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Emerging Technologies and Future of Work BoD – Books on Demand

Robot manipulators are developing more in the direction of industrial robots than of human workers. Recently, the applications of robot manipulators are spreading their focus, for example Da Vinci as a medical robot, ASIMO as a humanoid robot and so on. There are many research topics within the field of robot manipulators, e.g. motion planning, cooperation with a human, and fusion with external sensors like vision, haptic and force, etc. Moreover, these include both technical problems in the industry and theoretical problems in the academic fields. This book is a collection of papers presenting the latest research issues from around the world.

Flexible Manufacture of Lightweight Frame Structures, 2006 Springer Nature

The aim of this book is to present the latest applications, trends, and developments of computer-aided technologies (CAx). Computer-aided technologies are the core of product lifecycle management (PLM) and human lifecycle

management (HUM). This book has seven chapters, organized in two sections: "Computer-Aided Technologies in Engineering" and "Computer-Aided Technologies in Medicine." The first section treats the different aspects of PLM, including design, simulations and analysis, manufacturing, production planning, and quality assurance. In the second part of the book are presented CAx applications in medicine focused on clinical decision, diagnosis, and biosensor design. CAx plays a key role in a variety of engineering and medical applications, bringing a lot of benefits in product life cycle, extending and improving human life.

Robot Manipulators Springer Nature

Robotic automation has become ubiquitous in the modern manufacturing landscape, spanning an overwhelming range of processes and applications--from small scale force-controlled grinding operations for orthopedic joints to large scale composite manufacturing of aircraft fuselages. Smart factories, seamlessly linked via industrial networks and sensing, have revolutionized mass production, allowing for intelligent, adaptive manufacturing processes across a broad spectrum of industries. Against this background, an emerging group of researchers,

designers, and fabricators have begun to apply robotic technology in the pursuit of architecture, art, and design, implementing them in a range of processes and scales. Coupled with computational design tools the technology is no longer relegated to the repetitive production of the assembly line, and is instead being employed for the mass-customization of non-standard components. This radical shift in protocol has been enabled by the development of new design to production workflows and the recognition of robotic manipulators as “multi-functional” fabrication platforms, capable of being reconfigured to suit the specific needs of a process. The emerging discourse surrounding robotic fabrication seeks to question the existing norms of manufacturing and has far reaching implications for the future of how architects, artists, and designers engage with materialization processes. This book presents the proceedings of Rob|Arch2014, the second international conference on robotic fabrication in architecture, art, and design. It includes a Foreword by Sigrid Brell-Cokcan and Johannes Braumann, Association for Robots in Architecture. The work contained traverses a wide range of contemporary topics, from methodologies for incorporating dynamic material feedback into existing fabrication processes, to novel interfaces for robotic programming, to new processes for large-scale automated construction. The latent argument behind this research is that the term ‘file-to-factory’ must not be a reductive celebration of expediency but instead a perpetual challenge to increase the quality of feedback between design, matter, and making.

Robotics Springer

The work is a collection of contributions resulting from R&D efforts originated from scientific projects involving academia, technological partners, and end-user institutions. The aim is to provide a comprehensive overview of robotics technology applied to Healthcare, and discuss the anticipation of upcoming challenges. The intersection of Robotics and Medicine includes socially and economically relevant areas, such as rehabilitation, therapy, and healthcare. Innovative usages of current robotics technologies are being somewhat stranded by concerns related to social dynamics. The examples covered in this volume show some of the potential societal benefits robotics can bring and how the robots are being integrated in social environments. Despite the aforementioned concerns, a fantastic range of possibilities is being opened. The current trend in social robotics adds to technology challenges and requires R&D to think about Robotics as an horizontal discipline, intersecting social and exact sciences. For example, robots that can act as if they have credible personalities (not necessarily similar to humans) living in social scenarios, eventually helping people. Also, robots can move inside the human body to retrieve information that otherwise is difficult to obtain. The decision autonomy of these robots raises a broad range of subjects though the immediate advantages of its use are evident. The book presents examples of robotics technologies tested in healthcare environments or realistically close to being deployed in the field and discusses the challenges involved. Chapter 1 provides a comprehensive overview of Healthcare robotics and points to realistically expectable developments in the near future. Chapter 2 describes the challenges deploying a social robot in the Pediatrics ward of an Oncological hospital for

simple edutainment activities. Chapter 3 focuses on Human-Robot Interaction techniques and their role in social robotics. Chapter 4 focus on R&D efforts behind an endoscopic capsule robot. Chapter 5 addresses experiments in rehabilitation with orthotics and walker robots. These examples have deep social and economic relations with the Healthcare field, and, at the same time, are representative of the R&D efforts the robotics community is developing.

