

companion Web site www.mkp.com/gtcc. * Filled with robust, thoroughly tested solutions that will save you time and help you avoid costly errors. * Covers problems relevant for both 2D and 3D graphics programming. * Presents each problem and solution in stand-alone form allowing you the option of reading only those entries that matter to you. * Provides the math and geometry background you need to understand the solutions and put them to work. * Clearly diagrams each problem and presents solutions in easy-to-understand pseudocode. * Resources associated with the book are available at the companion Web site www.mkp.com/gtcc.

A Successful Transformation? Petr Pavlínek 2008-04-30 This is a brilliant examination of the complex processes of the post-1990 transformation in the Czech automotive industry and its selective integration into the West European system. The post-1990 restructuring of the industry is analyzed in the context of its pre-1990 development and in the context of the East European automobile industry as a whole. Specifically, the book examines the development and post-1990 restructuring of the Czech car, components, and truck industries.

Introduction to Modeling and Analysis of Stochastic Systems V. G. Kulkarni 2010-11-03 This book provides a self-contained review of all the relevant topics in probability theory. A software package called MAXIM, which runs on MATLAB, is made available for downloading. Vidyadhar G. Kulkarni is Professor of Operations Research at the University of North Carolina at Chapel Hill.

Rob|Arch 2012 Sigrid Brell-Cokcan 2013-12-16 This volume collects about 20 contributions on the topic of robotic construction methods. It is a proceedings volume of the robarch2012 symposium and workshop, which will take place in December 2012 in Vienna. Contributions will explore the current status quo in industry, science and practitioners. The symposium will be held as a biennial event. This book is to be the first of the series, comprising the current status of robotics in architecture, art and design.

Architectural Theories of the Environment Ariane Lourie Harrison 2013 "Humans are the largest environmental force on the planet, making this a new geologic era: The Anthropocene. As architects and designers, we struggle to reconcile the ever increasing environmental, humanitarian, and technological demands placed on our projects. Here, for the first time, editor Ariane Lourie Harrison collects the essays of architects, theorists, and sustainable designers that together provide a framework to help you develop your own guidelines to approaching your work. Each introduction defines a key term, such as biopolitics, animalization, and sociotechnical model, to increase your design vocabulary and highlight themes from the readings. Nine case studies from five countries demonstrate these concepts, so that you can see theory made concrete"--

Industrial robots and cobots Michal Gurgul 2018-12-08 In the modern world, highly repetitive and tiresome tasks are being delegated to machines. The demand for industrial robots is growing not only because of the need to improve production efficiency and the quality of the end products, but also due to rising employment costs and a shortage of skilled professionals. The industrial robot market is projected to grow by 16% year-on-year in the immediate future. The industry’s progressing automation is increasing the demand for specialists who can operate robots. If you would like to join this sought-after and well-paid professional group, it’s time to learn how to operate and program robots using modern methods. This book provides all the information you will need to enter the industry without spending money on training or looking for someone willing to introduce you to the world of robotics. You will learn about all aspects of programming and implementing robots in a company. The book consists of four parts: general introduction to robotics for non-technical people; part two describes industry robotisation; part three depicts the principles and methods of programming robots; the final part touches upon the safety of industrial robots and cobots. Are you a student of a technical faculty, or even a manager of a plant who would like to robotise production? If you are interested in this subject, you won’t find a better book!

Architectural Intelligence Molly Wright Steenson 2022-11-01 Architects who engaged with cybernetics, artificial intelligence, and other technologies poured the foundation for digital interactivity. In Architectural Intelligence, Molly Wright Steenson explores the work of four architects in the 1960s and 1970s who incorporated elements of interactivity into their work. Christopher Alexander, Richard Saul Wurman, Cedric Price, and Nicholas Negroponte and the MIT Architecture Machine Group all incorporated technologies—including cybernetics and artificial intelligence—into their work and influenced digital design practices from the late 1980s to the present day. Alexander, long before his famous 1977 book *A Pattern Language*, used computation and structure to visualize design problems; Wurman popularized the notion of “information architecture”; Price designed some of the first intelligent buildings; and Negroponte experimented with the ways people experience artificial intelligence, even at architectural scale. Steenson investigates how these architects pushed the boundaries of architecture—and how their technological experiments pushed the boundaries of technology. What did computational, cybernetic, and artificial intelligence researchers have to gain by engaging with architects and architectural problems? And what was this new space that emerged within these collaborations? At times, Steenson writes, the architects in this book characterized themselves as anti-architects and their work as anti-architecture. The projects Steenson examines mostly did not result in constructed buildings, but rather in design processes and tools, computer programs, interfaces, digital environments. Alexander, Wurman, Price, and Negroponte laid the foundation for many of our contemporary interactive practices, from information architecture to interaction design, from machine learning to smart cities.

