and Equilibria

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Recent Progress on Reaction-diffusion Systems and Viscosity Solutions

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Hyperfinite Dirichlet Forms and Stochastic Processes

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Minimax Methods in Critical Point Theory with Applications to Differential Equations

Operator Algebras and Mathematical Physics

Information Bounds and Nonparametric Maximum Likelihood Estimation

Statistical Decision Theory and Bayesian Analysis

Prediction, Learning, and Games

From Hahn-Banach to Monotonicity

Minimax Theorems and Qualitative Properties of the Solutions of Hemivariational Inequalities

KKM Theory and Applications in Nonlinear Analysis

Nonlinear Operator Theory in Probabilistic Metric Spaces

The Theory of Search Games and Rendezvous

An Introduction to Statistical Communication Theory

Introduction to Property Testing

Nonsmooth Equations in Optimization

An Introduction to Applied Matrix Analysis

An Introduction to Linear Programming and the Theory of Games

An Introduction to Minimax Theorems and Their Applications to Differential Equations

Critical Point Theory and Hamiltonian Systems

Minimax and Applications

Encyclopedia of Optimization

An Introduction to Continuous Optimization

Search Games

Index Theory for Symplectic Paths with Applications

Chance, Strategy, and Choice

Introduction to Modern Dynamics
Advances in Multiple Objective and Goal Programming
Ecole d'Ete de Probabilites de Saint-Flour XI, 1981

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Their Applications To
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MICAELA GRANT

*Variational Methods in Nonlinear
Analysis* Springer Science & Business
Media

This important text and reference for researchers and students in machine learning, game theory, statistics and information theory offers a comprehensive treatment of the problem of predicting individual sequences. Unlike standard statistical approaches to forecasting, prediction of individual sequences does not impose any probabilistic assumption on the data-generating mechanism. Yet, prediction algorithms can be constructed that work well for all possible sequences, in the sense that their performance is always nearly as good as the best forecasting strategy in a given reference class. The central theme is the model of prediction using expert advice, a general framework within which many related problems can be cast and discussed. Repeated game playing, adaptive data compression, sequential investment in the stock market, sequential pattern analysis, and several other problems are viewed as instances of the experts' framework and analyzed from a common nonstochastic standpoint that often reveals new and intriguing connections. *A Course on Large Deviations with an Introduction to Gibbs Measures* Springer Science & Business Media

Games and elections are fundamental activities in society with applications in economics, political science, and

sociology. These topics offer familiar, current, and lively subjects for a course in mathematics. This classroom-tested textbook, primarily intended for a general education course in game theory at the freshman or sophomore level, provides an elementary treatment of games and elections. Starting with basics such as gambling, zero-sum and combinatorial games, Nash equilibria, social dilemmas, and fairness and impossibility theorems for elections, the text then goes further into the theory with accessible proofs of advanced topics such as the Sprague-Grundy theorem and Arrow's impossibility theorem. • Uses an integrative approach to probability, game, and social choice theory • Provides a gentle introduction to the logic of mathematical proof, thus equipping readers with the necessary tools for further mathematical studies • Contains numerous exercises and examples of varying levels of difficulty • Requires only a high school mathematical background.

Topics on Perfect Graphs Academic Press
Property testing is concerned with the design of super-fast algorithms for the structural analysis of large quantities of data. The aim is to unveil global features of the data, such as determining whether the data has a particular property or estimating global parameters. Remarkably, it is possible for decisions to be made by accessing only a small portion of the data. Property testing focuses on properties and parameters that go beyond simple statistics. This book provides an extensive and authoritative introduction to property testing. It provides a wide

range of algorithmic techniques for the design and analysis of tests for algebraic properties, properties of Boolean functions, graph properties, and properties of distributions.

An Introduction to Decision Theory World Scientific

The volume provides users and developers of the IT/S (information technology and systems) with information about the advances in decision making and decision-making support that empower and enable information technology in the direction of productivity and effectiveness of decision making in business. The chapters have been written by well-known international experts in decision making and they explore the frontiers of decision making in the era of IT/S. The book is intended to serve as a research source, scientific reference and business support source, as well as a book of student readings that will appeal to a larger international audience.

Contents: Behavioral Issues in Decision Making
Multiple Criteria and Decision Support Systems
Objective Space Analysis
Risk and Efficiency Management
Tradeoff Analysis in Decision Making
Data Environment Analysis
Multiple Criteria System Engineering
Multiple Criteria Applications
Readership: Students, professors, researchers and practitioners in business, management and operations research. Keywords: Multiple Criteria; Decision Making; Decision Support Systems; Tradeoff Analysis; System Engineering; Linear Programming

Fixed Point Theorems with Applications to Economics and Game Theory Springer Science & Business Media

This book gives an introduction to index theory for symplectic matrix paths and

its iteration theory, as well as applications to periodic solution problems of nonlinear Hamiltonian systems. The applications of these concepts yield new approaches to some outstanding problems. Particular attention is given to the minimal period solution problem of Hamiltonian systems and the existence of infinitely many periodic points of the Poincaré map of Lagrangian systems on tori.

