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KEY=IN - VALENCIA FRIEDMAN

Feedback Systems

An Introduction for Scientists and Engineers, Second Edition

Princeton University Press The essential introduction to the principles and applications of feedback systems—now fully revised and expanded This textbook covers the mathematics needed to model, analyze, and design feedback systems. Now more user-friendly than ever, this revised and expanded edition of Feedback Systems is a one-volume resource for students and researchers in mathematics and engineering. It has applications across a range of disciplines that utilize feedback in physical, biological, information, and economic systems. Karl Åström and Richard Murray use techniques from physics, computer science, and operations research to introduce control-oriented modeling. They begin with state space tools for analysis and design, including stability of solutions, Lyapunov functions, reachability, state feedback observability, and estimators. The matrix exponential plays a central role in the analysis of linear control systems, allowing a concise development of many of the key concepts for this class of models. Åström and Murray then develop and explain tools in the frequency domain, including transfer functions, Nyquist analysis, PID control, frequency domain design, and robustness. Features a new chapter on design principles and tools, illustrating the types of problems that can be solved using feedback Includes a new chapter on fundamental limits and new material on the Routh-Hurwitz criterion and root locus plots Provides exercises at the end of every chapter Comes with an electronic solutions manual An ideal textbook for undergraduate and graduate students Indispensable for researchers seeking a self-contained resource on control theory

Fourier and Laplace Transforms

Cambridge University Press A 2003 textbook on Fourier and Laplace transforms for undergraduate and graduate students.

Applied Text Analysis with Python

Enabling Language-Aware Data Products with Machine Learning

"O'Reilly Media, Inc." From news and speeches to informal chatter on social media, natural language is one of the richest and most underutilized sources of data. Not only does it come in a constant stream, always changing and adapting in context; it also contains information that is not conveyed by traditional data sources. The key to unlocking natural language is through the creative application of text analytics. This practical book presents a data scientist's approach to building language-aware products with applied machine learning. You'll learn robust, repeatable, and scalable techniques for text analysis with Python, including contextual and linguistic feature engineering, vectorization, classification, topic modeling, entity resolution, graph analysis, and visual steering. By the end of the book, you'll be equipped with practical methods to solve any number of complex real-world problems. Preprocess and vectorize text into high-dimensional feature representations Perform document classification and topic modeling Steer the model selection process with visual diagnostics Extract key phrases, named entities, and graph structures to reason about data in text Build a dialog framework to enable chatbots and language-driven interaction Use Spark to scale processing power and neural networks to scale model complexity

The Mathematics of Diffusion

Oxford University Press Though it incorporates much new material, this new edition preserves the general character of the book in providing a collection of solutions of the equations of diffusion and describing how these solutions may be obtained.

Lectures on the Poisson Process

Cambridge University Press A modern introduction to the Poisson process, with general point processes and random measures, and applications to stochastic geometry.

Basic Transforms for Electrical Engineering

Springer Nature The textbook covers the most popular transforms used in electrical engineering along with the mathematical foundations of the transforms, uniquely bringing together the two in a single text. Geared towards an upper-undergraduate or graduate-level class, the book covers the most-used transforms including Fourier, Laplace, Discrete Fourier, z-, short-time Fourier, and discrete cosine transforms. The book includes the complex numbers, complex functions, and complex integration that are fundamental to understand the transforms. The author strives to make the study of the subject approachable by appealing to the use of popular software like LabVIEW virtual instruments, Matlab m-files, and C programming resources. Computer projects at the end of chapters further enhance the learning process. The book is based on the author's years of teaching Engineering Mathematics and Signal courses and can be used in both electrical engineering and mathematics curriculum. Presents both electrical engineering transforms and their mathematical foundations in an understandable, pedagogical, and applicable approach; Covers the most common transforms for electronics and communications engineers including Laplace transform, the Fourier transform, STFT, the z-transform; Features LabVIEW virtual instrument (vi) files, LTSpice simulation files, MATLAB m files, and computer projects in the chapter problems.

The Laplace Transform

World Scientific The classical theory of the Laplace Transform can open many new avenues when viewed from a modern, semi-classical point of view. In this book, the author re-examines the Laplace Transform and presents a study of many of the applications to differential equations, differential-difference equations and the renewal equation.

