Robotic Grasping and Fine Manipulation

Design and Operation of Human Locomotion Systems

This book provides an insight into recent technological trends and innovations in mobility solutions and platforms to improve mobility of visually impaired people. The authors' goal is to help contribute to the social and societal inclusion of the visually impaired. The book's topics include, but are not limited to, obstacle detection systems, indoor and outdoor navigation, transportation sustainability systems, and hardware/devices to aid visually impaired people. The book has a strong focus on practical applications, tested in a real environment. Applications include city halls, municipalities, and companies that can keep up to date with recent trends in platforms, methodologies and technologies to promote urban mobility. Also discussed are broader realms including education, health, electronics, tourism, and transportation.

Contributors include a variety of researchers and practitioners around the world. Features practical, tested applications of technological mobility solutions for visually impaired people; Presents topics such as obstacle detection systems, urban mobility, smart home services, and ambient assisted living; Includes a number of application examples in education, health, electronics, tourism, and transportation.

Water Security and Sustainability

This text introduces engineering students to probability theory and stochastic processes. Along with thorough mathematical development of the subject, the book presents intuitive explanations of key points in order to give students the insights they need to apply math to practical engineering problems. The first seven chapters contain the core material that is essential to any introductory course. In one-semester undergraduate courses, instructors can select material from the remaining chapters to meet their individual goals. Graduate courses can cover all chapters in one semester.

Technological Trends in Improved Mobility of the Visually Impaired

Beginning Arduino Programming allows you to quickly and intuitively develop your programming skills through sketching in code. This clear introduction provides you with an understanding of the basic framework for developing Arduino code, including the structure, syntax, functions, and libraries needed to create future projects. You will also learn how to program your Arduino interface board to sense the physical world, to control light, movement, and sound, and to create objects with interesting behavior. With Beginning Arduino Programming, you'll get the knowledge you need to master the fundamental aspects of writing code on the Arduino platform, even if you have never before written code. It will have you ready to take the next step: to explore new project ideas, new kinds of hardware, contribute back to the open source community, and even take on more programming languages.

Proceedings of the 2nd International Conference on Healthcare Science and Engineering

Design and Operation of Locomotion Systems examines recent advances in locomotion systems with multidisciplinary viewpoints, including mechanical design, biomechanics, control and computer science. In particular, the book addresses the specifications and requirements needed to achieve the proper design of locomotion systems. The book provides insights on the gait analysis of humans by considering image capture systems. It also studies human locomotion from a rehabilitation viewpoint and outlines the design and operation of exoskeletons, both for rehabilitation and human performance enhancement tasks. Additionally, the book content ranges from fundamental theory and mathematical formulations, to practical implementations and experimental testing procedures. Written and contributed by leading experts in robotics and locomotion.
Srf05 Detection Distance

Robot 2019: Fourth Iberian Robotics Conference

Sustainable Systems 2017 will provide an outstanding international forum for scientists from all over the world to share ideas and achievements in the theory and practice of all areas of inventive systems which includes artificial intelligence, automation systems, computing systems, electronics systems, electrical and informative systems etc. Presentations should highlight computing methodologies as a concept that combines theoretical research and applications in automation, information and computing technologies. All aspects of inventive systems are of interest, theory, algorithms, tools, applications, etc.

App Inventor

The second edition of this book would not have been possible without the comments and suggestions from students, especially those at Columbia University. Many of the new topics introduced here are a direct result of student feedback that helped refine and clarify the material. The intention of this book was to develop material that the author would have liked to have had available as a student. Theory of Applied Robotics: Kinematics, Dynamics, and Control (2nd Edition) explains robotics concepts in detail, concentrating on their practical use. Related theorems and formal proofs are provided, as are real-life applications. The second edition includes updated and expanded exercise sets and problems. New coverage includes: components and mechanisms of a robotic system with actuators, sensors and controllers, along with updated and expanded material on kinematics. New coverage is also provided in sensing and control including position sensors, speed sensors and acceleration sensors. Students, researchers, and practicing engineers alike will appreciate this user-friendly presentation of a wealth of robotics topics, most notably orientation, velocity, and forward kinematics.

