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The Electric Motor and Its Applications
Power Electronics and Motor Drives
Modelling and Control of Switched Reluctance Machines
Analysis and Control of Electric Drives
Advanced Electrical Drives
SPECIAL ELECTRICAL MACHINES
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Electric Machines and Drives
Proceedings of the 6th International Conference on Industrial Engineering (ICIE 2020)
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Principles of Electric Machines and Power Electronics
Electric Motors and Control Systems
Control of Synchronous Motors
Introduction to Embedded Systems, Second Edition
Recent Advances in Power Electronics and Drives
Electrical Engineering 101
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Advanced Control of Electrical Drives and Power Electronic Converters
Fundamentals of Electrical Drives
Neural and Fuzzy Logic Control of Drives and Power Systems
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Renewable and Efficient Electric Power Systems
Practical Electric Motor Handbook
Electric Motors and Drives

STEWART TREVON

The Electric Motor and Its Applications John Wiley & Sons

"This book will introduce the reader to a broad range of motor types and control systems. It provides an overview of electric motor operation, selection, installation, control and maintenance. The text covers Electrical Code references applicable to the installation of new control systems and motors, as well as information on maintenance and troubleshooting techniques. It includes coverage of how motors operate in conjunction with their associated control circuitry. Both older and newer motor technologies are examined. Topics covered range from motor types and controls to installing and maintaining conventional controllers, electronic motor drives and programmable logic controllers." -- Publisher's description.

Power Electronics and Motor Drives PHI Learning Pvt. Ltd.

This is a comprehensive textbook for the new trend of distributed power generation systems and renewable energy sources in electric power systems. It covers the complete range of topics from fundamental concepts to major technologies as well as advanced topics for power consumers. An Instructor's Manual presenting detailed solutions to all the problems in the book is available from the Wiley editorial department -- to obtain the manual, send an email to ialine@wiley.com

Modelling and Control of Switched Reluctance Machines Springer Science & Business Media

*Introduces cutting-edge control systems to a wide readership of engineers and students *The first book on neuro-fuzzy control systems to take a practical, applications-based approach, backed up with worked examples and case studies *Learn to use VHDL in real-world applications Introducing cutting edge control systems through real-world applications Neural networks and fuzzy logic based systems offer a modern control solution to AC machines used in variable speed drives, enabling industry to save costs and increase efficiency by replacing expensive and high-maintenance DC motor systems. The use of fast micros has revolutionised the field with sensorless vector control and direct torque control. This book reflects recent research findings and acts as a useful guide to the new generation of control systems for a wide readership of advanced undergraduate and graduate students, as well as practising engineers. The authors guide readers quickly and concisely through the complex topics of neural networks, fuzzy logic, mathematical modelling of electrical machines, power systems control and VHDL design. Unlike the academic monographs that have previously been published on each of these subjects, this book combines them and is based round case studies of systems analysis, control strategies, design, simulation and implementation. The result is a guide to applied control systems design that will appeal equally to students and professional design engineers. The book can also be used as a unique VHDL design aid, based on real-world power engineering applications.

Analysis and Control of Electric Drives MIT Press

This new edition combines the traditional areas of electric machinery with the latest in modern control and power electronics. It includes coverage of multi-machine systems, brushless motors and

switched reluctance motors, as well as constant flux and constant current operation of induction motors. It also features additional material on new solid state devices such as Insulated Gate Bipolar Transistors and MOS-Controlled Thyristors.

Advanced Electrical Drives John Wiley & Sons

A guide to drives essential to electric vehicles, wind turbines, and other motor-driven systems Analysis and Control of Electric Drives is a practical and comprehensive text that offers a clear understanding of electric drives and their industrial applications in the real-world including electric vehicles and wind turbines. The authors—noted experts on the topic—review the basic knowledge needed to understand electric drives and include the pertinent material that examines DC and AC machines in steady state using a unique physics-based approach. The book also analyzes electric machine operation under dynamic conditions, assisted by Space Vectors. The book is filled with illustrative examples and includes information on electric machines with Interior Permanent Magnets. To enhance learning, the book contains end-of-chapter problems and all topics covered use computer simulations with MATLAB Simulink® and Sciample® Workbench software that is available free online for educational purposes. This important book: Explores additional topics such as electric machines with Interior Permanent Magnets Includes multiple examples and end-of-chapter homework problems Provides simulations made using MATLAB Simulink® and Sciample® Workbench, free software for educational purposes Contains helpful presentation slides and Solutions Manual for Instructors; simulation files are available on the associated website for easy implementation A unique feature of this book is that the simulations in Sciample® Workbench software can seamlessly be used to control experiments in a hardware laboratory Written for undergraduate and graduate students, Analysis and Control of Electric Drives is an essential guide to understanding electric vehicles, wind turbines, and increased efficiency of motor-driven systems.