Robotic Landscapes Ilmar Hurkkens 2022-01-10 The first book on the use of robotic technology in landscape design that introduces new, dynamic methods and previously inconceivable scenarios for implementation. The Department of Architecture at ETH Zurich has been researching the integration of robots into the architectural practice, both in design and the fabrication process, for some time. This book—created in collaboration with the chair of Christophe Girod, Gramazio Kohler Research, and Marco Hutter at ETH Zurich’s Robotic Systems Lab—is the first to investigate the use of robot-based construction equipment for large-scale soil grading in landscape architecture. As landscapes evolve due to ever-changing environmental conditions, the application of autonomous systems that respond to the environment rather than perform predefined and static earthwork is of particular interest in this field. Robotic Landscapes sheds light on a series of groundbreaking experiments in an interdisciplinary collaboration of landscape design, environmental engineering, and robotics that aims to make landscape architecture sustainable and ecological in the long term.

Computational Design Neil Leach 2018 - Computational Design offers an informed overview of the impact of computational techniques on architectural design today, providing a snapshot of the latest developments in the field, drawing upon the leading experts in architectural practice and education from across the world - Publication accompanies that of a companion volume - Digital Fabrication ISBN 9787560873343 How are computational techniques changing the ways in which architects are designing buildings today? Computational Design offers a range of informed opinions on the subject written by some of the leading authorities in the world. It addresses parametric and algorithmic design, along with other related subjects, such as swarm intelligence, artificial intelligence, machine learning, interactive design, video gaming, building information modelling, geographic informational systems, remote sensing and data visualisation. The volume is divided into different sections comprising Manifestos, Methodologies and Projects, and also includes a helpful Introduction that offers a brief history of computational design.

Observer Design for Nonlinear Systems Pauline Bernard 2019-02-01 Observer Design for Nonlinear Systems deals with the design of observers for the large class of nonlinear continuous-time models. It contains a unified overview of a broad range of general designs, including the most recent results and their proofs, such as the homogeneous and nonlinear Luenberger design techniques. The book starts from the observation that most observer designs consist in looking for a reversible change of coordinates transforming the expression of the system dynamics into some specific structures, called normal forms, for which an observer is known. Therefore, the problem of observer design is broken down into three sub-problems:
• What are the available normal forms and their associated observers?
• Under which conditions can a system be transformed into one of these forms and through which transformation?
• How can an inverse transformation that recovers an estimate in the given initial coordinates be achieved? This organisation allows the book to structure results within a united framework, highlighting the importance of the choice of the observer coordinates for nonlinear systems. In particular, the first part covers state-affine forms with their Luenberger or Kalman designs, and triangular forms with their homogeneous high-gain designs. The second part addresses the transformation into linear forms through linearization by output injection or in the context of a nonlinear Luenberger design, and into triangular forms under the well-known uniform and differential observability assumptions. Finally, the third part presents some recently developed methods for avoiding the numerically challenging inversion of the transformation. Observer Design for Nonlinear Systems addresses students and researchers looking for an introduction to or an overview of the state of the art in observer design for nonlinear continuous-time dynamical systems. The book gathers the most important results focusing on a large and diffuse literature on general observer designs with global convergence, and is a valuable source of information for academics and practitioners.

