

Control Engineering By Ganesh Rao Webxmedia

Control Engineering Pearson Education India Control Engineering

This book provides engineering students with a solid grasp of control engineering fundamentals by emphasizing physical understanding and practical applications. The topical organization of the book starts with an initial exposure to Laplace transform theory and then deals with the topics of conventional control theory thereby ensuring an uninterrupted smooth flow throughout the text. Features A physical and intuitive approach has been used so that this engineering textbook can be read by students with enthusiasm and interest. A lot of emphasis is given to physical understanding of the various concepts so that a student can understand, formulate, and interpret the results of practical problems. Each chapter is supported by reinforcement problems to allow the students to tighten further their grasp on understanding the subject. Each chapter ends with a variety of homework problems to allow the students to test their understanding of the material covered in the text. Examples, reinforcement problems and exercise problems are time-tested. These problems have been used in class competitions, as well as in class tests. Text emphasizes on clarity of various concepts without sacrificing rigor and completeness. Systematically prepares a student to face competitive examinations like GATE, IES etc.

This book presents a compilation of the most recent implementation of artificial intelligence methods for solving different problems generated by the COVID-19. The problems addressed came from different fields and not only from medicine. The information contained in the book explores different areas of machine and deep learning, advanced image processing, computational intelligence, IoT, robotics and automation, optimization, mathematical modeling, neural networks, information technology, big data, data processing, data mining, and likewise. Moreover, the chapters include the theory and methodologies used to provide an overview of applying these tools to the useful contribution to help to face the emerging disaster. The book is primarily intended for researchers, decision makers, practitioners, and readers interested in these subject matters. The book is useful also as rich case studies and project proposals for postgraduate courses in those specializations.

Various measures of information are discussed in first chapter. Information rate, entropy and mark off models are presented. Second and third chapter deals with source coding. Shannon's encoding algorithm, discrete communication channels, mutual information, Shannon's first theorem are also presented. Huffman coding and Shannon-Fano coding is also discussed. Continuous channels are discussed in fourth chapter. Channel coding theorem and channel capacity theorems are also presented. Block codes are discussed in chapter fifth, sixth and seventh. Linear block codes, Hamming codes, syndrome decoding is presented in detail. Structure and properties of cyclic codes, encoding and syndrome decoding for cyclic codes is also discussed. Additional cyclic codes such as RS codes, Golay codes, burst error correction is also discussed. Last chapter presents convolutional codes. Time domain, transform domain approach, code tree, code trellis, state diagram, Viterbi decoding is discussed in detail.

This book covers the theory and mathematics needed to understand the concepts in control system design. Chapter 1 deals with compensation network design. Nonlinear control systems, including phase-plane analysis and the Delta method are presented in chapter 2. The analysis and design aspects based on the state variable approach are presented in Chapter 3. The discrete time control systems form the basis for the study of digital control systems in Chapter 4, covering the frequency response, root locus analysis, and stability considerations for discrete-time control systems. The stability analysis based on the Lyapunov method is given in chapter 5. The appendices include two US government articles on industrial control systems (NIST) and the control system design for a solar energy storage system (U.S. Dept. of Energy). Concepts in the text are supported by numerical examples. Features: • Covers the theory and mathematics needed to understand the concepts in control system design • Includes two U.S. government articles on industrial control systems (NIST) and the control system design for a solar energy storage system (U.S. Department of Energy)

This comprehensive and accessible book, now in its second edition, covers both mathematical and physical aspects of the theory of mechanical vibrations. This edition includes a new chapter on the analysis of nonlinear vibrations. The text examines the models and tools used in studying mechanical vibrations and the techniques employed for the development of solutions from a practical perspective to explain linear and nonlinear vibrations. To enable practical understanding of the subject, numerous solved and unsolved problems involving a wide range of practical situations are incorporated in each chapter. This text is designed for use by the undergraduate and postgraduate students of mechanical engineering.

This book presents selected papers from the 2021 International Conference on Electrical and Electronics Engineering (ICEEE 2020), held on January 2, 2021. The book focuses on the current developments in various fields of electrical and electronics engineering, such as power generation, transmission and distribution; renewable energy sources and technologies; power electronics and applications; robotics; artificial intelligence and IoT; control, automation and instrumentation; electronics devices, circuits and systems; wireless and optical communication; RF and microwaves; VLSI; and signal processing. The book is a valuable resource for academics and industry professionals alike.

