Mechanical Engineering Robotics Notes

Mechatronics and Robotics Engineering for Advanced and Intelligent ManufacturingSpringer

This book presents select proceedings of the 1st International Conference on Advances in Mechanical Engineering and Material Science (ICAMEMS 2022). It discusses about the diverse technological advancements, innovations, and achievements in the areas of mechanical engineering and material science. It also covers the developments and challenges in the field of machine design, manufacturing, thermal and fluid engineering. Important topics covered in the conference include advanced manufacturing processes, machining, product design and development, mechatronics and robotics, non-conventional energy resources, green energy and energy harvesting, tribology, materials and characterization. The book also discusses advanced research areas in material science such as smart materials, bio-materials and advanced energy materials. Given the contents, the book will be a valuable reference for students, researchers and industrialists interested in advanced research areas of mechanical engineering and material science.

A modern and unified treatment of the mechanics, planning, and control of robots, suitable for a first course in robotics.

This book presents select proceedings of the International Conference on Advances in Sustainable Technologies (ICAST 2020), organized by Lovely Professional University, Punjab, India. The topics covered include computer aided design (CAD), computer assisted manufacturing (CAM), computer integrated manufacturing (CIM), computer aided engineering (CAE) and product design, dynamics of control structures and systems, solid mechanics: differential and dynamical systems, modelling and simulation. The book also discusses various modern age design tools including finite element analysis, modelling, analysis and simulation of manufacturing processes, process design, automation, mechatronics, robotics and assembly, etc. The book will be useful for beginners, researchers, and professionals interested in the field of sustainable design practices.

Selected Papers from the Symposium on Mechatronics, Robotics, and Control (SMRC ’ 18)- CSME International Congress 2018, May 27-30, 2018 Toronto, Canada

Advances in Rehabilitation Robotics

Proceedings of the First Symposium on Aviation Maintenance and Management-Volume II

Fundamentals of Robot Technology

Selected articles from MUCET 2019

Select Proceedings of ICCEMME 2021

Robotics in Natural Settings

This book highlights selected papers from the Mechanical Engineering track, with a focus on mechatronics and manufacturing, presented at the “Malaysian Technical Universities Conference on Engineering and Technology” (MUCET 2019). The conference brings together researchers and professionals in the fields of engineering, research and technology, providing a platform for future collaborations and the exchange of ideas.

Mechanics as a fundamental science in Physics and in Engineering deals with interactions of forces resulting in motion and deformation of material bodies. Similar to other sciences Mechanics serves in the world of Physics and in that of Engineering in a di?erent way, in spite of many and increasing inter- pendencies. Machines and mechanisms are for physicists tools for cognition and research, for engineers they are the objectives of research, according to a famous statement of the Frankfurt physicist and biologist Friedrich Dessauer. Physicists apply machines to support their questions to Nature with the goal of new insights into our physical world. Engineers apply physical knowledge to support the realization process of their ideas and their intuition. Physics is an analytical Science searching for answers to questions concerning the world around us. Engineering is a synthetic Science, where the physical and ma- ematical fundamentals play the role of a kind of reinsurance with respect to a really functioning and e?ciently operating machine. Engineering is also an iterative Science resulting in typical long-time evolutions of their products, but also in terms of the relatively short-time developments of improving an existing product or in developing a new one. Every physical or mathematical Science has to face these properties by developing on their side new methods, new practice-proved algorithms up to new fundamentals adaptable to new technological developments. This is as a matter of fact also true for the ?eld of Mechanics.

This book includes recent research on climbing and walking robots. CLAWAR 2022 is the twenty-fifth International Conference Series on Climbing and Walking Robots and Mobile Machine Support Technologies. The conference is organized by CLAWAR Association in collaboration with the University of the Azores, S. Miguel, Portugal, during September 12-14, 2022. CLAWAR 2022 provides an updated state of the art on robotics and its use in a diversity of applications and/or simulation scenarios, within the framework “Robotics in Natural Settings”. The topics covered include Bio-Inspired Robotics, Biped Locomotion, Educational Robotics, Human-Machine/Human-Robot Interaction, Innovative Actuators, Inspection, Legged Locomotion, Modeling and Simulation of CLAWAR, Outdoor and Field Robotics, Planning and Control, Wearable Devices and Assistive Robotics, and the Use of A.I. in Robotics. The intended readership includes participants of CLAWAR 2022 conference, international robotic researchers, scientists, and professors of related topics worldwide, and professors and students of postgraduate courses in Robotics and Automation, Control Engineering, Mechanical Engineering, and Mechatronics.

