

[6] M. J. Lighthill and G. B. Whitham, "On kinematic waves II: a theory of traffic flow on longcrowded roads," *Proc. R. Soc. A*, vol. 229, pp. 317–345, May 1955.

[7] P. I. Richards, "Shock waves on the highway," *Operations Res.*, vol. 4, no. 1, pp. 42–51, 1956.

[8] H. J. Payne, "Models of freeway traffic and control," *Math. Model Public Syst.*, vol. 28, no. 1, pp. 51–61, 1971.

[9] G. B. Whitham, *Linear and Nonlinear Waves*. New York: Wiley, 1974.

[10] M. Papageorgiou, C. Diakaki, V. Dinopoulou, A. Kotsialos, and Y. Wang, "Review of road traffic control strategies," *Proc. IEEE*, vol. 91, pp. 2043–2067, Dec. 2003.

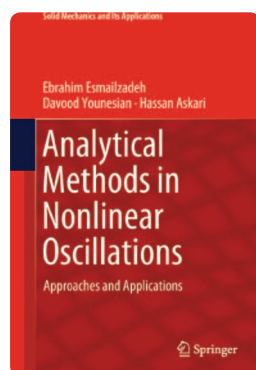
[11] L. D. Baskar, B. De Schutter, J. Hellendoorn, and Z. Papp, "Traffic control and intelligent vehicle highway systems: a survey," *IET Intelligent Transportation Syst.*, vol. 5, no. 1, pp. 38–52, 2011.

[12] E. Giovannoni and G. Fabietti, "What is sustainability? A review of the concept and its applications," in *Integrated Reporting*, C. Busco, M. L. Frigo, P. Quattrone, and A. Riccaboni, Eds. Basel, Switzerland: Springer, 2014.

[13] C. Diakaki, M. Papageorgiou, I. Papamichail, and I. Nikolos, "Overview and analysis of vehicle automation and communication systems from a motorway traffic management perspective," *Trans. Res. Part A*, vol. 75, pp. 147–165, May 2015.

[14] C. G. Cassandras, "Automating mobility in smart cities," *Annu. Rev. Control*, vol. 44, no. 1, pp. 1–8, 2017.

Book Announcements



Analytical Methods in Nonlinear Oscillations: Approaches and Applications

by E. ESMAILZADEH,
D. YOUNESIAN, and H. ASKARI

This book covers both classical and modern analytical methods in nonlinear systems. The text contains seven chapters, each with miscellaneous problems and their detailed solutions. More than 100 practice problems are illustrated, which should be useful for students in

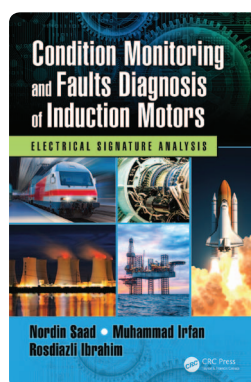
Springer, 2019,
ISBN: 978-94-024-1540-7,
286 pages, US\$169.99.

the areas of nonlinear oscillations and applied mathematics. This book aims to show the multidisciplinary emergence of nonlinear dynamical systems in a wide range of applications, including mechanical and electrical oscillators, micro/nanoresonators and sensors, global warming, epidemic diseases, sociology, chemical reactions, biology, and ecology.

CONDITION MONITORING AND FAULTS DIAGNOSIS OF INDUCTION MOTORS: ELECTRICAL SIGNATURE ANALYSIS

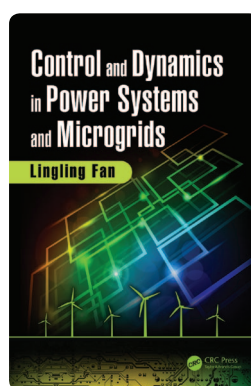
By N. SAAD, M. IRFAN, and
R. IBRAHIM

This book discusses various issues related to machinery condition monitoring, signal processing and conditioning, instrumentation and measurements, faults for induction



motors failures, new trends in condition monitoring, and the fault identification process using motor current electrical signature analysis. It presents a new noninvasive and non-intrusive condition monitoring system, which can detect defects in induction motors at incipient stages under arbitrary noise conditions. The performance of the developed system has been analyzed theoretically and experimentally during various loading conditions of the motor.