The book is a compilation of selected papers from 2020 International Conference on Electrical and Electronics Engineering (ICEEE 2020) held in National Power Training Institute HQ (Govt. of India) on February 21 – 22, 2020. The work focuses on the current development in the fields of electrical and electronics engineering like power generation, transmission and distribution, renewable energy sources and technology, power electronics and applications, robotics, artificial intelligence and IoT, control, and automation and instrumentation, electronics devices, circuits and systems, wireless and optical communication, RF and microwaves, VLSI, and signal processing. The book is beneficial for readers from both academia and industry.

Contributed papers presented at the 7th National Conference on Air Breathing Engines and Aerospace Propulsion, hosted at I.I.T., Kanpur.

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starts with an initial exposure to Laplace transform theory and then deals with the topics of conventional control theory thereby ensuring an uninterrupted smooth flow throughout the text. An appendix on state space theory has been given in order to enable the student who is in pursuit of advance level courses in control theory and DSP not to have a diffidence of not doing it. Features A physical and intuitive approach has been used so that this engineering textbook can be read by students with enthusiasm and interest. A lot of emphasis is given to physical understanding of the various concepts so that the reader can understand, formulate, and interpret the results of practical problems. Examples are worked out without sacrificing the rigor of the concept. These examples emphasize the concepts explained in each chapter. Each example is presented with a clear problem statement, and a detailed solution. The illustrations supporting the problems are drawn accurately to enhance the reader's understanding of the various solutions provided following the problem statement. Each chapter is supported by reinforcement problems to allow the students to tighten further their grasp on understanding the subject. Each chapter ends with a variety of homework problems to allow the students to test their understanding of the material covered in the text. Each chapter ends with a variety of homework problems to allow the students to test their understanding of the material covered in the text. Examples, reinforcement problems and exercise problems are time-tested. These problems have been used in class competitions, as well as in class tests. Text emphasizes on clarity of various concepts without sacrificing rigor and completeness. Calculators, computers and software tools are now available for solving a large variety of problems. Thus, it is felt that, it is imperative for future engineers to understand the problems, not so much to be able to perform analytical manipulation of the equations. This text stresses the physical basis of conventional control theory, including only the necessary minimum of mathematics, which is derived as needed. Systematically prepares a student to face competitive examinations like GATE, IES etc. An unsurpassed treatise on the state-of-the-science in the research and design of spillways and energy dissipators, *Hydraulics of Spillways and Energy Dissipators* compiles a vast amount of information and advancements from recent conferences and congresses devoted to the subject. It highlights developments in theory and practice and emphasizing top

This book presents the proceedings of the 46th National Symposium on Acoustics (NSA 2017). The main goal of this symposium is to discuss key opportunities and challenges in acoustics, especially as applied to engineering problems. The book covers topics ranging from hydro-acoustics, environmental acoustics, bio-acoustics to musical acoustics, electro-acoustics and sound perception. The contents of this volume will prove useful to researchers and practicing engineers working on acoustics problems.

Nature-Inspired Optimization in Advanced Manufacturing Processes and Systems Subject Guide: Engineering—Industrial and Manufacturing The manufacturing system is going through substantial changes and developments in light of Industry 4.0. Newer manufacturing technologies are being developed and applied. There is a need to optimize these techniques when applied in different circumstances with respect to materials, tools, product configurations, and process parameters. This book covers computational intelligence applied to manufacturing. It discusses nature-inspired optimization of processes and the design and development in manufacturing systems. It explores all manufacturing processes, at both macro and micro levels, and offers manufacturing philosophies. Nonconventional manufacturing, real industry problems and case studies, research on generative processes, and relevance of all this to Industry 4.0, is also included. Researchers, students, academicians, and industry professionals will find this reference title very useful.

Earthquake Geotechnical Engineering for Protection and Development of Environment and Constructions contains invited, keynote and theme lectures and regular papers presented at the 7th International Conference on Earthquake Geotechnical Engineering (Rome, Italy, 17-20 June 2019). The contributions deal with recent developments and advancements as well as case histories, field monitoring, experimental characterization, physical and analytical modelling, and applications related to the variety of environmental phenomena induced by earthquakes in soils and their effects on engineered systems interacting with them. The book is divided in the sections below: Invited papers Keynote papers Theme lectures Special Session on Large Scale Testing Special Session on Liquefact Projects Special Session on Lessons learned from recent earthquakes Special Session on the Central Italy earthquake Regular papers *Earthquake Geotechnical Engineering for Protection and Development of Environment and Constructions* provides a significant up-to-date collection of recent experiences and developments, and aims at engineers, geologists and seismologists, consultants, public and private contractors, local national and international authorities, and to all those involved in research and practice related to Earthquake Geotechnical Engineering.