The Scientist and Engineer's Guide to Digital Signal Processing

Convex Optimization

Cambridge University Press A comprehensive introduction to the tools, techniques and applications of convex optimization.

Physics of Light and Optics (Black & White)

Lulu.com

The Heat Equation

Academic Press The Heat Equation

Numerical Methods for Laplace Transform Inversion

Springer Science & Business Media This book gives background material on the theory of Laplace transforms, together with a fairly comprehensive list of methods that are available at the current time. Computer programs are included for those methods that perform consistently well on a wide range of Laplace transforms. Operational methods have been used for over a century to solve problems such as ordinary and partial differential equations.

Software-Defined Radio for Engineers

Artech House Based on the popular Artech House classic, *Digital Communication Systems Engineering with Software-Defined Radio*, this book provides a practical approach to quickly learning the software-defined radio (SDR) concepts needed for work in the field. This up-to-date volume guides readers on how to quickly prototype wireless designs using SDR for real-world testing and experimentation. This book explores advanced wireless communication techniques such as OFDM, LTE, WLA, and hardware targeting. Readers will gain an understanding of the core concepts behind wireless hardware, such as the radio frequency front-end, analog-to-digital and digital-to-analog converters, as well as various processing technologies. Moreover, this volume includes chapters on timing estimation, matched filtering, frame synchronization message decoding, and source coding. The orthogonal frequency division multiplexing is explained and details about HDL code generation and deployment are provided. The book concludes with coverage of the WLAN toolbox with OFDM beacon reception and the LTE toolbox with downlink reception. Multiple case studies are provided throughout the book. Both MATLAB and Simulink source code are included to assist readers with their projects in the field.

Foundations of Cellular Neurophysiology

MIT Press with simulations and illustrations by Richard Gray Problem solving is an indispensable part of learning a quantitative science such as neurophysiology. This text for graduate and advanced undergraduate students in neuroscience, physiology, biophysics, and computational neuroscience provides comprehensive, mathematically sophisticated descriptions of modern principles of cellular neurophysiology. It is the only neurophysiology text that gives detailed derivations of equations, worked examples, and homework problem sets (with complete answers). Developed from notes for the course that the authors have taught since 1983, *Foundations of Cellular Neurophysiology* covers cellular neurophysiology (also some material at the molecular and systems levels) from its physical and mathematical foundations in a way that is far more rigorous than other commonly used texts in this area.

A Philosophical Essay on Probabilities

Courier Corporation Without the use of higher mathematics, this classic demonstrates the application of probability to games of chance, physics, reliability of witnesses, astronomy, insurance, democratic government, and many other areas.

Differential Equations for Engineers

Cambridge University Press Xie presents a systematic introduction to ordinary differential equations for engineering students and practitioners. Mathematical concepts and various techniques are presented in a clear, logical, and concise manner. Various visual features are used to highlight focus areas. Complete illustrative diagrams are used to facilitate mathematical modeling of application problems. Readers are motivated by a focus on the relevance of differential equations through their applications in various engineering disciplines. Studies of various types of differential equations are determined by engineering applications. Theory and techniques for solving differential equations are then applied to solve practical engineering problems. A step-by-step analysis is presented to model the engineering problems using differential equations from physical principles and to solve the differential equations using the easiest possible method. This book is suitable for undergraduate students in engineering.

The Fourier Transform and Its Applications

Solutions Manual

Iterative Methods for Sparse Linear Systems

Second Edition

SIAM Mathematics of Computing -- General.

Introduction to Applied Linear Algebra

Vectors, Matrices, and Least Squares

Cambridge University Press A groundbreaking introduction to vectors, matrices, and least squares for engineering applications, offering a wealth of practical examples.

Instabilities of Flows and Transition to Turbulence

CRC Press Addressing classical material as well as new perspectives, *Instabilities of Flows and Transition to Turbulence* presents a concise, up-to-date treatment of theory and applications of viscous flow instability. It covers materials from classical instability to contemporary research areas including bluff body flow instability, mixed convection flows, and application areas of aerospace and other branches of engineering. Transforms and perturbation techniques are used to link linear instability with receptivity of flows, as developed by the author. The book: Provides complete coverage of transition concepts, including receptivity and flow instability Introduces linear receptivity using bi-lateral Fourier-Laplace transform techniques Presents natural laminar flow (NLF) airfoil analysis and design as a practical application of classical and bypass transition Distinguishes strictly between instability and receptivity, which leads to identification of wall- and free stream-modes Describes energy-based receptivity theory for the description of bypass transitions *Instabilities of Flows and Transition to Turbulence* has evolved into an account of the personal research interests of the author over the years. A conscious effort has been made to keep the treatment at an elementary level requiring rudimentary knowledge of calculus, the Fourier-Laplace transform, and complex analysis. The book is equally amenable to undergraduate students, as well as researchers in the field.