CRC Press, 2019,
ISBN: 978-0-8153-8995-8,
170 pages, US\$149.95.



CONTROL AND DYNAMICS IN POWER SYSTEMS AND MICROGRIDS

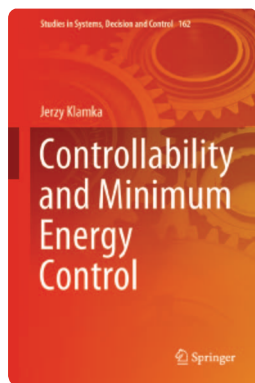
by L. FAN

In traditional power system dynamics and control books, the focus is on synchronous generators. However, in current industrial applications where renewable energy, power electronics converters, and microgrids arise, ideas related to system-level dynamics and control play an important role. To this end, this book discusses wind energy system dynamics, microgrid system control, modern control design tools, and advanced control

CRC Press, 2017,
ISBN: 978-1-138-03499-0,
230 pages, US\$119.95.

concepts. The goal is to provide the reader with a basic understanding of dynamics and control in the areas of synchronous generator-based power systems, power electronics converter-enabled renewable energy systems, and microgrids.

disorder, and communication delay. It describes three data dropout models: the random sequence model, Bernoulli variable model, and Markov chain model for both linear and nonlinear stochastic systems. Furthermore, it proposes and analyzes two compensation algorithms for the incomplete data: the intermittent update algorithm and successive update algorithm. Incomplete information environments include random data dropout, random communication delay, random iteration-varying lengths, and other communication constraints. The book explores several potential solutions methodologies with the goal of introducing readers to the latest advances in ILC for systems with random factors.



CONTROLLABILITY AND MINIMUM ENERGY CONTROL

by J. KLAMKA

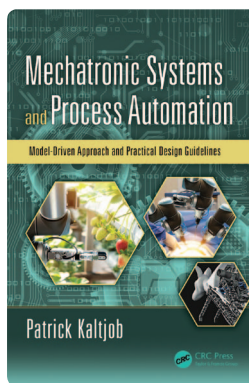
The book presents an overview of controllability problems and minimum energy control for dynamical systems including linear, semi-linear, and nonlinear systems. The theory of controllability is developed for both finite and infinite dimensional dynamical systems described by differential state equations. Results

Springer, 2019,
ISBN: 978-3-319-92539-4,
176 pages, US\$149.99.

from functional analysis and matrix algebra, which provide effective tools for the solution of a number of controllability problems, are also emphasized. Theoretical results are illustrated by examples throughout the book. This book is primarily intended for researchers and graduate students working in mathematical control theory and applied mathematics.

MECHATRONIC SYSTEMS AND PROCESS AUTOMATION: MODEL-DRIVEN APPROACH AND PRACTICAL DESIGN GUIDELINES

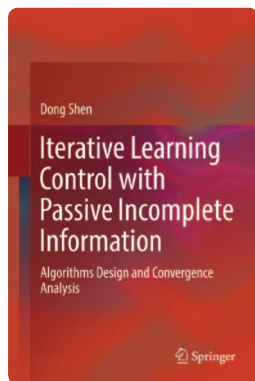
by P. KALTJOB



This book discusses the basics of process automation and mechatronic system design. The emphasis is on modeling, analysis, control, networking, monitoring, and sensing of various machines and processes from single electrical-driven machines to large-scale industrial process operations. It covers design applications from various engineering disciplines through real-world mechatronics problems and industrial automation case studies. A variety of topics such as manufacturing, power

CRC Press, 2018,
ISBN: 978-0-8153-7079-6,
467 pages, US\$129.95.

grids, cement production, wind generators, and oil refining are also covered.



ITERATIVE LEARNING CONTROL WITH PASSIVE INCOMPLETE INFORMATION: ALGORITHMS DESIGN AND CONVERGENCE ANALYSIS

by D. SHEN

This book presents an in-depth discussion of iterative learning control (ILC) with passive incomplete information, highlighting the incomplete input and output data resulting from factors such as data dropout, transmission

Springer, 2018,
ISBN: 978-981-10-8266-5,
294 pages, US\$169.99.

