Lahiri Functional Analysis

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Compositional Data Analysis American Mathematical Soc.
Gogol is named after his father's favourite author. But growing up in an Indian family in suburban America, the boy starts to hate his name and itches to cast it off, along with the inherited values it represents. Gogol sets off on his own path only to discover that the search for identity depends on much more than a name.
Reviews in Operator Theory, 1980-86 Elsevier
This is a graduate level textbook on measure theory and probability theory. The book can be used as a text for a two semester sequence of courses in measure theory and probability theory, with an option to include supplemental material on stochastic processes and special topics. It is intended primarily for first year Ph.D. students in mathematics and statistics although mathematically advanced students from engineering and economics would also find the book useful. Prerequisites are kept to the minimal level of an understanding of basic real analysis concepts such as limits, continuity, differentiability, Riemann integration, and convergence of sequences and series. A review of this material is included in the appendix. The book starts with an informal introduction that provides some heuristics into the abstract concepts of measure and integration theory, which are then rigorously developed. The first part of the book can be used for a standard real analysis course for both mathematics and statistics Ph.D. students as it provides full coverage of topics such as the construction of Lebesgue-Stieltjes measures on real line and Euclidean spaces, the basic convergence theorems, L^p spaces, signed measures, Radon-Nikodym theorem, Lebesgue's decomposition theorem and the fundamental theorem of Lebesgue integration on R, product spaces and product measures, and Fubini-Tonelli theorems. It also provides an elementary introduction to Banach and Hilbert spaces, convolutions, Fourier series and Fourier and Plancherel transforms. Thus part I would be particularly useful for students in a typical Statistics Ph.D. program if a separate course on real analysis is not a standard requirement. Part II (chapters 6-13) provides full coverage of standard graduate level probability theory. It starts with Kolmogorov's probability model and Kolmogorov's existence theorem. It then treats thoroughly the laws of large numbers including renewal theory and ergodic theorems with applications and then weak convergence of probability distributions, characteristic functions, the Levy-Cramer continuity theorem and the central limit theorem as well as stable laws. It ends with conditional expectations and conditional probability, and an introduction to the theory of discrete time martingales. Part III (chapters 14-18) provides a modest coverage of discrete time Markov chains with countable and general state spaces, MCMC, continuous time discrete space jump Markov processes, Brownian motion, mixing sequences, bootstrap methods, and branching processes. It could be used for a topics/seminar course or as an introduction to stochastic processes. Krishna B. Athreya is a professor at the departments of mathematics and statistics and a Distinguished Professor in the College of Liberal Arts and Sciences at the Iowa State University. He has been a faculty member at University of Wisconsin, Madison; Indian Institute of Science, Bangalore; Cornell University; and has held visiting appointments in Scandinavia and Australia. He is a fellow of the Institute of Mathematical Statistics USA; a fellow of the Indian Academy of Sciences, Bangalore; an elected member of the International Statistical Institute; and serves on the editorial board of several journals in probability and statistics. Soumendra N. Lahiri is a professor at the department of statistics at the Iowa State University. He is a fellow of the Institute of Mathematical Statistics, a fellow of the American Statistical Association, and an elected member of the International Statistical Institute.
U-Statistics, Mm-Estimators and Resampling Springer Nature
These notes are a record of a one semester course on Functional Analysis given by the author to second year Master of Statistics students at the Indian Statistical Institute, New Delhi. Students taking this course have a strong background in real analysis, linear algebra, measure theory and probability, and the course proceeds rapidly from the definition of a normed linear space to the spectral theorem for bounded selfadjoint operators in a Hilbert space. The book is organised as twenty six lectures, each corresponding to a ninety minute class session. This may be helpful to teachers planning a course on this topic. Well prepared students can read it on their own.