SPECIAL ELECTRICAL MACHINES Springer Nature

An introduction to the engineering principles of embedded systems, with a focus on modeling, design, and analysis of cyber-physical systems. The most visible use of computers and software is processing information for human consumption. The vast majority of computers in use, however, are much less visible. They run the engine, brakes, seatbelts, airbag, and audio system in your car. They digitally encode your voice and construct a radio signal to send it from your cell phone to a base station. They command robots on a factory floor, power generation in a power plant, processes in a chemical plant, and traffic lights in a city. These less visible computers are called embedded systems, and the software they run is called embedded software. The principal challenges in designing and analyzing embedded systems stem from their interaction with physical processes. This book takes a cyber-physical approach to embedded systems, introducing the engineering concepts underlying embedded systems as a technology and as a subject of study. The focus is on modeling, design, and analysis of cyber-physical systems, which integrate computation, networking, and physical processes. The second edition offers two new chapters, several new exercises, and other improvements. The book can be used as a textbook at the advanced undergraduate or introductory graduate level and as a professional reference for practicing engineers and computer

scientists. Readers should have some familiarity with machine structures, computer programming, basic discrete mathematics and algorithms, and signals and systems.

Dynamics and Control of Electrical Drives Fundamentals of Electrical Drives

Written for non-specialist users of electric motors and drives, this book explains how electric drives work and compares the performance of the main systems, with many examples of applications. The author's approach - using a minimum of mathematics - has made this book equally popular as an outline for professionals and an introductory student text. * First edition (1990) has sold over 6000 copies. Drives and Controls on the first edition: 'This book is very readable, up-to-date and should be extremely useful to both users and o.e.m. designers. I unhesitatingly recommend it to any busy engineer who needs to make informed judgements about selecting the right drive system.' New features of the second edition: * New section on the cycloconverter drive. * More on switched reluctance motor drives. * More on vector-controlled induction motor drives. * More on power switching devices. * New 'question and answer' sections on common problems and misconceptions. * Updating throughout. *Electric Motors and Drives* is for non-specialist users of electric motors and drives. It fills the gap between specialist textbooks (which are pitched at a level which is too academic for the average user) and the more prosaic 'handbooks' which are filled with useful detail but provide little opportunity for the development of any real insight or understanding. The book explores most of the widely-used modern types of motor and drive, including conventional and brushless d.c., induction motors (mains and inverter-fed), stepping motors, synchronous motors (mains and converter-fed) and reluctance motors.

Electric Machines and Drives Tata McGraw-Hill Education

This contributed volume is written by key specialists working in multidisciplinary fields in electrical engineering, linking control theory, power electronics, artificial neural networks, embedded controllers and signal processing. The authors of each chapter report the state of the art of the various topics addressed and present results of their own research, laboratory experiments and successful applications. The presented solutions concentrate on three main areas of interest: · motion control in complex electromechanical systems, including sensorless control; · fault diagnosis and fault tolerant control of electric drives; · new control algorithms for power electronics converters. The chapters and the complete book possess strong monograph attributes. Important practical and theoretical problems are deeply and accurately presented on the background of an exhaustive state-of-the-art review. Many results are completely new and were never published before. Well-known control methods like field oriented control (FOC) or direct torque control (DTC) are referred as a starting point for modifications or are used for comparison. Among numerous control theories used to solve particular problems are: nonlinear control, robust control, adaptive control, Lyapunov techniques, observer design, model predictive control, neural control, sliding mode control, signal filtration and processing, fault diagnosis, and fault tolerant control.

Proceedings of the 6th International Conference on Industrial Engineering (ICIE 2020) Springer Science & Business Media

A unique approach to sensorless control and regulator design of electric drives Based on the author's vast industry experience and collaborative works with other industries, *Control of Electric Machine Drive Systems* is packed with tested, implemented, and verified ideas that engineers can