Surface Architecture David Leatherbarrow 2005-02-11 A study of the building surface, architecture's primary instrument of identity and engagement with its surroundings. Visually, many contemporary buildings either reflect their systems of production or recollect earlier styles and motifs. This division between production and representation is in some ways an extension of that between modernity and tradition. In this book, David Leatherbarrow and

Mohsen Mostafavi explore ways that design can take advantage of production methods such that architecture is neither independent of nor dominated by technology. Leatherbarrow and Mostafavi begin with the theoretical and practical isolation of the building surface as the subject of architectural design. The autonomy of the surface, the "free facade," presumes a distinction between the structural and nonstructural elements of the building, between the frame and the cladding. Once the skin of the building became independent of its structure, it could just as well hang like a curtain, or like clothing. The focus of the relationship between structure and skin is the architectural surface. In tracing the handling of this surface, the authors examine both contemporary buildings and those of the recent past. Architects discussed include Albert Kahn, Ludwig Mies van der Rohe, Alison and Peter Smithson, Alejandro de la Sota, Robert Venturi, Jacques Herzog, and Pierre de Meuron. The properties of a building's surface—whether it is made of concrete, metal, glass, or other materials—are not merely superficial; they construct the spatial effects by which architecture communicates. Through its surfaces a building declares both its autonomy and its participation in its surroundings.

Agile Practice Guide 2017-09-06 Agile Practice Guide - First Edition has been developed as a resource to understand, evaluate, and use agile and hybrid agile approaches. This practice guide provides guidance on when, where, and how to apply agile approaches and provides practical tools for practitioners and organizations wanting to increase agility. This practice guide is aligned with other PMI standards, including A Guide to the Project Management Body of Knowledge (PMBOK® Guide) – Sixth Edition, and was developed as the result of collaboration between the Project Management Institute and the Agile Alliance.

Multimodèles en automatique CHADLI Mohammed 2012-06-01 Pour représenter au mieux le fonctionnement dynamique d'un processus, une approche globale basée sur de multiples modèles LTI (linéaires ou affines) autour de différents points de fonctionnement est utilisée. Cette approche multimodèle est une représentation polytopique convexe pouvant être obtenue, soit directement à partir d'un modèle mathématique non linéaire, soit par transformation mathématique, soit par linéarisation autour de différents points de fonctionnement. Basé essentiellement sur la deuxième méthode de Lyapunov et la formulation LMI, Multimodèles en automatique se concentre sur l'analyse de la stabilité et la synthèse de correcteurs/observateurs. Le cas des multimodèles incertains avec des entrées inconnues est étudié et les fonctions de Lyapunov quadratiques et non quadratiques sont également considérées. Afin de réduire le pessimisme de la méthode quadratique, l'étude de stabilité des multimodèles est réalisée en considérant des fonctions de Lyapunov non quadratiques.

Handbook of Energy Storage Michael Sterner 2019-09-27 The authors of this Handbook offer a comprehensive overview of the various aspects of energy storage. After explaining the importance and role of energy storage, they discuss the need for energy storage solutions with regard to providing electrical power, heat and fuel in light of the Energy Transition. The book’s main section presents various storage technologies in detail and weighs their respective advantages and disadvantages. Sections on sample practical applications and the integration of storage solutions across all energy sectors round out the book. A wealth of graphics and examples illustrate the broad field of energy storage, and are also available online. The book is based on the 2nd edition of the very successful German book Energiespeicher. It features a new chapter on legal considerations, new studies on storage needs, addresses Power-to-X for the chemical industry, new Liquid Organic Hydrogen Carriers (LOHC) and potential-energy storage, and highlights the latest cost trends and battery applications. “Finally - a comprehensive book on the Energy Transition that is written in a style accessible to and inspiring for non-experts.” Franz Alt, journalist and book author “I can recommend this outstanding book to anyone who is truly interested in the future of our country. It strikingly shows: it won't be easy, but we can do it.” Prof. Dr. Harald Lesch, physicist and television host

Fabricate Achim Menges 2017-04-03 Bringing together pioneers in design and making within architecture, construction, engineering, manufacturing, materials technology and computation, Fabricate is a triennial international conference, now in its third year (ICD, University of Stuttgart, April 2017). The 2017 edition features 32 illustrated articles on built projects and works in progress from academia and practice, including contributions from leading practices such as Foster + Partners, Zaha Hadid Architects, Arup, and Ron Arad, and from world-renowned institutions including ICD Stuttgart, Harvard, Yale, MIT, Princeton University, The Bartlett School of Architecture (UCL) and the Architectural Association.Each year it produces a supporting publication, to date the only one of its kind specialising in Digital Fabrication.