2019 16th International Conference on Ubiquitous Robots (UR)


OCEANS 2016 - Shanghai

A guide to using App Inventor to create Android applications presents step-by-step instructions for a variety of projects, including creating location-aware apps, data storage, and decision-making apps.

App Inventor 2

This updated Second Edition covers current state-of-the-art technology and instrumentation. The Second Edition of this well-respected publication provides updated coverage of basic nondestructive testing (NDT) principles for currently recognized NDT methods. The book provides information to help students and NDT personnel qualify for Level I, II, and III certification in the NDT methods of their choice. It is organized in accordance with the American Society for Nondestructive Testing (ASNT) Recommended Practice No. SNT-TC-1A(2001 Edition). Following the author’s logical organization and clear presentation, readers learn both the basic principles and applications for the latest techniques as they apply to a wide range of disciplines that employ NDT, including space shuttle engineering, digital technology, and process control systems. All chapters have been updated and expanded to reflect the development of more advanced NDT instruments and systems with improved monitors, sensors, and software analysis for instant viewing and real-time imaging. Keeping pace with the latest developments and innovations in the field, five new chapters have been added: Vibration Analysis, Laser Testing Methods, Thermal/Infrared Testing, Holography and Shearography, Overview of Recommended Practice No. SNT-TC-1A. Each chapter covers recommended practice topics such as basic principles, theory of operation, method advantages and disadvantages, instrument description, basic principles, theory of operation, method advantages and disadvantages, instrument description, brief operating and calibrating procedures, and typical examples of flaw detection and interpretation, where applicable.

PROFIBUS Manual

In the last 20 years, I have been personally involved with PROFIBUS: teaching it at the University, working on projects and leading workshops for industry. During this time, various descriptions and guides to different aspects of PROFIBUS were developed. I was helped in this by the contacts I had with industry and a range of experts in my capacity as chairman of PROFIBUS Switzerland and head of the PROFIBUS Competence Centre (PICC) at the Bern University of Applied Sciences. I have now brought these documents together in the form of a manual. Its purpose is to simplify entry to the world of PROFIBUS for a wider public. Now I generated an electronic book version with active links for the usage on iPad or Android tablet computers.
The Proceedings of the Second International Conference on Communications, Signal Processing, and Systems

This book constitutes the thoroughly refereed post-workshop proceedings of the 5th International Workshop on Modelling and Simulation for Autonomous Systems, MESAS 2018, held in Prague, Czech Republic, in October 2018. The 46 revised full papers included in the volume were carefully reviewed and selected from 66 submissions. They are organized in the following topical sections: Future Challenges of Advanced M&S Technology; Swarming - R&D and Application; M&S of Intelligent Systems - AI, R&D and Application; AxS in Context of Future Warfare and Security Environment (Concepts, Applications, Training, Interoperability, etc.).

Advances in 3D Image and Graphics Representation, Analysis, Computing and Information Technology

This book discusses the design and practice of environmental resources management for smart cities. Presenting numerous city case studies, it focuses on one specific environmental resource in each city. Environmental resources are commonly owned properties that require active inputs from the government and the people, and in any smart city their management calls for a synchronous combination of e-democracy, e-governance and IOT (Internet of Things) systems in a 24/7 framework. Smart environmental resources management uses information and communication technologies, the Internet of Things, internet of governance (e-governance) and internet of people (e-democracy) along with conventional resource management tools to achieve coordinated, effective and efficient management, development, and conservation that equitably improves ecological and economic welfare, without compromising the sustainability of development ecosystems and stakeholders.

Engineering Design Applications III

Interconnecting Smart Objects with IP: The Next Internet explains why the Internet Protocol (IP) has become the protocol of choice for smart object networks. IP has successfully demonstrated the ability to interconnect billions of digital systems on the global Internet and in private IP networks. Once smart objects can be easily interconnected, a whole new class of smart object systems can begin to evolve. The book discusses how IP-based smart object networks are being designed and deployed. The book is organized into three parts. Part 1 demonstrates why the IP architecture is well suited to smart object networks, in contrast to non-IP based sensor network or other proprietary systems that interconnect to IP networks (e.g. the public Internet of private IP networks) via hard-to-manage and expensive multi-protocol translation gateways that scale poorly. Part 2 examines protocols and algorithms, including smart objects and the low power link layers technologies used in these networks. Part 3 describes the following smart object network applications: smart grid, industrial automation, smart cities and urban networks, home automation, building automation, structural health monitoring, and container tracking. Shows in detail how connecting smart objects impacts our lives with practical implementation examples and case studies Provides an in depth understanding of the technological and architectural aspects underlying smart objects technology Offers an in-depth examination of relevant IP protocols to build large scale smart object networks in support of a myriad of new services