An easy to understand guide covering key principles of mathematical modelling and simulation in chemical engineering.

The book is a collection of selected high quality research papers presented at the International Conference on Computing in Engineering and Technology (ICCET 2019), held on January 10–11, 2019 at Deogiri Institute of Engineering and Management Studies, Aurangabad, India. Focusing on frontier topics and next-generation technologies, it presents original and innovative research from academics, scientists, students, and engineers alike.

This book comprises select papers from the International Conference on Emerging Trends in Civil Engineering (ICETCE 2018). Latest research findings in different branches of civil engineering such as structural engineering, construction materials, geotechnical engineering, water resources engineering, environmental engineering, and transportation infrastructure are covered in this book. The book also gives an overview of emerging topics like smart materials and structures, green building technologies, and intelligent transportation system. The contents of this book will be beneficial for students, academicians, industrialists and researchers working in the field of civil engineering.

This book presents the latest research in the fields of computational intelligence, ubiquitous computing models, communication intelligence, communication security, machine learning, informatics, mobile computing, cloud computing and big data analytics. The best selected papers, presented at the International Conference on Innovative Data Communication Technologies and Application (ICIDCA 2020), are included in the book. The book focuses on the theory, design, analysis, implementation and applications of distributed systems and networks.

Practical examples offered throughout this book show how easy it is to design op-amps into a wide variety of circuits. Manufacturers' data sheets are referred to and standard value components are selected. Beginning with a description of the basic operational amplifier circuit, voltage followers, inverting amplifiers and non-inverting amplifiers are discussed. Op-amp characteristics and parameters are investigated and frequency compensation methods are thoroughly explored. All of the most important op-amp circuit applications are explained, analysed and designed.

This book is a text on Signals and Systems, at the Second year degree level. The purpose of writing this book was to provide the reader with a precise practical up-to-date exposition of Signals and Systems. Accordingly this book contains a wealth of material that trains a student to face the challenges posed by growing trends in communication, controls, signal processing and other allied areas. Features Reflects our passion towards teaching by explaining tough abstract concepts in a very convincing manner without compromising the concepts. Consistency is an essential requirement of conviction. Hence, care is taken to make the subject matter more consistent in respect of various symbols and their implications. Problems are graded to meet the needs of University examination as well as qualifying examinations like GATE, IES.... etc. Contents Fundamentals Linear Time - Invariant Systems Fourier Analysis and its Applications The Z-transform.

This book comprises selected peer-reviewed papers from the International Conference on VLSI, Signal Processing, Power Systems, Illumination and Lighting Control, Communication and Embedded Systems (VSPICE-2019). The contents are divided into five broad topics - VLSI and embedded systems, signal processing, power systems, illumination and control, and communication and networking. The book focuses on the latest innovations, trends, and challenges encountered in the different areas of electronics and communication, and electrical engineering. It also offers potential solutions and provides an insight into various emerging areas such as image fusion, bio-sensors, and underwater sensor networks. This book can prove to be useful for academics and professionals interested in the various sub-fields of electronics and communication engineering.

Handbook of Robust Low-Rank and Sparse Matrix Decomposition: Applications in Image and Video Processing shows you how robust subspace learning and tracking by decomposition into low-rank and sparse matrices provide a suitable framework for computer vision applications. Incorporating both existing and new ideas, the book conveniently gives you one-stop access to a number of different decompositions, algorithms, implementations, and benchmarking techniques. Divided into five parts, the book begins with an overall introduction to robust principal component analysis (PCA) via decomposition into low-rank and sparse matrices. The second part addresses robust matrix factorization/completion problems while the third part focuses on robust online subspace estimation, learning, and tracking. Covering applications in image and video processing, the fourth part discusses image analysis, image denoising, motion saliency detection, video coding, key frame extraction, and hyperspectral video processing. The final part presents resources and applications in background/foreground separation for video surveillance. With contributions from leading teams around the world, this handbook provides a complete overview of the concepts, theories, algorithms, and applications related to robust low-rank and sparse matrix decompositions. It is designed for researchers, developers, and graduate students in computer vision, image and video processing, real-time architecture, machine learning, and data mining.

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