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River Publishers Book Catalogue

Series in Automation, Control and
Robotics

River Publishers Series in Automation, Control and Robotics

Control Systems: Theory and Applications

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ISBN: 9788770220248

e-ISBN: 9788770220255

Available From: December 2018

Price: € 95.00



Description:

In recent years, a considerable amount of effort has been devoted, both in industry and academia, towards the development of advanced methods of control theory with focus on its practical implementation in various fields of human activity such as space control, robotics, control applications in marine systems, control processes in agriculture and food production.

Control Systems: Theory and Applications consists of selected best papers which were presented at XXIV International conference on automatic control "Automatics 2017" (September 13-15, 2017, Kyiv, Ukraine) organized by Ukrainian Association on Automatic Control (National member organization of IFAC - International Federation on Automatic Control) and National University of Life and Environmental Sciences of Ukraine. More than 120 presentations were discussed at the conference, with participation of the scientists from the numerous countries.

The book is divided into two main parts, a first on Theory of Automatic Control (5 chapters) and the second on Control Systems Applications (8 chapters). The selected chapters provide an overview of challenges in the area of control systems design, modeling, engineering and implementation and the approaches and techniques that relevant research groups within this area are employing to try to resolve these.

This book on advanced methods of control theory and successful cases in the practical implementation is ideal for personnel in modern technological processes automation and SCADA systems, robotics, space and marine industries as well as academic staff and master/research students in computerized control systems, automatized and computer-integrated systems, electrical and mechanical engineering

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Algorithms and Applications for Academic Search, Recommendation and Quantitative Association Rule Mining

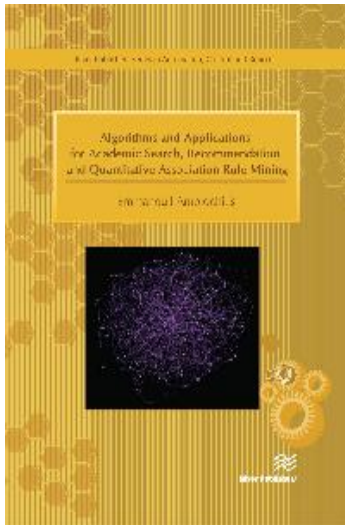
Author: Emmanouil Amolochitis, Aalborg University, Denmark

ISBN: 9788793609648

e-ISBN: 9788793609631

Available From: February 2018

Price: € 80.00



Description:

Algorithms and Applications for Academic Search, Recommendation and Quantitative Association Rule Mining presents novel algorithms for academic search, recommendation and association rule mining that have been developed and optimized for different commercial as well as academic purpose systems. Along with the design and implementation of algorithms, a major part of the work presented in the book involves the development of new systems both for commercial as well as for academic use.

In the first part of the book the author introduces a novel hierarchical heuristic scheme for re-ranking academic publications retrieved from standard digital libraries. The scheme is based on the hierarchical combination of a custom implementation of the term frequency heuristic, a time-depreciated citation score and a graph-theoretic computed score that relates the paper's index terms with each other. In order to evaluate the performance of the introduced algorithms, a meta-search engine has been designed and developed that submits user queries to standard digital repositories of academic publications and re-ranks the top-n results using the introduced hierarchical heuristic scheme.

In the second part of the book the design of novel recommendation algorithms with application in different types of e-commerce systems are described. The newly introduced algorithms are a part of a developed Movie Recommendation system, the first such system to be commercially deployed in Greece by a major Triple Play services provider. The initial version of the system uses a novel hybrid recommender (user, item and content based) and provides daily recommendations to all active subscribers of the provider (currently more than 30,000). The recommenders that we are presenting are hybrid by nature, using an ensemble configuration of different content, user as well as item-based recommenders in order to provide more accurate recommendation results.

The final part of the book presents the design of a quantitative association rule mining algorithm. Quantitative association rules refer to a special type of association rules of the form that antecedent implies consequent consisting of a set of numerical or quantitative attributes. The introduced mining algorithm processes a specific number of user histories in order to generate a set of association rules with a minimally required support and confidence value. The generated rules show strong relationships that exist between the consequent and the antecedent of each rule, representing different items that have been consumed at specific price levels. This research book will be of appeal to researchers, graduate students, professionals, engineers and computer programmers.

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A First Course in Control System Design

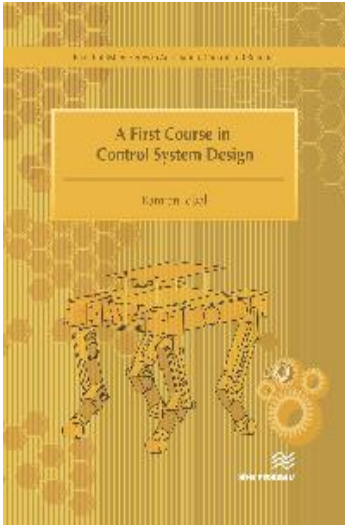
Author: Kamran Iqbal, University of Arkansas at Little Rock, USA

ISBN: 9788793609051

e-ISBN: 9788793609044

Available From: December 2017

Price: € 85.00



Description:

Control systems are pervasive in our lives. Our homes have environmental controls. The appliances we use at home, such as the washing machine, microwave, etc. have embedded controllers. We fly in airplanes and drive automobiles, which make extensive use of control systems. The increasing automation in the past few decades has increased our reliance on control systems.