Robotic Fabrication in Architecture, Art and Design 2014 Springer Science & Business Media

This immensely practical guide to PIV provides a condensed, yet exhaustive guide to most of the information needed for experiments employing the technique. This second edition has updated chapters on the principles and extra information on microscopic, high-speed and three component measurements as well as a description of advanced evaluation techniques. What's more, the huge increase in the range of possible applications has been taken into account as the chapter describing these applications of the PIV technique has been expanded.

Finite and Instantaneous Screw Theory in Robotic Mechanism Springer Nature

This book provides state-of-the-art scientific and engineering research findings and developments in the area of mobile robotics and associated support technologies. It contains peer-reviewed articles presented at the CLAWAR 2008 conference. Robots are no longer confined to industrial manufacturing environments; rather, a great deal of interest is invested in the use of robots outside the factory environment. The CLAWAR conference series, established as a high-profile international event, acts as a platform for dissemination of research and development findings to address the current interest in mobile robotics in meeting the needs of mankind in various sectors of the society. These

include personal care, public health, and services in the domestic, public and industrial environments. The editors of the book have extensive research experience and publications in the area of robotics in general, and in mobile robotics specifically.

May 2022 - Surplus Record Machinery & Equipment Directory Frontiers Media SA

The changing manufacturing environment requires more responsive and adaptable manufacturing systems. The theme of the 5th International Conference on Changeable, Agile, Reconfigurable and Virtual production (CARV2013) is "Enabling Manufacturing Competitiveness and Economic Sustainability. Leading edge research and best implementation practices and experiences, which address these important issues and challenges, are presented. The proceedings include advances in manufacturing systems design, planning, evaluation, control and evolving paradigms such as mass customization, personalization, changeability, re-configurability and flexibility. New and important concepts such as the dynamic product families and platforms, co-evolution of products and systems, and methods for enhancing manufacturing systems' economic sustainability and prolonging their life to produce more than one product generation are treated. Enablers of change in manufacturing systems, production volume and capability, scalability and managing the volatility of markets, competition among global enterprises and the increasing complexity of products, manufacturing systems and management strategies are discussed. Industry challenges and future directions for research and development needed to help both practitioners and academicians are presented. About the Editor Prof. Dr.-Ing. Michael F. Zaeh, born in 1963, has been and is Professor for and Manufacturing Technology since 2002 and, together with Prof. Dr.-Ing. Gunther Reinhart, Head of the Institute for Machine Tools and Industrial Management (iwb) at the Technische Universitaet Muenchen (TUM). After studying

general mechanical engineering, he was doctoral candidate under Prof. Dr.-Ing. Joachim Milberg at TUM from 1990 until 1993 and received his doctorate in 1993. From 1994 to 1995, he was department leader under Prof. Dr.-Ing. Gunther Reinhart. From 1996 to 2002, he worked for a machine tool manufacturer in several positions, most recently as a member of the extended management. Prof. Dr.-Ing. Michael F. Zaeh is an associated member of the CIRP and member of acatech, WGP and WLP. His current researches include among others Joining and Cutting Technologies like Laser Cutting and Welding as well as Friction Stir Welding, Structural Behaviour and Energy Efficiency of Machine Tools and Manufacturing Processes like Additive Manufacturing.

Social Robotics BoD – Books on Demand

This book addresses optimization in robotics, in terms of both the configuration space and the metal structure of the robot arm itself; and discusses, describes and builds different types of heuristics and algorithms in MATLAB. In addition, the book includes a wealth of examples and exercises. In particular, it enables the reader to write a MATLAB code for all the related problems in robotics. The book also offers detailed descriptions of and builds from scratch several types of optimization algorithms using MATLAB and simplified methods, especially for inverse problems and avoiding singularities. Each chapter features examples and exercises to enhance the reader's comprehension. Accordingly, the book offers the reader a better understanding of robot analysis from an optimization standpoint.

Advances in Automotive Production Technology – Theory and Application

Ediciones Paraninfo, S.A.