apply to everyday problems in the field. Originally published in Korean as a textbook, this highly practical updated version features the latest information on the control of electric machines and apparatus, as well as a new chapter on sensorless control of AC machines, a topic not covered in any other publication. The book begins by explaining the features of the electric drive system and trends of development in related technologies, as well as the basic structure and operation principles of the electric machine. It also addresses steady state characteristics and control of the machines and the transformation of physical variables of AC machines using reference frame theory in order to provide a proper foundation for the material. The heart of the book reviews several control algorithms of electric machines and power converters, explaining active damping and how to regulate current, speed, and position in a feedback manner. Seung-Ki Sul introduces tricks to enhance the control performance of the electric machines, and the algorithm to detect the phase angle of an AC source and to control DC link voltages of power converters. Topics also covered are: Vector control Control algorithms for position/speed sensorless drive of AC machines Methods for identifying the parameters of electric machines and power converters The matrix algebra to model a three-phase AC machine in d-q-n axes Every chapter features exercise problems drawn from actual industry experience. The book also includes more than 300 figures and offers access to an FTP site, which provides MATLAB programs for selected problems. The book's practicality and realworld reliability make it an invaluable resource for professionals and engineers involved in the research and development of electric machine drive business, industrial drive designers, and senior undergraduate and graduate students. To obtain instructor materials please send an email to pressbooks@ieee.org To visit this book's FTP site to download MATLAB codes, please click on this link: ftp://ftp.wiley.com/public/sci_tech_med/electric_machine/ MATLAB codes are also downloadable from Wiley Booksupport Site at <http://booksupport.wiley.com>

Electrical Machines & their Applications Career Education

Presents applied theory and advanced simulation techniques for electric machines and drives This book combines the knowledge of experts from both academia and the software industry to present theories of multiphysics simulation by design for electrical machines, power electronics, and drives. The comprehensive design approach described within supports new applications required by technologies sustaining high drive efficiency. The highlighted framework considers the electric machine at the heart of the entire electric drive. The book also emphasizes the simulation by design concept—a concept that frames the entire highlighted design methodology, which is described and illustrated by various advanced simulation technologies. Multiphysics Simulation by Design for Electrical Machines, Power Electronics and Drives begins with the basics of electrical machine design and manufacturing tolerances. It also discusses fundamental aspects of the state of the art design process and includes examples from industrial practice. It explains FEM-based analysis techniques for electrical machine design—providing details on how it can be employed in ANSYS Maxwell software. In addition, the book covers advanced magnetic material modeling capabilities employed in numerical computation; thermal analysis; automated optimization for electric machines; and power electronics and drive systems. This valuable resource: Delivers the multi-physics know-how based on practical electric machine design methodologies Provides an extensive overview of electric machine design optimization and its integration with power electronics and drives Incorporates case

studies from industrial practice and research and development projects Multiphysics Simulation by Design for Electrical Machines, Power Electronics and Drives is an incredibly helpful book for design engineers, application and system engineers, and technical professionals. It will also benefit graduate engineering students with a strong interest in electric machines and drives.

Recent Advances in Power Electronics and Drives CRC Press

The first book of its kind, Power Converters and AC Electrical Drives with Linear Neural Networks systematically explores the application of neural networks in the field of power electronics, with particular emphasis on the sensorless control of AC drives. It presents the classical theory based on space-vectors in identification, discusses control of electrical drives and power converters, and examines improvements that can be attained when using linear neural networks. The book integrates power electronics and electrical drives with artificial neural networks (ANN). Organized into four parts, it first deals with voltage source inverters and their control. It then covers AC electrical drive control, focusing on induction and permanent magnet synchronous motor drives. The third part examines theoretical aspects of linear neural networks, particularly the neural EXIN family. The fourth part highlights original applications in electrical drives and power quality, ranging from neural-based parameter estimation and sensorless control to distributed generation systems from renewable sources and active power filters. Simulation and experimental results are provided to validate the theories. Written by experts in the field, this state-of-the-art book requires basic knowledge of electrical machines and power electronics, as well as some familiarity with control systems, signal processing, linear algebra, and numerical analysis. Offering multiple paths through the material, the text is suitable for undergraduate and postgraduate students, theoreticians, practicing engineers, and researchers involved in applications of ANNs.

Control of Electric Machine Drive Systems Elsevier

Synchronous motors are indubitably the most effective device to drive industrial production systems and robots with precision and rapidity. Their control law is thus critical for combining at the same time high productivity to reduced energy consumption. As far as possible, the control algorithms must exploit the properties of these actuators. Therefore, this work draws on well adapted models resulting from the Park's transformation, for both the most traditional machines with sinusoidal field distribution and for machines with non-sinusoidal field distribution which are more and more used in industry. Both, conventional control strategies like vector control (either in the synchronous reference frame or in the rotor frame) and advanced control theories like direct control and predictive control are thoroughly presented. In this context, a significant place is reserved to sensorless control which is an important and critical issue in tomorrow's motors.