A First Course in Control System Design discusses control systems design from a model-based perspective as applicable to single-input single-output systems. The emphasis in this book is on understanding and applying the techniques that enable the design of effective control systems. The book covers the time-domain and the frequency-domain design methods, as well as the design of continuous-time and discrete-time systems.

Technical topics discussed in the book include:

- Modeling of physical systems
- Analysis of transfer function and state variable models
- Control system design via root locus
- Control system design in the state-space
- Control design of sampled-data systems
- Compensator design via frequency response modification

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Systems, Cybernetics, Control, and Automation **Ontological, Epistemological, Societal, and Ethical Issues**

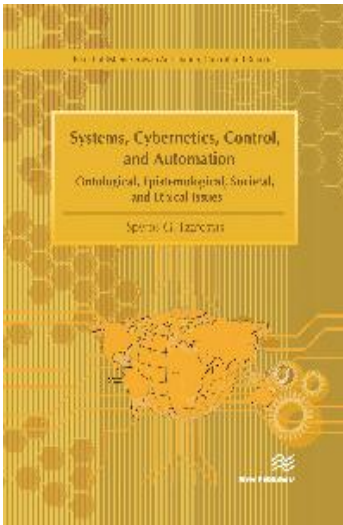
Author: Spyros G. Tzafestas, National Technical University of Athens, Greece

ISBN: 9788793609075

e-ISBN: 9788793609068

Available From: July 2017

Price: € 85.00



Description:

Systems, cybernetics, control, and automation (SCCA) are four interrelated and overlapping scientific and technological fields that have contributed substantially to the development, growth, and progress of human society. A large number of models, methods, and tools were developed that assure high efficiency of SCCA applied to practical situations. The real-life applications of SCCA encompass a wide range of man-made or biological systems, including transportations, power generation, chemical industry, robotics, manufacturing, cybernetics organisms (cyborgs), aviation, economic systems, enterprise, systems, medical/health systems, environmental applications, and so on. The SCCA fields exhibit strong influences on society and rise, during their use and application, many ethical concerns and dilemmas.

This book provides a consolidated and concise overview of SCCA, in a single volume for the first time, focusing on ontological, epistemological, social impact, ethical, and general philosophical issues. It is appropriate for use in engineering courses as a convenient tutorial source providing fundamental conceptual and educational material on these issues, or for independent reading by students and scientists.

Included in the book is:

- Background material on philosophy and systems theory
- Major ontological, epistemological, societal and ethical/philosophical aspects of the four fields that are considered in the book
- Over 400 references and a list of 130 additional books in the relevant fields
- Over 100 colored photos and 70 line figures that illustrate the text

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An Introduction to Robophilosophy

Cognition, Intelligence, Autonomy, Consciousness, Conscience and Ethics

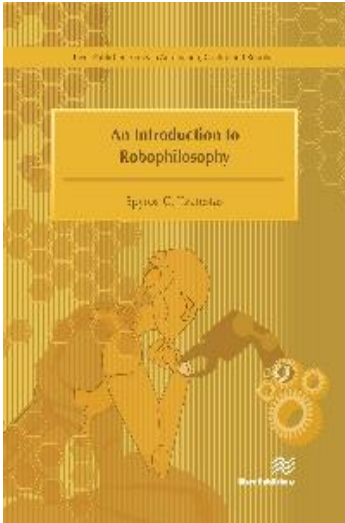
Author: Spyros G. Tzafestas, National Technical University of Athens, Greece

ISBN: 9788793379572

e-ISBN: 9788793379565

Available From: June 2016

Price: € 75.00



Description:

Modern robots have arrived at a very matured state both in their mechanical / control aspects and their mental aspects. An Introduction to Robophilosophy explores the philosophical questions that arise in the development, creation, and use of mental – anthropomorphic and zoomorphic- robots that are capable of semiautonomous / autonomous operation, decision making and human-like action, being able to socially interact with humans and exhibit behavior similar to human beings or animals. Coverage first presents fundamental concepts, and an overview of philosophy, philosophy of science, and philosophy of technology. The six principal mental capabilities of modern robots, namely cognition, intelligence, autonomy, consciousness, conscience, and ethics are then studied from a philosophical point of view. They actually represent the product of technological embodiment of cognitive features to robots. Overall, readers are provided a consolidated thorough investigation of the philosophical aspects of these mental capabilities when embedded to robots. This book will serve as an ideal educational source in engineering and robotics courses as well as an introductory reference for researchers in the field of robotics, and it includes a rich bibliography.

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