This book draws together the most interesting recent results to emerge in mechanical engineering in Russia, providing a fascinating overview of the state of the art in the field in that country which will be of interest to a wide readership. A broad range of topics and issues in modern engineering are discussed, including dynamics of machines, materials engineering, structural strength, transport technologies, machinery quality and innovations. The book comprises selected papers presented at the 9th conference "Modern Engineering: Science and Education", held at the Peter the Great Saint Petersburg Polytechnic University in June 2020 with the support of the Russian Engineering Union. The authors are experts in various fields of engineering, and all of the papers have been carefully reviewed. The book will be of interest to mechanical engineers, lecturers in engineering disciplines and engineering graduates.

Mechatronics and Robotics Engineering for Advanced and Intelligent Manufacturing

Advances in Design, Simulation and Manufacturing II

Recent Advances in Mechanical Engineering

Proceedings of the International Joint Conference on Mechanics, Design Engineering & Advanced Manufacturing (JCM 2016), 14-16 September, 2016, Catania, Italy

Proceedings of the Fifth International Conference Design and Modeling of Mechanical Systems, CMSM´2013, Djerba, Tunisia, March 25-27, 2013

Recent Advances in Materials and Modern Manufacturing

6th International Conference, ICIRA 2013, Busan, South Korea, September 25-28, 2013, Proceedings, Part II

Moving inertial loads are applied to structures in civil engineering, robotics, and mechanical engineering. Some fundamental books exist, as well as thousands of research papers. Well known is the book by L. Frýba, Vibrations of Solids and Structures Under Moving Loads, which describes almost all problems concerning non-inertial loads. This book presents broad description of numerical tools successfully applied to structural dynamic analysis. Physically we deal with non-conservative systems. The discrete approach formulated with the use of the classical finite element method results in elemental matrices, which can be directly added to global structure matrices. A more general approach is carried out with the space-time finite element method. In such a case, a trajectory of the moving concentrated parameter in space and time can be simply defined. We consider structures described by pure hyperbolic differential equations such as strings and structures described by hyperbolic-parabolic differential equations such as beams and plates. More complex structures such as frames, grids, shells, and three-dimensional objects, can be treated with the use of the solutions given in this book.

This book comprises select peer-reviewed proceedings of the International Conference on Advances in Materials Research (ICAMR 2019). The contents cover latest research in materials and their applications relevant to composites, metals, alloys, polymers, energy and phase change. The indigenous properties of materials including mechanical, electrical, thermal, optical, chemical and biological functions are discussed. The book also elaborates the properties and performance enhancement and/or deterioration in order of the modifications in atomic particles and structure. This book will be useful for both students and professionals interested in the development and applications of advanced materials.

This book presents select peer-reviewed proceedings of the International Conference on Advances in Mechanical Engineering (ICAME 2020). The contents cover latest research in several areas such as advanced energy sources, automation, mechatronics and robotics, automobiles, biomedical engineering, CAD/CAM, CFD, advanced engineering materials, mechanical design, heat and mass transfer, manufacturing and production processes, tribology and wear, surface engineering, ergonomics and human factors, artificial intelligence, and supply chain management. The book brings together advancements happening in the different domains of mechanical engineering, and hence, this will be useful for students and researchers working in mechanical engineering.

This book presents the select proceedings of the International Conference on Recent Advancements in Mechanical Engineering (ICRAME 2020). It provides a comprehensive overview of the various technical challenges faced, their systematic investigation, contemporary developments, and future perspectives in the domain of mechanical engineering. The book covers a wide array of topics including fluid flow techniques, compressible flows, waste management and waste disposal, bio-fuels, renewable energy, cryogenic applications, computing in applied mechanics, product design, dynamics and control of structures, fracture and failure mechanics, solid mechanics, finite element analysis, tribology, nano-mechanics and MEMS, robotics, supply chain management and logistics, intelligent manufacturing system, rapid prototyping and reverse engineering, quality control and reliability, conventional and non-conventional machining, and ergonomics. This book can be useful for students and researchers interested in mechanical engineering and its allied fields.

