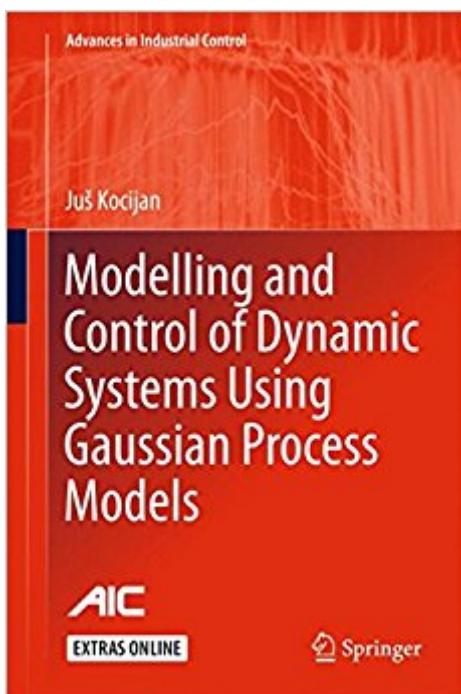


The book was found

# Modelling And Control Of Dynamic Systems Using Gaussian Process Models (Advances In Industrial Control)



## Synopsis

This monograph opens up new horizons for engineers and researchers in academia and in industry dealing with or interested in new developments in the field of system identification and control. It emphasizes guidelines for working solutions and practical advice for their implementation rather than the theoretical background of Gaussian process (GP) models. The book demonstrates the potential of this recent development in probabilistic machine-learning methods and gives the reader an intuitive understanding of the topic. The current state of the art is treated along with possible future directions for research. Systems control design relies on mathematical models and these may be developed from measurement data. This process of system identification, when based on GP models, can play an integral part of control design in data-based control and its description as such is an essential aspect of the text. The background of GP regression is introduced first with system identification and incorporation of prior knowledge then leading into full-blown control. The book is illustrated by extensive use of examples, line drawings, and graphical presentation of computer-simulation results and plant measurements. The research results presented are applied in real-life case studies drawn from successful applications including: a gas-liquid separator control; urban-traffic signal modelling and reconstruction; and prediction of atmospheric ozone concentration. A MATLAB® toolbox, for identification and simulation of dynamic GP models is provided for download.

## Book Information

Series: Advances in Industrial Control

Paperback: 267 pages

Publisher: Springer; 1st ed. 2016 edition (November 22, 2015)

Language: English

ISBN-10: 3319210203

ISBN-13: 978-3319210209

Product Dimensions: 6.2 x 0.8 x 9.5 inches

Shipping Weight: 12.6 ounces (View shipping rates and policies)

Average Customer Review: Be the first to review this item

Best Sellers Rank: #717,360 in Books (See Top 100 in Books) #233 in Books > Science & Math > Chemistry > Industrial & Technical #564 in Books > Engineering & Transportation > Engineering > Industrial, Manufacturing & Operational Systems > Robotics & Automation #2208 in Books > Textbooks > Science & Mathematics > Mathematics > Statistics

## Customer Reviews

This monograph opens up new horizons for engineers and researchers in academia and in industry dealing with or interested in new developments in the field of system identification and control. It emphasizes guidelines for working solutions and practical advice for their implementation rather than the theoretical background of Gaussian process (GP) models. The book demonstrates the potential of this recent development in probabilistic machine-learning methods and gives the reader an intuitive understanding of the topic. The current state of the art is treated along with possible future directions for research. Systems control design relies on mathematical models and these may be developed from measurement data. This process of system identification, when based on GP models, can play an integral part of control design in data-based control and its description as such is an essential aspect of the text. The background of GP regression is introduced first with system identification and incorporation of prior knowledge then leading into full-blown control. The book is illustrated by extensive use of examples, line drawings, and graphical presentation of computer-simulation results and plant measurements. The research results presented are applied in real-life case studies drawn from successful applications including: a gas-oil separator control; urban-traffic signal modelling and reconstruction; and prediction of atmospheric ozone concentration. A MATLAB® toolbox, for identification and simulation of dynamic GP models is provided for download. Advances in Industrial Control aims to report and encourage the transfer of technology in control engineering. The rapid development of control technology has an impact on all areas of the control discipline. The series offers an opportunity for researchers to present an extended exposition of new work in all aspects of industrial control.

Južan Kocijan is a senior research fellow at the Department of Systems and Control, Jozef Stefan Institute, the leading Slovenian research institute in the field of natural sciences and engineering, and a Professor of Electrical Engineering at the University of Nova Gorica, Slovenia. His past experience in the field of control engineering includes teaching and research at the University of Ljubljana and visiting research and teaching posts at several European universities and research institutes. He has been active in applied research in automatic control through numerous domestic and international research grants and projects, in a considerable number of which he acted as project leader. His research interests include the modelling of dynamic systems with Gaussian process models, control based on Gaussian process models, multiple-model approaches to modelling and control, applied nonlinear control, Individual Channel Analysis and Design. His other experience includes: serving as one of the editors of the Engineering Applications of Artificial

Intelligence journal and on the editorial boards of other research journals, serving as a member of IFAC Technical committee on Computational Intelligence in Control, actively participating as a member of numerous scientific-meeting international programme and organising committees. Prof. Kocijan is a member of various national and international professional societies in the field of automatic control, modelling and simulation.

[Download to continue reading...](#)

Modelling and Control of Dynamic Systems Using Gaussian Process Models (Advances in Industrial Control) Wind Turbine Control Systems: Principles, Modelling and Gain Scheduling Design (Advances in Industrial Control) Modelling and Controlling Hydropower Plants (Advances in Industrial Control) Real-time Monitoring and Operational Control of Drinking-Water Systems (Advances in Industrial Control) Advances in Modelling and Clinical Application of Intravenous Anaesthesia (Advances in Experimental Medicine and Biology) Modeling Dynamic Biological Systems (Modeling Dynamic Systems) Evaluation of Industrial Disability: Prepared by the Committee of the California Medical Association and Industrial Accident Commission of the State ... of Joint Measures in Industrial Injury Cases. Clay Modelling for Beginners: An Essential Guide to Getting Started in the Art of Sculpting Clay ~ ( Clay Modelling | Clay Modeling | Clay Art ) Art Models 7: Dynamic Figures for the Visual Arts (Art Models series) Dynamic Modeling in the Health Sciences (Modeling Dynamic Systems) Dynamic Programming and Optimal Control, Vol. II, 4th Edition: Approximate Dynamic Programming Modelling and Control in Biomedical Systems 1988 Robotics: Modelling, Planning and Control (Advanced Textbooks in Control and Signal Processing) Model-Reference Robust Tuning of PID Controllers (Advances in Industrial Control) Simple Mathematical Models of Gene Regulatory Dynamics (Lecture Notes on Mathematical Modelling in the Life Sciences) Signals and Systems using MATLAB, Second Edition (Signals and Systems Using MATLAB w/ Online Testing) Fundamentals of Industrial Instrumentation and Process Control Decoding The Hidden Market Rhythm - Part 1: Dynamic Cycles: A Dynamic Approach To Identify And Trade Cycles That Influence Financial Markets (WhenToTrade) Decoding The Hidden Market Rhythm - Part 1: Dynamic Cycles: A Dynamic Approach To Identify And Trade Cycles That Influence Financial Markets (WhenToTrade) (Volume 1) Nonlinear Power Flow Control Design: Utilizing Exergy, Entropy, Static and Dynamic Stability, and Lyapunov Analysis (Understanding Complex Systems)

[Contact Us](#)

[DMCA](#)

Privacy

FAQ & Help