Proceedings of the AHFE International Conference on Human Factors in Design, Engineering, and Computing (AHFE 2023 Hawaii Edition), Honolulu, Hawaii, USA 4-6, December 2023

Particle Image Velocimetry Springer Science & Business Media

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!

Handbook of Valves and Actuators Elsevier

Based on the successful *Modelling and Control of Robot Manipulators* by Sciavicco and Siciliano (Springer, 2000), *Robotics* provides the basic know-how on the foundations of robotics: modelling, planning and

control. It has been expanded to include coverage of mobile robots, visual control and motion planning. A variety of problems is raised throughout, and the proper tools to find engineering-oriented solutions are introduced and explained. The text includes coverage of fundamental topics like kinematics, and trajectory planning and related technological aspects including actuators and sensors. To impart practical skill, examples and case studies are carefully worked out and interwoven through the text, with frequent resort to simulation. In addition, end-of-chapter exercises are proposed, and the book is accompanied by an electronic solutions manual containing the MATLAB® code for computer problems; this is available free of charge to those adopting this volume as a textbook for courses.

IEEE/SICE/RSJ International Conference on Multisensor Fusion and Integration for Intelligent Systems "O'Reilly Media, Inc."

The first generation of surgical robots are already being installed in a number of operating rooms around the world. Robotics is being introduced to medicine because it allows for unprecedented control and precision of surgical instruments in minimally invasive procedures. So far, robots have been used to position an endoscope, perform gallbladder surgery and correct gastroesophageal reflux and heartburn. The ultimate goal of the robotic surgery field is to design a robot that can be used to perform closed-chest, beating-heart surgery. The use of robotics in surgery will expand over the next decades without any doubt. Minimally Invasive Surgery (MIS) is a revolutionary approach in surgery. In MIS, the operation is performed with

instruments and viewing equipment inserted into the body through small incisions created by the surgeon, in contrast to open surgery with large incisions. This minimizes surgical trauma and damage to healthy tissue, resulting in shorter patient recovery time. The aim of this book is to provide an overview of the state-of-art, to present new ideas, original results and practical experiences in this expanding area. Nevertheless, many chapters in the book concern advanced research on this growing area. The book provides critical analysis of clinical trials, assessment of the benefits and risks of the application of these technologies. This book is certainly a small sample of the research activity on Medical Robotics going on around the globe as you read it, but it surely covers a good deal of what has been done in the field recently, and as such it works as a valuable source for researchers interested in the involved subjects, whether they are currently "medical roboticists" or not.

Comprehensive Materials Processing

Springer Nature

SURPLUS RECORD, is the leading independent business directory of new and used capital equipment, machine tools, machinery, and industrial equipment, listing over 95,000 industrial assets; including metalworking and fabricating machine tools, chemical and process equipment, cranes, air compressors, pumps, motors, circuit breakers, generators, transformers, turbines, and more. Over 1,100 businesses list with the SURPLUS RECORD. May 2022 issue. Vol. 99, No. 5

Industrial robots and cobots John Wiley & Sons

This book highlights recent findings in industrial, manufacturing and mechanical engineering, and provides an overview of the state of the art in these fields, mainly in Russia and Eastern Europe. A broad range of topics and issues in modern

engineering are discussed, including the dynamics of machines and working processes, friction, wear and lubrication in machines, surface transport and technological machines, manufacturing engineering of industrial facilities, materials engineering, metallurgy, control systems and their industrial applications, industrial mechatronics, automation and robotics. The book gathers selected papers presented at the 5th International Conference on Industrial Engineering (ICIE), held in Sochi, Russia in March 2019. The authors are experts in various fields of engineering, and all papers have been carefully reviewed. Given its scope, the book will be of interest to a wide readership, including mechanical and production engineers, lecturers in engineering disciplines, and engineering graduates.

Robotic Tactile Sensing Micha? Gurgul

Future robots are expected to work closely and interact safely with real-world objects and humans alike. Sense of touch is important in this context, as it helps estimate properties such as shape, texture, hardness, material type and many more; provides action related information, such as slip detection; and helps carrying out actions such as rolling an object between fingers without dropping it. This book presents an in-depth description of the solutions available for gathering tactile data, obtaining aforementioned tactile information from the data and effectively using the same in various robotic tasks. The efforts during last four decades or so have yielded a wide spectrum of tactile sensing technologies and