Upscaling Earth Anna Heringer 2019 Earth building is not only one of the oldest, but also one of the most modern construction methods of our time. What economic, environmental, and social conditions are necessary for an upscaling of earth to occur? The authors present a wide scope of built and unbuilt projects as well as strategies that can be implemented to edify processes of building, adapting the use of earth to each unique culture and context. The advantages of this material become manifest: from its worldwide availability to the possibility of comprehensive recycling, from climate-neutral production to socially just implementation, including a focus on emerging economies. This book reveals the incredible potentials of earthen architecture - for people and for the entire planet.

Architectural Intelligence Philip F. Yuan 2020-09-03 This book presents selected papers from The 1st International Conference on Computational Design and Robotic Fabrication (CDRF 2019). Focusing on novel architecture theories, tools, methods, and procedures for digital design and construction in architecture, it promotes dialogs between architecture, engineer, computer science, robotics, and other relevant disciplines to establish a new way of production in the building industry in the digital age. The contents make valuable contributions to academic researchers and engineers in the industry. At the same time, it offers readers new ideas for the application of digital technology.

MEICON John Orr 2018

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Instabilities and Potentialities Chandler Ahrens 2019-02-22 Now that information technologies are fully embedded into the design studio, Instabilities and Potentialities explores our post-digital culture to better understand its impact on theoretical discourse and design processes in architecture. The role of digital technologies and its ever-increasing infusion of information into the design process entails three main shifts in the way we approach architecture: its movement from an abstracted mode of codification to the formation of its image, the emergence of the informed object as a statistical model rather than a fixed entity and the increasing porosity of the architectural discipline to other fields of knowledge. Instabilities and Potentialities aims to bridge theoretical and practical approaches in digital architecture.

Impact: Design With All Senses Christoph Gengnagel 2019-08-28 This book reflects and expands on the current trend in the building industry to understand, simulate and ultimately design buildings by taking into consideration the interlinked elements and forces that act on them. Shifting away from the traditional focus, which was exclusively on building tasks, this approach presents new challenges in all areas of the industry, from material and structural to the urban scale. The book presents contributions including research papers and case studies, providing a comprehensive overview of the field as well as perspectives from related disciplines, such as computer science. The chapter authors were invited speakers at the 7th Symposium “Impact: Design With All Senses”, which took place at the University of the Arts in Berlin in September 2019.

Advanced Human-Robot Collaboration in Manufacturing Lihui Wang 2021-06-10 This book presents state-of-the-art research, challenges and solutions in the area of human-robot collaboration (HRC) in manufacturing. It enables readers to better understand the dynamic behaviour of manufacturing processes, and gives more insight into on-demand adaptive control techniques for industrial robots. With increasing complexity and dynamism in today’s manufacturing practice, more precise, robust and practical approaches are needed to support real-time shop-floor operations. This book presents a collection of recent developments and innovations in this area, relying on a wide range of research efforts. The book is divided into five parts. The first part presents a broad-based review of the key areas of HRC, establishing a common ground of understanding in key aspects. Subsequent chapters focus on selected areas of HRC subject to intense recent interest. The second part discusses human safety within HRC. The third, fourth and fifth parts provide in-depth views of relevant methodologies and algorithms. Discussing dynamic planning and monitoring, adaptive control and multi-modal decision making, the latter parts facilitate a better understanding of HRC in real situations. The balance between scope and depth, and theory and applications, means this book appeals to a wide readership, including academic researchers, graduate students, practicing engineers, and those within a variety of roles in manufacturing sectors.

Robotic Welding, Intelligence and Automation Tzyh-Jong Tarn 2004-03-10 This research report brings together present trends in advanced welding robots, robotic welding, artificial intelligent and automatic welding. It includes important technical subjects on welding robots such as intelligent technologies and systems, and design and analysis. Modeling, identification and control of the welding process are presented, as well as knowledge-based systems for welding and tele-robotic welding. Other topics covered are sensing and data fusion, computer vision and virtual-reality applications of the welding process. An overview of intelligent and flexible manufacturing systems is given in addition to artificial intelligent technologies for industrial processes.