Advances on Mechanics, Design Engineering and Manufacturing

Robotics

Select Proceedings of ICAMEMS-2022

Advances in Mechanical Engineering

Mechanics and Control

Selected Contributions from the Conference “Modern Engineering: Science and Education”, Saint Petersburg, Russia, June 2020

This book gathers papers presented at the International Joint Conference on Mechanics, Design Engineering and Advanced Manufacturing (JCM 2016), held on 14-16 September, 2016, in Catania, Italy. It reports on cutting-edge topics in product design and manufacturing, such as industrial methods for integrated product and process design; innovative design; and computer-aided design. Further topics covered include virtual simulation and reverse engineering; additive manufacturing; product manufacturing; engineering methods in medicine and education; representation techniques; and nautical, aeronautics and aerospace design and modeling. The book is divided into eight main sections, reflecting the focus and primary themes of the conference. The contributions presented here will not only provide researchers, engineers and experts in a range of industrial engineering subfields with extensive information to support their daily work; they are also intended to stimulate new research directions, advanced applications of the methods discussed, and future interdisciplinary collaborations.

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 is 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. This book gathers selected papers presented at the 8th International Conference on Industrial Engineering (ICIE), held in Sochi, Russia, in May 2022. The authors are experts in various fields of engineering, and all papers have been carefully reviewed. Given its scope, this book will be of interest to a wide readership, including mechanical and production engineers, lecturers in engineering disciplines, and engineering graduates.

This book reports on advances in sensing, modeling and control methods for different robotic platforms such as multi-degree of freedom robotic arms, unmanned aerial vehicles and autonomous mobile platforms. Based on 2018 Symposium on Mechatronics, Robotics, and Control (SMTRC’18), held as part of the 2018 CSME International Congress, in York University, Toronto, Canada, the book covers a variety of topics, from filtering and state estimation to adaptive control of reconfigurable robots and more. Next-generation systems with advanced control, planning, perception and interaction capabilities will achieve functionalities far beyond today’s technology. Two key challenges remaining for advanced robot technologies are related to sensing and control in robotic systems. Advanced perception is needed to navigate changing environments. Adaptive and intelligent control systems must be developed to enable operation in unstructured and dynamic environments. The selected chapters in this book focus on both of the aforementioned areas and highlight the main trends and challenges in robot sensing and control. The first part of the book introduces chapters which focus on advanced perception and sensing for robotics applications. They include sensor filtering and state estimation for bipedal robots and motion capture systems analysis. The second part focuses on different modeling and control methods for robotic systems including flight control for UAVs, multi-variable robust control for modular and reconfigurable robotics and control for precision micromanipulation.

This book provides a comprehensive introduction to the area of robot mechanisms, primarily considering industrial manipulators and humanoid arms. The book is intended for both teaching and self-study. Emphasis is given to the fundamentals of kinematic analysis and the design of robot mechanisms. The coverage of topics is untypical. The focus is on robot kinematics. The book creates a balance between theoretical and practical aspects in the development and application of robot mechanisms, and includes the latest achievements and trends in robot science and technology.

Select Proceedings of ITME 2019

Select Proceedings of CAMSE 2020

CAD/CAM, Robotics and Factories of the Future

Volume I

Intelligent Robotics and Applications

Recent Trends in Engineering Design

Select Proceedings of ICOFTIME 2020

This book offers a collection of original peer-reviewed contributions presented at the 3rd International and 18th National Conference on Machines and Mechanisms (iNaCoMM), organized by Division of Remote Handling & Robotics, Bhabha Atomic Research Centre, India, from December 13th to 15th, 2017 (iNaCoMM 2017). It reports on various theoretical and practical features of machines, mechanisms and robotics; the contributions include carefully selected, novel ideas on and approaches to design, analysis, prototype deve assessment and surveys. Applications in machine and mechanism engineering, serial and parallel manipulators, power reactor engineering, autonomous vehicles, engineering in medicine, image-based data analytics, compliant mechanisms, and safety mechanisms Further papers provide in-depth analyses of data preparation, isolation and brain segmentation for focused visualization and robot-based neurosurgery, new approaches to parallel mechanism-based Master-Slave manipulators, solutions to forward kinematic problem and optimizations based on historical and contemporary compliant mechanism-based design. The spectrum of contributions on theory and practice reveals central trends and newer branches of research in connection with these topics.