Basketball Handicapping

Management of Research and Development Organizations

This book presents a guideline for EWMA filter design for industrial wireless networked control system, both theoretically and practically. The filter’s key advantages are simple, effective, low computational overhead. This book also provides a guideline for practical implementation of EWMA filter for improving networked control performance of various process plants. It further discusses not only the advantages of the filter, but also the limitations and how to avoid them when implementing the filter from practical point of view.

Programming Kotlin

This book comprises the select proceedings of the International Conference on Future Learning Aspects of Mechanical Engineering (FLAME) 2020. This volume focuses on several emerging interdisciplinary areas involving mechanical engineering. Some of the topics covered include automobile engineering, mechatronics, applied mechanics, structural mechanics, hydraulic mechanics, human vibration, biomechanics, biomedical instrumentation, ergonomics, biodynamic modeling, nuclear engineering, and agriculture engineering. The contents of this book will be useful for students, researchers as well as professionals interested in interdisciplinary topics of mechanical engineering.

Advances in Interdisciplinary Engineering

This book provides an update on recent advances in various areas of modern engineering design, such as mechanical, materials, computer, and process engineering, which provide the foundation for the development of improved structures, materials, and processes. The modern design cycle is characterized by the interaction of different disciplines and a strong shift toward computer-based approaches involving only a small number of experiments for verification purposes. A major driver for this development is the increased demand for cost reduction, which is also connected to environmental demands. In the transportation industry (e.g. automotive or aerospace), where there is a demand for greater fuel efficiency, one solution is lighter structures and/or improved processes for energy conversion. Another emerging area is the interaction of classical engineering with the health and medical sector.

Make: Arduino Bots and Gadgets
This book gathers selected papers presented at the conference “Advances in 3D Image and Graphics Representation, Analysis, Computing and Information Technology,” one of the first initiatives devoted to the problems of 3D imaging in all contemporary scientific and application areas. The aim of the conference was to establish a platform for experts to combine their efforts and share their ideas in the related areas in order to promote and accelerate future development. This second volume discusses algorithms and applications, focusing mainly on the following topics: 3D printing technologies; naked, dynamic and auxiliary 3D displays; VR/AR/MR devices; VR camera technologies; microprocessors for 3D data processing; advanced 3D computing systems; 3D data-storage technologies; 3D data networks and technologies; 3D data intelligent processing; 3D data cryptography and security; 3D visual quality estimation and measurement; and 3D decision support and information systems.

Modern Physical Metallurgy and Materials Engineering

A comprehensive review of the current state of research and use of task analysis for Human-Computer Interaction (HCI), this multi-authored and diligently edited handbook offers the best reference source available on this diverse subject whose foundations date to the turn of the last century. Each chapter begins with an abstract and is cross-referenced and indexed to other chapters. Divided into five parts—each prefaced with a rationale and brief summary of its chapters—this volume presents contemporary thinking about task analysis together with a representative set of methods. Part I opens with seven chapters that form a book-within-a-book and introduce most of the main concepts, methods, and techniques discussed in more detail in later parts. Part II describes the use of task analysis in commercial IT projects and recognizes some of the important constraints on its use. Part III primarily concentrates on human issues—most relying on some particular psychological or ergonomic model. Part IV presents task analysis methods targeted at software engineering development. These methods, particularly where supported by CASE tools, are therefore practical for use in commercial projects. Lastly, Part V focuses on outstanding issues associated with task analysis, highlighting the main problems with it and analyzing how these might be resolved in due course. Academic researchers, post-graduate students and final year undergraduates, as well as practicing HCI professionals and hardcore task analysts, including industrialists, psychologists, and computer scientists all benefit from this Handbook.