Digital Signal Processing: A Practical Guide for Engineers and Scientists

Elsevier In addition to its thorough coverage of DSP design and programming techniques, Smith also covers the operation and usage of DSP chips. He uses Analog Devices' popular DSP chip family as design examples. Covers all major DSP topics Full of insider information and shortcuts Basic techniques and algorithms explained without complex numbers

Handbook of Integral Equations

Second Edition

CRC Press Unparalleled in scope compared to the literature currently available, the *Handbook of Integral Equations, Second Edition* contains over 2,500 integral equations with solutions as well as analytical and numerical methods for solving linear and nonlinear equations. It explores Volterra, Fredholm, Wiener-Hopf, Hammerstein, Uryson, and other equations that arise in mathematics, physics, engineering, the sciences, and economics. With 300 additional pages, this edition covers much more material than its predecessor. New to the Second Edition • New material on Volterra, Fredholm, singular, hypersingular, dual, and nonlinear integral equations, integral transforms, and special functions • More than 400 new equations with exact solutions • New chapters on mixed multidimensional equations and methods of integral equations for ODEs and PDEs • Additional examples for illustrative purposes To accommodate different mathematical backgrounds, the authors avoid wherever possible the use of special terminology, outline some of the methods in a schematic, simplified manner, and arrange the material in increasing order of complexity. The book can be used as a database of test problems for numerical and approximate methods for solving linear and nonlinear integral equations.

The Quest for Artificial Intelligence

Cambridge University Press Artificial intelligence (AI) is a field within computer science that is attempting to build enhanced intelligence into computer systems. This book traces the history of the subject, from the early dreams of eighteenth-century (and earlier) pioneers to the more successful work of today's AI engineers. AI is becoming more and more a part of everyone's life. The technology is already embedded in face-recognizing cameras, speech-recognition software, Internet search engines, and health-care robots, among other applications. The book's many diagrams and easy-to-understand descriptions of AI programs will help the casual reader gain an understanding of how these and other AI systems actually work. Its thorough (but unobtrusive) end-of-chapter notes containing citations to important source materials will be of great use to AI scholars and researchers. This book promises to be the definitive history of a field that has captivated the imaginations of scientists, philosophers, and writers for centuries.

Laplace Transform (PMS-6)

Princeton University Press Book 6 in the Princeton Mathematical Series. Originally published in 1941. The Princeton Legacy Library uses the latest print-on-demand technology to again make available previously out-of-print books from the distinguished backlist of Princeton University Press. These editions preserve the original texts of these important books while presenting them in durable paperback and hardcover editions. The goal of the Princeton Legacy Library is to vastly increase access to the rich scholarly heritage found in the thousands of books published by Princeton University Press since its founding in 1905.

Oliver Heaviside

The Life, Work, and Times of an Electrical Genius of the Victorian Age

JHU Press Acclaimed biography of the pioneer of modern electrical theory featuring a new preface by author. "He was a man who often was incapable of conducting himself properly in the most elementary social interactions. His only continuing contacts with women were limited to his mother, nieces, and housekeepers. He was a man who knew the power of money and desired it, but refused to work for it, preferring to live off the sweat of his family and long-suffering friends, whom he often insulted even as they paid his bills."—Excerpt from the book *This, then, was Oliver Heaviside, a pioneer of modern electrical theory. Born into a low social class of Victorian England, Heaviside made advances in mathematics by introducing the operational calculus; in physics, where he formulated the modern-day expressions of Maxwell's Laws of electromagnetism; and in electrical engineering, through his duplex equations. With a new preface by the author, this acclaimed biography will appeal to historians of technology and science, as well as to scientists and engineers who wish to learn more about this remarkable man.*