Introduction to Minimax Springer Science & Business Media

The best parts of physics are the last topics that our students ever see. These are the exciting new frontiers of nonlinear and complex systems that are at the forefront of university research and are the basis of many high-tech businesses. Topics such as traffic on the World Wide Web, the spread of epidemics through globally-mobile populations, or how the synchronization of global economies are governed by universal principles just as profound as Newton's laws. Nonetheless, the conventional university physics curriculum reserves most of these topics for graduate study because of the assumed need for advanced mathematics. However, by using only linear algebra and calculus, combined with exploratory computer simulations, all of these topics become accessible to advanced undergraduate students. The structure of this book combines the three main topics of modern dynamics - chaos theory, dynamics on complex networks, and general relativity - into a coherent framework. By taking a geometric view of physics, concentrating on the time evolution of physical systems as trajectories through abstract spaces, these topics share a common and simple mathematical language through which any student can gain a

unified physical intuition. Given the growing importance of complex dynamical systems in many areas of science and technology, this text provides students with an up-to-date foundation for their future careers. This second edition has an updated introductory chapter and has added key topics to help students prepare for their GRE physics subject exam. It also has expanded chapters on Hamiltonian dynamics, Hamiltonian chaos, and Econophysics, while increasing the number of homework problems at the end of each chapter. The second edition is designed to fulfill the textbook needs of any advanced undergraduate course in mechanics.

Optima and Equilibria Courier Dover Publications

Techniques and principles of minimax theory play a key role in many areas of research, including game theory, optimization, and computational complexity. In general, a minimax problem can be formulated as $\min_{x \in X} \max_{y \in Y} f(x, y)$ (1) where $f(x, y)$ is a function defined on the product of X and Y spaces. There are two basic issues regarding minimax problems: The first issue concerns the establishment of sufficient and necessary conditions for equality $\min_{x \in X} \max_{y \in Y} f(x, y) = \max_{y \in Y} \min_{x \in X} f(x, y)$. (2) The classical minimax theorem of von Neumann is a result of this type. Duality theory in linear and convex quadratic programming interprets minimax theory in a different way. The second issue concerns the establishment of sufficient and necessary conditions for values of the variables x and y that achieve the global minimax function value $f(x^*, y^*) = \min_{x \in X} \max_{y \in Y} f(x, y)$. (3) There are two developments in minimax theory that we would like to mention.

Introduction to the Theory of Games

Cambridge University Press

This book explores fixed point theorems and its uses in economics, co-operative and noncooperative games.

Minimax Theorems Courier Corporation

The techniques that can be used to solve non-linear problems are far different than those that are used to solve linear problems. Many courses in analysis and applied mathematics attack linear cases simply because they are easier to solve and do not require a large theoretical background in order to approach them. Professor Schechter's 2005 book is devoted to non-linear methods using the least background material possible and the simplest linear techniques. An understanding of the tools for solving non-linear problems is developed whilst demonstrating their application to problems in one dimension and then leading to higher dimensions. The reader is guided using simple exposition and proof, assuming a minimal set of prerequisites. For completion, a set of appendices covering essential basics in functional analysis and metric spaces is included, making this ideal as an accompanying text on an upper-undergraduate or graduate course, or even for self-study.

Recent Progress on Reaction-diffusion Systems and Viscosity Solutions Birkhäuser

This well-thought-out book covers the fundamentals of nonlinear analysis, with a particular focus on variational methods and their applications. Starting from preliminaries in functional analysis, it expands in several directions such as Banach spaces, fixed point theory, nonsmooth analysis, minimax theory, variational calculus and inequalities, critical point theory, monotone, maximal

monotone and pseudomonotone operators, and evolution problems.

An Introduction to Nonlinear

Analysis Springer Science & Business Media

This is an introductory course on the methods of computing asymptotics of probabilities of rare events: the theory of large deviations. The book combines large deviation theory with basic statistical mechanics, namely Gibbs measures with their variational characterization and the phase transition of the Ising model, in a text intended for a one semester or quarter course. The book begins with a straightforward approach to the key ideas and results of large deviation theory in the context of independent identically distributed random variables. This includes Cramér's theorem, relative entropy, Sanov's theorem, process level large deviations, convex duality, and change of measure arguments. Dependence is introduced through the interactions potentials of equilibrium statistical mechanics. The phase transition of the Ising model is proved in two different ways: first in the classical way with the Peierls argument, Dobrushin's uniqueness condition, and correlation inequalities and then a second time through the percolation approach. Beyond the large deviations of independent variables and Gibbs measures, later parts of the book treat large deviations of Markov chains, the Gärtner-Ellis theorem, and a large deviation theorem of Baxter and Jain that is then applied to a nonstationary process and a random walk in a dynamical random environment. The book has been used with students from mathematics, statistics, engineering, and the sciences and has been written for a broad audience with advanced technical training. Appendixes review

basic material from analysis and probability theory and also prove some of the technical results used in the text.