An Expedition to Geometry Springer
Using chips composed of thousands of spots, each with the capability of holding DNA molecules corresponding to a given gene, DNA microarray technology has enabled researchers to measure simultaneously gene expression across the genome. As with other large-scale genomics approaches, microarray technologies are broadly applicable across disciplines of life and biomedical sciences, but remain daunting to many researchers. This guide is designed to demystify the technology and inform more biologists about this critically important experimental technique. Cohesive overview of the technology and available platforms, followed by detailed discussion of experimental design and analysis of microarray experiments Up-to-date description of normalization methods and current methods for sample amplification and labeling Deep focus on oligonucleotide design, printing, labeling and hybridization, data acquisition, normalization, and meta-analysis Additional uses of microarray technology such as ChIP (chromatin immunoprecipitation) with hybridization to DNA arrays, microarray-based comparative genomic hybridization (CGH), and cell and tissue arrays
Measure and Integration Vintage
Handbook of Statistics_29B contains the most comprehensive account of sample surveys theory and practice to date. It is a second volume on sample surveys, with the goal of updating and extending the sampling volume published as volume 6 of the Handbook of Statistics in 1988. The present handbook is divided into two volumes (29A and 29B), with a total of 41 chapters, covering current developments in almost every aspect of sample surveys, with references to important contributions and available software. It can serve as a self contained guide to researchers and practitioners, with appropriate balance between theory and real life applications. Each of the two volumes is divided into three parts, with each part preceded by an introduction, summarizing the main developments in the areas covered in that part. Volume 1 deals with methods of sample selection and data processing, with the later including editing and imputation, handling of outliers and measurement errors, and methods of disclosure control. The volume contains also a large variety of applications in specialized areas such as household and business surveys, marketing research, opinion polls and censuses. Volume 2 is concerned with inference, distinguishing between design-based and model-based methods and focusing on specific problems such as small area estimation, analysis of longitudinal data, categorical data analysis and inference on distribution functions. The volume contains also chapters dealing with case-control studies, asymptotic properties of estimators and decision theoretic aspects. Comprehensive account of recent developments in sample survey theory and practice Covers a wide variety of diverse applications Comprehensive bibliography
Topics in Functional Analysis and Applications Springer
This well-written book contains the analytical tools, concepts, and viewpoints needed for modern applied mathematics. It treats various practical methods for solving problems such as differential equations, boundary value problems, and integral equations. Pragmatic approaches to difficult equations are presented, including the Galerkin method, the method of iteration, Newton’s method, projection techniques, and homotopy methods.
Wassily Leontief John Wiley & Sons
Originally published in 2010, reissued as part of Pearson's modern classic series.
A Course in Applied Stochastic Processes Springer Science & Business Media
This is part two of a two-volume book on real analysis and is intended for senior undergraduate students of mathematics who have already been exposed to calculus. The emphasis is on rigour

and foundations of analysis. Beginning with the construction of the number systems and set theory, the book discusses the basics of analysis (limits, series, continuity, differentiation, Riemann integration), through to power series, several variable calculus and Fourier analysis, and then finally the Lebesgue integral. These are almost entirely set in the concrete setting of the real line and Euclidean spaces, although there is some material on abstract metric and topological spaces. The book also has appendices on mathematical logic and the decimal system. The entire text (omitting some less central topics) can be taught in two quarters of 25–30 lectures each. The course material is deeply intertwined with the exercises, as it is intended that the student actively learn the material (and practice thinking and writing rigorously) by proving several of the key results in the theory.
Reviews in Functional Analysis, 1980-86 Academic Press
This book offers a summary and discussion of the advances of inflammation and infection in various cancers. The authors cover the classically known virus infections in cancer, novel roles of other pathogens (e.g. bacteria and fungi), as well as biomarkers for diagnosis and therapy. Further, the chapters highlight the progress of immune therapy, stem cells and the role of the microbiome in the pathophysiology of cancers. Readers will gain insights into complex microbial communities, that inhabit most external human surfaces and play a key role in health and disease. Perturbations of host-microbe interactions often lead to altered host responses that can promote cancer development. Thus, this book highlights emerging roles of the microbiome in pathogenesis of cancers and outcome of therapy. The focus is on mechanistic concepts that underlie the complex relationships between host and microbes. Approaches that can inhibit infection, suppress chronic inflammation and reverse the dysbiosis are discussed, as a means for restoring the balance between host and microbes. This comprehensive work will be beneficial to researchers and students interested in infectious diseases, microbiome, and cancer as well as clinicians and general physiologists.