Statistical Learning with Sparsity

The Lasso and Generalizations

CRC Press Discover New Methods for Dealing with High-Dimensional Data A sparse statistical model has only a small number of nonzero parameters or weights; therefore, it is much easier to estimate and interpret than a dense model. *Statistical Learning with Sparsity: The Lasso and Generalizations* presents methods that exploit sparsity to help recover the underlying signal in a set of data. Top experts in this rapidly evolving field, the authors describe the lasso for linear regression and a simple coordinate descent algorithm for its computation. They discuss the application of l_1 penalties to generalized linear models and support vector machines, cover generalized penalties such as the elastic net and group lasso, and review numerical methods for optimization. They also present statistical inference methods for fitted (lasso) models, including the bootstrap, Bayesian methods, and recently developed approaches. In addition, the book examines matrix decomposition, sparse multivariate analysis, graphical models, and compressed sensing. It concludes with a survey of theoretical results for the lasso. In this age of big data, the number of features measured on a person or object can be large and might be larger than the number of observations. This book shows how the sparsity assumption allows us to tackle these problems and extract useful and reproducible patterns from big datasets. Data analysts, computer scientists, and theorists will appreciate this thorough and up-to-date treatment of sparse statistical modeling.

Speech & Language Processing

Pearson Education India

Advanced Engineering Mathematics

Jones & Bartlett Learning Accompanying CD-ROM contains ... "a chapter on engineering statistics and probability / by N. Bali, M. Goyal, and C. Watkins."--CD-ROM label.

Biomedical Engineering and Information Systems: Technologies, Tools and Applications

Technologies, Tools and Applications

IGI Global "Bridging the disciplines of engineering and medicine, this book informs researchers, clinicians, and practitioners of the latest developments in diagnostic tools, decision support systems, and intelligent devices that impact and redefine research in and delivery of medical services"--Provided by publisher.

Handbook of Induction Heating

CRC Press The second edition of the Handbook of Induction Heating reflects the number of substantial advances that have taken place over the last decade in theory, computer modeling, semi-conductor power supplies, and process technology of induction heating and induction heat treating. This edition continues to be a synthesis of information, discoveries, and technical insights that have been accumulated at Inductoheat Inc. With an emphasis on design and implementation, the newest edition of this seminal guide provides numerous case studies, ready-to-use tables, diagrams, rules-of-thumb, simplified formulas, and graphs for working professionals and students.

Spiral Vector Theory of AC Circuits and Machines

Oxford University Press on Demand The spiral vector theory proposed and explained in this book unifies the steady-state and transient-state theories of AC circuits and machines. Previously, steady-state theory and transient-state theory were separated by different expressions for state variables. This new theory makes possible the analysis of transient phenomena in three-phase machines, an area largely untouched by conventional AC machine theories. Results of AC motor analysis obtained by the spiral vector method have led directly to new torque controls which give AC motors much superior performance to the usual DC control motors. With the rapid developments in inverter technology making the control of AC power easier, the spiral-vector theory provides the necessary theoretical foundation for the understanding and design of AC circuits and machines.

A Solution of the Differential Equation of Longitudinal Dispersion in Porous Media

Fluid Movement in Earth Materials

Encyclopaedia of Mathematics

Supplement Volume I

Springer Science & Business Media This is the first Supplementary volume to Kluwer's highly acclaimed Encyclopaedia of Mathematics. This additional volume contains nearly 600 new entries written by experts and covers developments and topics not included in the already published 10-volume set. These entries have been arranged alphabetically throughout. A detailed index is included in the book. This Supplementary volume enhances the existing 10-volume set. Together, these eleven volumes represent the most authoritative, comprehensive up-to-date Encyclopaedia of Mathematics available.

Process Dynamics and Control

John Wiley & Sons This 3rd edition provides chemical engineers with process control techniques that are used in practice while offering detailed mathematical analysis. Numerous examples and simulations are used to illustrate key theoretical concepts. New exercises are integrated throughout several chapters to reinforce concepts.

Temperature- and Supply Voltage-Independent Time References for Wireless Sensor Networks

Springer This book investigates the possible circuit solutions to overcome the temperature and supply voltage-sensitivity of fully-integrated time references for ultra-low-power communication in wireless sensor networks. The authors provide an elaborate theoretical introduction and literature study to enable full understanding of the design challenges and shortcomings of current oscillator implementations. Furthermore, a closer look to the short-term as well as the long-term frequency stability of integrated oscillators is taken. Next, a design strategy is developed and applied to 5 different oscillator

topologies and 1 sensor interface. All 6 implementations are subject to an elaborate study of frequency stability, phase noise and power consumption. In the final chapter all blocks are compared to the state of the art.