Probability and Stochastic Processes

Yes, you can create your own apps for Android devices—and it’s easy to do. This extraordinary book introduces you to App Inventor 2, a powerful visual tool that lets anyone build apps. Learn App Inventor basics hands-on with step-by-step instructions for building more than a dozen fun projects, including a text answering machine app, a quiz app, and an app for finding your parked car! The second half of the book features an Inventor’s Manual to help you understand the fundamentals of app building and computer science. App Inventor 2 makes an excellent textbook for beginners and experienced developers alike. Use programming blocks to build apps—like working on a puzzle Create custom multi-media quizzes and study guides Design games and other apps with 2D graphics and animation Make a custom tour of your city, school, or workplace Control a LEGO® MINDSTORMS® NXT robot with your phone Build location-aware apps by working with your phone’s sensors Explore apps that incorporate information from the Web

WirelessHARTTM

This book presents applications on the ultrasonic wave for material characterization and nondestructive evaluations. It could be of interest to the researchers and students who are studying on the fields of ultrasonic waves.

Communications, Signal Processing, and Systems

SAS provides a forum for sensor users and developers to meet and exchange information about novel sensors and emergent sensor applications The main purpose of SAS is to collaborate and network with scientists, engineers, researchers, developers, and end users through formal technical presentations, workshops, and informal interactions

Wireless Power Transfer for Electric Vehicles: Foundations and Design Approach

This book describes the fundamentals and applications of wireless power transfer (WPT) in electric vehicles (EVs). Wireless power transfer (WPT) is a technology that allows devices to be powered without having to be connected to the electrical grid by a cable. Electric vehicles can greatly benefit from WPT, as it does away with the need for users to manually recharge the vehicles’ batteries, leading to safer charging operations. Some wireless chargers are available already, and research is underway to develop even more efficient and practical solutions. This book brings readers up to date on the state-of-the-art worldwide. In particular, it provides: • The fundamental principles of WPT for the wireless charging of electric vehicles (car, bicycles and drones), including compensation topologies, bi-directionality and coil topologies. • Information on international standards for EV wireless charging. • Design procedures for EV wireless chargers, including software files to help readers test their own designs. • Guidelines on the components and materials for EV wireless chargers. • Review and analysis of the main control algorithms applied to EV wireless chargers. • Review and analysis of commercial EV wireless charger products coming to the market and the main research projects on this topic being carried out worldwide. The book provides essential practical guidance on how to design wireless chargers for electric vehicles, and supplies MATLAB files that demonstrate the complexities of WPT technology, and which can help readers design their own chargers.

Smart Environment for Smart Cities

Rapid advances in IoT technology demand a lot of devices to be connected to the internet. To design such devices, we usually need knowledge about microcontrollers and computer network. As an example, we often found devices that can be connected to the network and can be configured via web interfaces. These devices
implement embedded web server. For example, most of network devices usually use embedded web server as the interface for configuration. Although there are a lot of books that discuss about microcontrollers or web development, they usually present these topics in separate books. They do not usually present these topics in one book, i.e. the book that discusses how to create a web interface for a microcontroller. Therefore, this book is written to fill that gap. The Arduino library is used to program the ESP32, while HTML, CSS, and JavaScript are used to build the web interface.

**Hands-On IoT: Wi-Fi and Embedded Web Development**

For many years, various editions of Smallman’s Modern Physical Metallurgy have served throughout the world as a standard undergraduate textbook on metals and alloys. In 1995, it was rewritten and enlarged to encompass the related subject of materials science and engineering and appeared under the title Metals & Materials: Science, Processes, Applications offering a comprehensive approach to a much wider range of engineering materials. Coverage ranged from pure elements to superalloys, from glasses to engineering ceramics, and from everyday plastics to in situ composites. Amongst other favourable reviews, Professor Bhadeshia of Cambridge University commented: “Given the amount of work that has obviously gone into this book and its extensive comments, it is very attractively priced. It is an excellent book to be recommended strongly for purchase by undergraduates in materials-related subjects, who should benefit greatly by owning a text containing so much knowledge.” The book now includes new chapters on materials for sports equipment (golf, tennis, bicycles, skiing, etc.) and biomaterials (replacement joints, heart valves, tissue repair, etc.) — two of the most exciting and rewarding areas in current materials research and development. As in its predecessor, numerous examples are given of the ways in which knowledge of the relation between fine structure and properties has made it possible to optimise the service behaviour of traditional engineering materials and to develop completely new and exciting classes of materials. Special consideration is given to the crucial processing stage that enables materials to be produced as marketable commodities. Whilst attempting to produce a useful and relatively concise survey of key materials and their interrelationships, the authors have tried to make the subject as accessible to a wide range of readers, to provide insights into specialised methods of examination and to convey the excitement of the atmosphere in which new materials are conceived and developed.