Interpreter of Maladies Springer
Excellent treatment of subject geared toward students with background in linear algebra, advanced calculus, physics and engineering. Text covers introduction to inner-product spaces, normed, metric spaces, and topological spaces; complete orthonormal sets, the Hahn-Banach Theorem and its consequences, and many other related subjects. Includes detailed proofs of theorems, bibliography, and index of symbols. 1966 edition.
Math Classics
This book presents a variety of intriguing, surprising and appealing topics and nonroutine theorems in real function theory. It is a reference book to which one can turn for finding that arise while studying or teaching analysis.Chapter 1 is an introduction to algebraic, irrational and transcendental numbers and contains the Cantor ternary set. Chapter 2 contains functions with extraordinary properties; functions that are continuous at each point but differentiable at no point. Chapters 4 and intermediate value property, periodic functions, Rolle's theorem, Taylor's theorem, points of tangents. Chapter 6 discusses sequences and series. It includes the restricted harmonic series, of alternating harmonic series and some number theoretic aspects. In Chapter 7, the infinite peculiar range of convergence is studied. Appendix I deal with some specialized topics. Exercises at the end of chapters and their solutions are provided in Appendix II.This book will be useful for students and teachers alike.
Time Series Analysis: Methods and Applications Springer Nature
This book deals with topics on the theory of measure and integration. It starts with discussion on the Riemann integral and points out certain shortcomings, which motivate the theory of measure and the Lebesgue integral. Most of the material in this book can be covered in a one-semester introductory course. An awareness of basic real analysis and elementary topological notions, with special emphasis on the topology of the n-dimensional Euclidean space, is the pre-requisite for this book. Each chapter is provided with a variety of exercises for the students. The book is targeted to students of graduate- and advanced-graduate-level courses on the theory of measure and integration.
Theory of Semigroups and Applications Springer
Key Features:Basic knowledge in functional analysis is a pre-requisite. Illustrations via partial differential equations of physics provided. Exercises given in each chapter to augment concepts and theorems.About the Book:The book, written to give a fairly comprehensive treatment of the techniques from Functional Analysis used in the modern theory of Partial Differential Equations, is now in its third edition. The original structure of the book has been retained but each chapter has been revamped. Proofs of several theorems have been either simplified or elaborated in order to achieve greater clarity. It is hoped that this version is even more user-friendly than before. In the chapter on Distributions, some additional results, with proof, have been presented. The section on Convolution of Functions has been rewritten. In the chapter on Sobolev Spaces, the section containing Stampacchia's theorem on composition of functions has been reorganized. Some additional results on Eigenvalue problems are presented. The material in the text is supplemented by four appendices and updated bibliography at the end.
Sample Surveys: Inference and Analysis Morgan Kaufmann
The book presents major topics in semigroups, such as operator theory, partial differential equations, harmonic analysis, probability and statistics and classical and quantum mechanics, and applications. Along with a systematic development of the subject, the book emphasises on the explorations of the contact areas and interfaces, supported by the presentations of explicit computations, wherever feasible. Designed into seven chapters and three appendixes, the book targets to the graduate and senior undergraduate students of mathematics, as well as researchers in the respective areas. The book envisages the pre-requisites of a good understanding of real analysis with elements of the theory of measures and integration, and a first course in functional analysis and in the theory of operators. Chapters 4 through 6 contain advanced topics, which have many interesting applications such as the Feynman–Kac formula, the central limit theorem and the construction of Markov semigroups. Many examples have been given in each chapter, partly to initiate and motivate the theory developed and partly to underscore the applications. The choice of topics in this vastly developed book is a difficult one, and the authors have made an effort to stay closer to applications instead of bringing in too many abstract concepts.