Principles of Communications

Systems, Modulation, and Noise

Understanding Digital Signal Processing

Unders Digita Signal Proces_3

Pearson Education Amazon.com's Top-Selling DSP Book for Seven Straight Years—Now Fully Updated! *Understanding Digital Signal Processing, Third Edition*, is quite simply the best resource for engineers and other technical professionals who want to master and apply today's latest DSP techniques. Richard G. Lyons has updated and expanded his best-selling second edition to reflect the newest technologies, building on the exceptionally readable coverage that made it the favorite of DSP professionals worldwide. He has also added hands-on problems to every chapter, giving students even more of the practical experience they need to succeed. Comprehensive in scope and clear in approach, this book achieves the perfect balance between theory and practice, keeps math at a tolerable level, and makes DSP exceptionally accessible to beginners without ever oversimplifying it. Readers can thoroughly grasp the basics and quickly move on to more sophisticated techniques. This edition adds extensive new coverage of FIR and IIR filter analysis techniques, digital differentiators, integrators, and matched filters. Lyons has significantly updated and expanded his discussions of multirate processing techniques, which are crucial to modern wireless and satellite communications. He also presents nearly twice as many DSP Tricks as in the second edition—including techniques even seasoned DSP professionals may have overlooked. Coverage includes New homework problems that deepen your understanding and help you apply what you've learned Practical, day-to-day DSP implementations and problem-solving throughout Useful new guidance on generalized digital networks, including discrete differentiators, integrators, and matched filters Clear descriptions of statistical measures of signals, variance reduction by averaging, and real-world signal-to-noise ratio (SNR) computation A significantly expanded chapter on sample rate conversion (multirate systems) and associated filtering techniques New guidance on implementing fast convolution, IIR filter scaling, and more Enhanced coverage of analyzing digital filter behavior and performance for diverse communications and biomedical applications Discrete sequences/systems, periodic sampling, DFT, FFT, finite/infinite impulse response filters, quadrature (I/Q) processing, discrete Hilbert transforms, binary number formats, and much more

Acetaria

A Discourse of Sallets

This book is part of the TREDITION CLASSICS series. The creators of this series are united by passion for literature and driven by the intention of making all public domain books available in printed format again - worldwide. At trediton we believe that a great book never goes out of style. Several mostly non-profit literature projects provide content to trediton. To support their good work, trediton donates a portion of the proceeds from each sold copy. As a reader of a TREDITION CLASSICS book, you support our mission to save many of the amazing works of world literature from oblivion.

Vector-valued Laplace Transforms and Cauchy Problems

Springer Science & Business Media Linear evolution equations in Banach spaces have seen important developments in the last two decades. This is due to the many different applications in the theory of partial differential equations, probability theory, mathematical physics, and other areas, and also to the development of new techniques. One important technique is given by the Laplace transform. It played an important role in the early development of semigroup theory, as can be seen in the pioneering monograph by Rille and Phillips [HP57]. But many new results and concepts have come from Laplace transform techniques in the last 15 years. In contrast to the classical theory, one particular feature of this method is that functions with values in a Banach space have to be considered. The aim of this book is to present the theory of linear evolution equations in a systematic way by using the methods of vector-valued Laplace transforms. It is simple to describe the basic idea relating these two subjects. Let A be a closed linear operator on a Banach space X . The Cauchy problem defined by A is the initial value problem $(t \geq 0)$, $(CP) \{u'(t) = Au(t) \ u(0) = x, \text{ where } x \in X \text{ is a given initial value. If } u \text{ is an exponentially bounded, continuous function, then we may consider the Laplace transform } \mathcal{L}u(\lambda) = \int_0^\infty e^{-\lambda t} u(t) dt \text{ of } u \text{ for large real } \lambda > \dots$

Laplace Transforms and Their Applications to Differential Equations

Courier Corporation Classic graduate-level exposition covers theory and applications to ordinary and partial differential equations. Includes derivation of Laplace transforms of various functions, Laplace transform for a finite interval, and more. 1948 edition.