REINFORCEMENT LEARNING FOR OPTIMAL FEEDBACK CONTROL: A LYAPUNOV-BASED APPROACH

by R. KAMALAPUKAR, P. WALTERS, J. ROSENFELD,
and W. DIXON

This text develops model-based and data-driven reinforcement learning methods for solving optimal control

(continued on p. 86)



At the Rodin Museum, “The Thinker” guards the Gates of Hell, pondering his next theorem. (Photo courtesy of Philadelphia Convention and Visitors Bureau.)

jamin Franklin Parkway, nicknamed the “Museum Mile,” lie the Academy of Natural Sciences of Drexel University (the oldest natural history museum in America), the Franklin Institute (featuring an IMAX theater, planetarium, and interactive science shows), the Barnes Foundation (home to a priceless collection of postimpressionist and early modern art),

the Rodin Museum (housing one of the most comprehensive public collections of Auguste Rodin’s work outside Paris), and the Philadelphia Museum of Art (one of the top five art museums in the United States with over 227,400 pieces, including famous collections of Renaissance, impressionist, postimpressionist, and modern art).

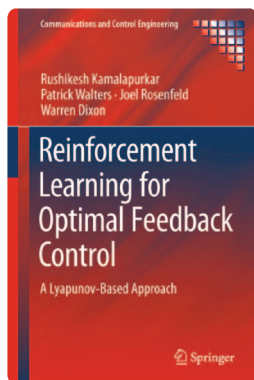
Philadelphia offers many family-friendly attractions, including the 42-acre Philadelphia Zoo in Fairmount Park, the Please Touch Museum in Chestnut Hill, and Adventure Aquarium just across the Delaware River in Camden, New Jersey. Nine professional sports teams call Philadelphia home, including baseball’s Phillies, who will be in town to host the Washington Nationals July 12–14.

Please visit the conference website <http://acc2019.a2c2.org> for the latest developments leading up to the conference. To learn more about the host city, visit <http://www.visitphilly.com>, the official website for Philadelphia travel and tourism information. The 2019 ACC Operating Committee looks forward to seeing you in Philly next July for another outstanding ACC!

Douglas A. Lawrence
General Chair

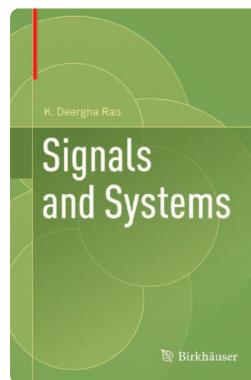


» BOOKSHELF (continued from p. 72)



Springer, 2018,
ISBN: 978-3-319-78383-3,
293 pages, US\$169.99.

problems in nonlinear deterministic dynamical systems. To achieve learning under uncertainty, data-driven methods for identifying system models in real time are also developed. The book illustrates the advantages gained from the use of a model and previous experience in the form of recorded data through simulations and experiments. The book’s focus on deterministic systems allows for an in-depth Lyapunov-based analysis of the performance of the methods described during the learning phase and execution. To yield an approximate optimal controller, the book discusses theories and methods that fall under the umbrella of actor–critic methods for machine learning. This monograph provides researchers with backgrounds in diverse disciplines an introduction to the use of model-based methods.



Birkhäuser, 2018,
ISBN: 978-3-319-68674-5,
424 pages, US\$69.99.

This textbook covers the fundamentals of signals and systems analysis. A novel feature is the inclusion of recent developments from integrated circuits technology in the example problems. The text provides an overview of continuous- and discrete-time systems, Fourier analysis, the Laplace transform, and the z transform. Various classes of analog filters and their use in signal processing applications are also covered. Intended for undergraduate electrical engineering students, the text includes Matlab-based examples to allow readers to experiment with signals and systems code independently. An online repository of the Matlab code can be found at the book’s website.

SIGNALS AND SYSTEMS

by K.D. RAO