Seiberg Witten Gauge Theory Springer
This volume presents the latest research in linguistic modules and interfaces in Lexical-Functional Grammar (LFG). LFG has a highly modular design that models the linguistic system as a set of discreet submodules that include, among others, constituent structure, functional structure, argument structure, semantic structure, and prosodic structure; each module has its own coherent properties and is related to other modules by correspondence functions. Following a detailed introduction, Part I examines the nature of linguistic structures, interfaces, and representations in LFG's architecture and ontology. Parts II and III are concerned with problems, analyses, and generalizations associated with linguistic phenomena of long-standing theoretical significance, including agreement, reciprocals, possessives, reflexives, raising, subjecthood, and relativization, demonstrating how these phenomena can be naturally accounted for within LFG's modular architecture. Part IV explores issues of the synchronic and diachronic dynamics of syntactic categories in grammar, such as unlike category coordination, fuzzy categorial edges, and consequences of decategorialization, providing explicit LFG solutions to such problems, including those resulting from language change in progress. The final part re-examines and refines the precise representations and interfaces of syntax with morphology, semantics, and pragmatics to account for challenging facts such as suspended affixation, prosody in multiple question word interrogatives and information structure, anaphoric dependencies, and idioms. The volume draws on data from a range of typologically diverse languages, including Arabic, Chinese, Icelandic, Kelabit, Polish, and Urdu, and will be of interest not only to those working in LFG and related frameworks, but to all those working on linguistic interfaces from a variety of theoretical standpoints.
Handbook of Statistics CRC Press
The field of statistics not only affects all areas of scientific activity, but also many other matters such as public policy. It is branching rapidly into so many different subjects that a series of handbooks is the only way of comprehensively presenting the various aspects of statistical methodology, applications, and recent developments. The Handbook of Statistics is a series of self-contained reference books. Each volume is devoted to a particular topic in statistics, with Volume 30 dealing with time series. The series is addressed to the entire community of statisticians and scientists in various disciplines who use statistical methodology in their work. At the same time, special emphasis is placed on applications-oriented techniques, with the applied statistician in mind as the primary audience. Comprehensively presents the various aspects of statistical methodology Discusses a wide variety of diverse applications and recent developments Contributors are internationally renowened experts in their respective areas
Modular Design of Grammar Springer Science & Business Media
This book presents Advanced Calculus from a geometric point of view: instead of dealing with partial derivatives of functions of several variables, the derivative of the function is treated as a linear transformation between normed linear spaces. Not only does this lead to a simplified and transparent exposition of "difficult" results like the Inverse and Implicit Function Theorems but also permits, without any extra effort, a discussion of the Differential Calculus of functions defined on infinite dimensional Hilbert or Banach spaces.The prerequisites demanded of the reader are modest: a sound understanding of convergence of sequences and series of real numbers, the continuity and differentiability properties of functions of a real variable and a little Linear Algebra should provide adequate background for understanding the book. The first two chapters cover much of the more advanced background material on Linear Algebra (like dual spaces, multilinear functions and tensor products.) Chapter 3 gives an ab initio exposition of the basic results concerning the topology of metric spaces, particularly of normed linear spaces.The last chapter deals with miscellaneous applications of the Differential Calculus including an introduction to the Calculus of Variations. As a corollary to this, there is a brief discussion of geodesics in Euclidean and hyperbolic planes and non-Euclidean geometry.
Differential Calculas in Normed Linear Spaces Springer
The field of statistics not only affects all areas of scientific activity, but also many other matters such as public policy. It is branching rapidly into so many different subjects that a series of handbooks is the only way of comprehensively presenting the various aspects of statistical methodology, applications, and recent developments. The Handbook of Statistics is a series of self-contained reference books. Each volume is devoted to a particular topic in statistics, with Volume 30 dealing with time series. The series is addressed to the entire community of statisticians and scientists in various disciplines who use statistical methodology in their work. At the same time, special emphasis is placed on applications-oriented techniques, with the applied statistician in mind as the primary audience. Comprehensively presents the various aspects of statistical methodology Discusses a wide variety of diverse applications and recent developments Contributors are internationally renowened experts in their respective areas
Measure Theory and Probability Theory Springer
This is an introductory text on a broad class of statistical estimators that are minimizers of convex functions. It covers the basics of U-statistics and Mm-estimators and develops their asymptotic properties. It also provides an elementary introduction to resampling, particularly in the context of these estimators. The last chapter is on practical implementation of the methods presented in other chapters, using the free software R.
Whereabouts Anthem Press
Including Affine and projective classification of Conics, 2 point homogeneity's of the planes, essential isometrics, non euclidean plan geometrics, in this book, the treatment of Geometry goes beyond the Kleinian views.