**Theory of Applied Robotics**


**Interconnecting Smart Objects with IP**

When a person picks up a metal part and clamps it in the chuck of a lathe, he begins with his arm, proceeds with his wrist and finishes with his fingers. The arm brings the part near the chuck. The wrist positions the part, giving it the proper orientation to slide in. After the part is inserted, the wrist and fingers make tiny corrections to ensure that it is correctly seated. Today’s robot attempting the same operations is at a grave disadvantage if it has to make all motions with the arm. The following work investigates the use of robotic wrists and hands to help industrial robots perform the fine motions needed in a metal working cell. Chapters 1 and 2 are an introduction to the field and a review of previous investigations on related subjects. Little work has been done on grasping and fine manipulation with a robot hand or wrist, but the related subjects of robot arm dynamics and control have an extensive literature.

**The Handbook of Task Analysis for Human–Computer Interaction**

Over the past decade, there has been an increase in attention and focus on the discipline of software engineering. Software engineering tools and techniques have been developed to gain more predictable quality improvement results. Process standards such as Capability Maturity Model Integration (CMMI), ISO 9000, Software Process Improvement and Capability Determination (SPICE), Agile Methodologies, and others have been proposed to assist organizations to achieve more predictable results by incorporating these proven standards and procedures into their software process. Software Process Improvement and Management: Approaches and Tools for Practical Development offers the latest research and case studies on software engineering and development. The production of new process standards assist organizations and software engineers in adding a measure of predictability to the software process. Companies can gain a decisive competitive advantage by applying these new and theoretical methodologies in real-world scenarios. Researchers, scholars, practitioners, students, and anyone interested in the field of software development and design should access this book as a major compendium of the latest research in the field.

**2020 IEEE Sensors Applications Symposium (SAS)**

This book gathers a selection of papers presented at ROBOT 2019 — the Fourth Iberian Robotics Conference, held in Porto, Portugal, on November 20th-22nd, 2019. ROBOT 2019 is part of a series of conferences jointly organized by the SFR — Sociedade Portuguesa de Robotica (Portuguese Society for Robotics) and SEIROB — Sociedad Española para la Investigación y Desarrollo de Robótica (Spanish Society for Research and Development in Robotics). ROBOT 2019 built upon several previous successful events, including three biannual workshops and the three previous installments of the Iberian Robotics Conference, and chiefly focused on presenting the latest findings and applications in robotics from the Iberian Peninsula, although the event was also open to research and researchers from other countries. The event featured five plenary talks on state-of-the-art topics and 16 special sessions, plus a main/general robotics track. In total, after a stringent review process, 112 high-quality papers written by authors from 24 countries were selected for presentation.
Beginning Arduino Programming

Papers on ocean technology, exhibits from ocean equipment and service suppliers, student posters and student poster competition, tutorial on ocean technology, workshops and town hall meetings on policy and governmental process.