Power Converters and AC Electrical Drives with Linear Neural Networks Springer

Experienced product designers are increasingly expected to be adept at incorporating a range of components into their designs. Students and experimenters too need to look beyond basic circuits and devices to achieve adequate design solutions. For those experienced in engineering design, this is the guide to electric motors. This book will allow engineers and designers to marry the technologies they know about with motor technology, and hence to incorporate motors into their products. Of the many good books on motors, such as Electric Motors and Drives by Hughes, none offer the engineering professional a tailored guide to motors taking into account their expertise. This

book fills that gap. Irving Gottlieb is a leading author of many books for practising engineers, technicians and students of electronic and electrical engineering. Practical approach with minimum theory Covers a core area ignored by many electronics texts Shows how to incorporate motors into electronic products

Multiphysics Simulation by Design for Electrical Machines, Power Electronics and Drives Elsevier

This innovative approach to the fundamentals of electric power provides the most rigorous, comprehensive and modern treatment available. To impart a thorough grounding in electric power systems, it begins with an informative discussion on per-unit normalizations, symmetrical components and iterative load flow calculations. Covering important topics within the power system, such as protection and DC transmission, this book looks at both traditional power plants and those used for extracting sustainable energy from wind and sunlight. With classroom-tested material, this book also presents: the principles of electromechanical energy conversion and magnetic circuits; synchronous machines - the most important generators of electric power; power electronics; induction and direct current electric motors. Homework problems with varying levels of difficulty are included at the end of each chapter, and an online solutions manual for tutors is available. A useful Appendix contains a review of elementary network theory. For senior undergraduate and postgraduate students studying advanced electric power systems as well as engineers re-training in this area, this textbook will be an indispensable resource. It will also benefit engineers in electronic power systems, power electronic systems, electric motors and generators, robotics and mechatronics. www.wiley.com/go/kirtley_electric

Electrical Machines, Drives, and Power Systems John Wiley & Sons

This book reports on innovative research and developments in automation. The chapters spans a wide range of disciplines, including communication engineering, power engineering, control engineering, instrumentation, signal processing and cybersecurity. Emphasis is given to methods and findings aimed at fostering better control and monitoring of industrial and manufacturing processes, and improving safety. Based on the International Russian Automation Conference, held in September 8-14, 2019, in Sochi, Russia, the book provides academics and professionals with a timely overview and extensive information on the state of the art in the field of automation and control systems, and is expected to foster new idea, as well as collaboration between different groups in different countries.

Who's Driving Electric Cars Springer Nature

The purpose of this book is to familiarize the reader with all aspects of electrical drives. It contains a comprehensive user-friendly introductory text.

Pearson Educación

This book is devoted to students, PhD students, postgraduates of electrical engineering, researchers, and scientists dealing with the analysis, design, and optimization of electrical machine properties. The purpose is to present methods used for the analysis of transients and steady-state conditions. In three chapters the following methods are presented: (1) a method in which the parameters (resistances and inductances) are calculated on the basis of geometrical dimensions and material properties made in the design process, (2) a method of general theory of electrical machines, in

which the transients are investigated in two perpendicular axes, and (3) FEM, which is a mathematical method applied to electrical machines to investigate many of their properties.

Principles of Electrical Machines PHI Learning Pvt. Ltd.

Power Electronics and Motor Drives: Advances and Trends, Second Edition is the perfect resource to keep the electrical engineer up-to-speed on the latest advancements in technologies, equipment and applications. Carefully structured to include both traditional topics for entry-level and more advanced applications for the experienced engineer, this reference sheds light on the rapidly growing field of power electronic operations. New content covers converters, machine models and new control methods such as fuzzy logic and neural network control. This reference will help engineers further understand recent technologies and gain practical understanding with its inclusion of many industrial applications. Further supported by a glossary per chapter, this book gives engineers and researchers a critical reference to learn from real-world examples and make future decisions on power electronic technology and applications. Provides many practical examples of industrial applications Updates on the newest electronic topics with content added on fuzzy logic and neural networks Presents information from an expert with decades of research and industrial experience

Electric Drives: Concepts & Appl, 2/E Springer

This book highlights recent findings in industrial, manufacturing and mechanical engineering, and provides an overview of the state of the art in these fields, mainly in Russia and Eastern Europe. A broad range of topics and issues in modern engineering are discussed, including the dynamics of machines and working processes, friction, wear and lubrication in machines, surface transport and technological machines, manufacturing engineering of industrial facilities, materials engineering, metallurgy, control systems and their industrial applications, industrial mechatronics, automation and robotics. The book gathers selected papers presented at the 6th International Conference on Industrial Engineering (ICIE), held in Sochi, Russia in May 2020. The authors are experts in various fields of engineering, and all papers have been carefully reviewed. Given its scope, the book will be of interest to a wide readership, including mechanical and production engineers, lecturers in engineering disciplines, and engineering graduates.

Principles of Electric Machines and Power Electronics Newnes

Provides broad insights into problems of coding control algorithms on a DSP platform. - Includes a set of Simulink simulation files (source codes) which permits readers to envisage the effects of control solutions on the overall motion control system. -bridges the gap between control analysis and industrial practice.

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