engineered solutions for both intrinsic and extrinsic touch sensors. Nowadays, new materials and structures are being explored for obtaining robotic skin with physical features like bendable, conformable, and stretchable. Such features are important for covering various body parts of robots or 3D surfaces. Nonetheless, there exist many more hardware, software and application related issues that must be considered to make tactile sensing an effective component of future robotic platforms. This book presents an in-depth analysis of various system related issues and presents the trade-offs one may face while developing an effective tactile sensing system. For this purpose, human touch sensing has also been explored. The design hints coming out of the investigations into human sense of touch can be useful in improving the effectiveness of tactile sensory modality in robotics and other machines. Better integration of tactile sensors on a robot's body is prerequisite for the effective utilization of tactile data. The concept of semiconductor devices based sensors is an interesting one, as it allows compact and fast tactile sensing systems with capabilities such as human-like spatio-temporal resolution. This book presents a comprehensive description of semiconductor devices based tactile sensing. In particular, novel Piezo Oxide Semiconductor Field Effect Transistor (POSFET) based approach for high resolution tactile sensing has been discussed in detail. Finally, the extension of semiconductors devices based sensors concept to large and

flexible areas has been discussed for obtaining robotic or electronic skin. With its multidisciplinary scope, this book is suitable for graduate students and researchers coming from diverse areas such as robotics (bio-robots, humanoids, rehabilitation etc.), applied materials, human touch sensing, electronics, microsystems, and instrumentation. To better explain the concepts the text is supported by a large number of figures.

Robot industrial. Manual de instalación
Springer Nature

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.

Intelligent Information and Database Systems
Springer Science & Business Media

This book consists of papers presented at AUTOMATION2019, an international conference held in Warsaw from March 27 to 29, 2019. It discusses the radical technological changes occurring due to the INDUSTRY 4.0. To follow these changes, both scientists and engineers have to face the challenge of interdisciplinary approach directed at the development of cyber-physical systems. This approach encompasses interdisciplinary theoretical knowledge, numerical modelling and simulation as well as application of artificial intelligence techniques. Both software and physical devices are composed into systems that will increase production efficiency and resource savings. The theoretical results, practical solutions and guidelines presented

are valuable for both researchers working in the area of engineering sciences and practitioners looking for solutions to industrial problems.

Whole-Body Control for Multi-Contact Balancing of Humanoid Robots
Springer Science & Business Media

The book provides the most recent technology for sensing and automation in apple production cycle in terms of bagging robotics, flower pollination robotics, pruning robotics, and harvest robotics. It does not only summarize the development of technology progress, but also discuss the future trend for unmanned apple production cycle.

Though apple production still mainly relies on manual labor, a huge number of innovative technologies emerge during the past years, which pave the road for unmanned apple orchard management. A book summarizing all these new and innovative technologies is needed, to provide an easy approach to understand this field quickly and comprehensively, which drives the publication of this book. This book is a useful reference for students, researchers, and practitioners in the field of apple production.

Mig Welding Guide Springer Science & Business Media

MIG (metal inert gas) welding, also known as gas metal arc welding (GMAW), is a key joining technology in manufacturing. MIG welding guide provides a comprehensive, practical and accessible guide to this widely used process. Part one discusses the range of technologies used in MIG welding, including power sources, shielding gases and consumables. Fluxed cored arc welding, pulsed MIG welding and MIG brazing are also explored. Part two reviews

quality and safety issues such as improving productivity in MIG/MAG welding, assessing weld quality, health and safety, and methods for reducing costs. The final part of the book takes a practical look at the applications of MIG welding, with chapters dedicated to the welding of steel and aluminium, the use of robotics in MIG welding, and the application of MIG welding in the automotive industry. MIG welding guide is essential reading for welding and production engineers, designers and all those involved in manufacturing. Provides extensive coverage on gas metal arc welding, a key process in industrial manufacturing User friendly in its language and layout Looks at the practical applications of MIG welding

Sheet Metal Industries Surplus Record

The two-volume set LNAI 14453 and 14454 constitutes the refereed post-conference proceedings of the 15th International Conference on Social Robotics, ICSR 2023, held in Doha, Qatar, during December 4–7, 2023. The 68 revised full papers presented in these proceedings were carefully reviewed and selected from 83 submissions. They deal with topics around the interaction between humans and intelligent robots and on the integration of robots into the fabric of society. This year the special topic is "Human-Robot Collaboration: Sea; Air; Land; Space and Cyberspace", focusing on all physical and cyber-physical domains where humans and robots collaborate.