Engineering Design Applications

Programmers don’t just use Kotlin; they love it. Even Google has adopted it as a first-class language for Android development. With Kotlin, you can intermix imperative, functional, and object-oriented styles of programming and benefit from the approach that’s most suitable for the problem at hand. Learn to use the many features of this highly concise, fluent, elegant, and expressive statically typed language with easy-to-use constructs. Learn how to program with elegance but without compromising efficiency or performance, and how to use metaprogramming to create high-level DSLs, program asynchrony, and much more. Kotlin is a highly concise, elegant, fluent, and expressive statically typed multi-paradigm language. It is one of the few languages that compiles down to both Java bytecode and JavaScript. You can use it to build server-side, front-end, and Android applications. With Kotlin, you need less code to accomplish your tasks, while keeping the code type-safe and less prone to error. If you want to learn the essentials of Kotlin, from the fundamentals to more advanced concepts, you’ve picked the right book. Fire up your favorite IDE and practice hundreds of examples and exercises to sharpen your Kotlin skills. Learn to build standalone small programs to run as scripts, create type safe code, and then carry that knowledge forward to create fully object-oriented and functional style code that’s easier to extend. Learn how to program with elegance but without compromising efficiency or performance, and how to use metaprogramming to create high-level DSLs that exploit the fluency of the language. Explore coroutines, program asynchrony, run automated tests, and intermix Kotlin with Java in your enterprise applications. This book will help you master one of the few languages that you can use for the entire full stack — from the server to mobile devices — to create performant, concise, and easy to maintain applications. What You Need: To try out the examples in the book you’ll need a computer with Kotlin SDK, JDK, and a text editor or a Kotlin IDE installed in it.

Software Process Improvement and Management: Approaches and Tools for Practical Development

This edition has been completely revised. The authors, noted authorities in the field, focus on ways to improve R&D organization productivity and foster excellence in such companies. They describe how to design jobs, organize hierarchies, resolve conflicts, motivate employees, and create an innovative work environment. Features extensive cross-cultural coverage of European and Pacific Rim R&D organizations and policies which greatly differ from the US. Includes an entirely new section on various strategic planning elements unique to an R&D organization along with a case study.

Towards Autonomous Robotic Systems

Organised into four sections, this text discusses the organisation of the living world. Links Ecology, Biodiversity and Biogeography Bridges modern and conventional Ecology Builds sequentially from the concept and importance of species, through patterns of diversity to help consider global patterns of biogeography. Uses real data sets to help train in essential skills

Instructional Development for Training Teachers of Exceptional Children

This volume gives an overview on recent developments for various applications of modern engineering design. Different engineering disciplines, such as mechanical, materials, computer and process engineering provide the foundation for the design and development of improved structures, materials and processes. The modern design cycle is characterized by an interaction of different disciplines and a strong shift to computer-based approaches where only a few experiments are performed for verification purposes. A major driver for this development is the increased demand for cost reduction, which is also connected to environmental demands. In the transportation industry (e.g. automotive or aerospace), this is connected with the demand for higher fuel efficiency, which is related to the operational costs and the lower harm for the environment. One way to fulfill such requirements are lighter structures and/or improved processes for energy conversion. Another emerging area is the interaction of classical engineering with the health and medical sector. In this book, many examples of the mentioned design applications are presented.

Modelling and Simulation for Autonomous Systems

This book contains selected peer-reviewed papers presented in the International Conference Down To Earth 2019, and is focused on Water Security and Sustainability. The topics covered in this book include sustainability of water resources, geospatial modelling and hydro-informatics, extreme hydrology (drought and flood), adaptation to climate-change impacts, vulnerability-risk-reliability-resilience, and hydrological risks in north-east India. The book also discusses innovative techniques and technologies for water resources assessment and management. Enriched with numerous case studies covering diverse topics, the book can be valuable for students, researchers, as well as industry professionals interested in water resources assessment, management and sustainable development.

Applications on Ultrasonic Wave

This table gives an overview on recent developments for various applications.

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This publication.
The late Mike Lee was the premier basketball handicapper between the 1970’s and 2003. He was a columnist, a theorist and a bettor. He condensed his line-making theory and handicapping theories into this technical paper which has been the foundation of many players, and which was presented at a seminar to a sold-out crowd of novice players.

2017 International Conference on Intelligent Sustainable Systems (ICISS)

This book presents a compilation of selected papers from the 2nd International Conference on Healthcare Science and Engineering (Healthcare 2018). The work focuses on novel computing, networking, and data analytics techniques for various issues in healthcare. The book is a valuable resource for academic researchers and practitioners working in the field.

Introduction to Nondestructive Testing

Provides information on creating a variety of gadgets and controllers using Arduino.

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