New Frontiers of Decision Making for the Information Technology Era

Walter de Gruyter GmbH & Co KG

Geared toward students of mathematical programming, this user-friendly text offers a thorough introduction to the part of optimization theory that lies between approximation theory and mathematical programming. 37 illustrations. 1974 edition.

Hyperfinite Dirichlet Forms and Stochastic Processes

American Mathematical Soc.

A comprehensive and accessible introduction to all aspects of decision theory, now with new and updated discussions and over 140 exercises.

An Introduction to Nonlinear Analysis: Applications Elsevier

Search Theory is one of the original disciplines within the field of Operations Research. It deals with the problem faced by a Searcher who wishes to minimize the time required to find a hidden object, or "target." The Searcher chooses a path in the "search space" and finds the target when he is sufficiently close to it. Traditionally, the target is assumed to have no motives of its own regarding when it is found; it is simply stationary and hidden according to a known distribution (e. g. , oil), or its motion is determined stochastically by known rules (e. g. , a fox in a forest). The problems dealt with in this book assume, on the contrary, that the "target" is an independent player of equal status to the Searcher, who cares about when he is found. We consider two possible motives of the target, and divide the book accordingly. Book I considers the zero-sum game that results when the target (here called the Hider) does not

want to be found. Such problems have been called Search Games (with the “ze-sum” qualifier understood). Book II considers the opposite motive of the target, namely, that he wants to be found. In this case the Searcher and the Hider can be thought of as a team of agents (simply called Player I and Player II) with identical aims, and the coordination problem they jointly face is called the Rendezvous Search Problem.

Minimax Methods in Critical Point Theory with Applications to Differential Equations World Scientific
This treatment focuses on the analysis and algebra underlying the workings of convexity and duality and necessary/sufficient local/global optimality conditions for unconstrained and constrained optimization problems. 2015 edition.

Operator Algebras and Mathematical Physics Oxford University Press, USA

The book is intended to be an introduction to critical point theory and its applications to differential equations. Although the related material can be found in other books, the authors of this volume have had the following goals in mind: To present a survey of existing minimax theorems, To give applications to elliptic differential equations in bounded domains, To consider the dual variational method for problems with continuous and discontinuous nonlinearities, To present some elements of critical point theory for locally Lipschitz functionals and give applications to fourth-order differential equations with discontinuous nonlinearities, To study homoclinic solutions of differential equations via the variational methods. The contents of the book consist of seven chapters, each one divided into several sections. Audience:

Graduate and post-graduate students as well as specialists in the fields of differential equations, variational methods and optimization.

Information Bounds and Nonparametric Maximum Likelihood Estimation World Scientific Publishing Company

The purpose of this book is to present selected results on perfect graphs in a single volume. These take the form of reprinted classical papers, survey papers or new results.

Statistical Decision Theory and Bayesian Analysis Springer Science & Business Media

This volume gathers contributions from the International Workshop on Operator Theory and Its Applications (IWOTA) held in Bangalore, India, in December 2013. All articles were written by experts and cover a broad range of original material at the cutting edge of operator theory and its applications. Topics include multivariable operator theory, operator theory on indefinite metric spaces (Krein and Pontryagin spaces) and its applications, spectral theory with applications to differential operators, the geometry of Banach spaces, scattering and time varying linear systems, and wavelets and coherent states.

Prediction, Learning, and Games Springer Science & Business Media

The goal of the Encyclopedia of Optimization is to introduce the reader to a complete set of topics that show the spectrum of research, the richness of ideas, and the breadth of applications that has come from this field. The second edition builds on the success of the former edition with more than 150 completely new entries, designed to ensure that the reference addresses recent areas where optimization theories and techniques have advanced.

Particularly heavy attention resulted in health science and transportation, with entries such as "Algorithms for Genomics", "Optimization and Radiotherapy Treatment Design", and "Crew Scheduling".

From Hahn-Banach to Monotonicity
Cambridge University Press

The book establishes links between regularity and derivative concepts of nonsmooth analysis and studies of solution methods and stability for optimization, complementarity and equilibrium problems. In developing necessary tools, it presents, in particular: an extended analysis of Lipschitz functions and the calculus of their generalized derivatives, including regularity, successive approximation and implicit functions for multivalued

mappings; a unified theory of Lipschitzian critical points in optimization and other variational problems, with relations to reformulations by penalty, barrier and NCP functions; an analysis of generalized Newton methods based on linear and nonlinear approximations; the interpretation of hypotheses, generalized derivatives and solution methods in terms of original data and quadratic approximations; a rich collection of instructive examples and exercises. £/LIST£ Audience:

Researchers, graduate students and practitioners in various fields of applied mathematics, engineering, OR and economics. Also university teachers and advanced students who wish to get insights into problems, future directions and recent developments.