This book presents the proceedings of 24th International Conference Series on Climbing and Walking Robots. CLAWAR 2021 is the twenty-fourth edition of International Conference series on Climbing and Walking Robots and the Support Technologies for Mobile M conference is organized by CLAWAR Association in collaboration with Kwansei Gakuin University on a virtual platform in Takarazuka, Japan, during 30 August–01 September 2021. CLAWAR 2021 brings new developments and new research findings in robotics tech the framework of “Robotics for Sustainable Future”. The topics covered include biped locomotion, human–machine/human–robot interaction, innovative actuators, power supplies and design of CLAWAR, inspection, legged locomotion, modelling and simulation of CL outdoor and field robotics, planning and control, and wearable devices and assistive robotics. The intended readership includes participants of CLAWAR 2021 conference, international robotic researchers, scientists, professors of related topics worldwide, and profes students of postgraduate courses in Robotics and Automation, Control Engineering, Mechanical Engineering, and Mechatronics.

This book focusses on one of the important classes of Robots known as manipulators or robotic arms, and provides a thorough treatment of its kinematics, dynamics, and control. The book also covers the problem of trajectory generation and robot programming. The providing a detailed account of topics such as on taxonomy of robots, spatial description of rigid bodies, kinematics of manipulator, concept of dexterous workspace, concept of singularity, manipulator dynamics using both the Newton–Euler and Lagrangian approach deeper insight into the manipulator dynamics, manipulator control, and programming, additionally encompasses topics on motion planning, intelligent control, and distributed control of manipulators. The book is an excellent learning resource for understanding the con manipulator design, analysis, and operation. It clearly presents ideas without compromising on the mathematical rigour. KEY FEATURES • Full coverage of syllabi of all the Indian universities • Based on classroom-tested lecture notes • Numerous illustrative example end problems for brainstorming Primarily designed for students studying Robotics in undergraduate and postgraduate engineering courses in mechanical and mechatronics disciplines, the book is also of immense value to the students pursuing research in robotics. I Resources PPTs and Solution Manual are also available for the faculty members who adopt the book.

This book presents the select proceedings of the 1st International 13th National Conference on Industrial Problems on Machines and Mechanism (IPRoMM 2020) and examines issues in the design, manufacture, and performance of mechanical and mechatronic ele that are employed in modern machines and devices. The topics covered include robotics, industrial CAD/CAM systems, mechatronics, machinery associated with conventional and unconventional manufacturing systems, material handling and automated assembly, electro-mechanical systems of modern machinery and equipment, micro-devices, compliant mechanisms, hybrid electric vehicle and electric vehicle mechanisms, acoustic and noise control. This book also discusses the recent advances in the integration of IoT and mechanism and machines. The book will be a valuable reference for academicians, researchers, and professionals interested in the design and development of industrial machines.

Volume II

Proceedings of the 7th International Conference on Industrial Engineering (ICIE 2021)

Proceedings of the 28th International Conference on CARs & FoF 2016

ROBOTICS

An Introduction to Industrial Robots, Teleoperators and Robot Vehicles

Proceedings of the 2nd International Conference on Design, Simulation, Manufacturing: The Innovation Exchange, DSMIE-2019, June 11-14, 2019, Lutsk, Ukraine

Advances in Industrial Machines and Mechanisms

Featuring selected contributions from the 2nd International Conference on Mechatronics and Robotics Engineering, held in Nice, France, February 18–19, 2016, this book introduces recent advances and state-of-the-art technologies in the field of advanced intelligent manufacturing. This systematic and carefully detailed collection provides a valuable reference source for mechanical engineering researchers who want to learn about the latest developments in advanced manufacturing and automation, readers from industry seeking potential solutions for their own applications, and those involved in the robotics and mechatronics industry.

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 is 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 7th International Conference on Industrial Engineering (ICIE), held in Sochi, Russia, in May 2021. 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.

For senior-year or first-year graduate level robotics courses generally taught from the mechanical engineering, electrical engineering, or computer science departments. Since its original publication in 1986, Craig's Introduction to Robotics: Mechanics and Control has been the marketês leading textbook used for teaching robotics at the university level. With perhaps one-half of the material from traditional mechanical engineering material, one-fourth control theoretical material, and one-fourth computer science, it covers rigid-body transformations, forward and inverse positional kinematics, velocities and Jacobians of linkages, dynamics, linear control, non-linear control, force control methodologies, mechanical design aspects, and programming of robots. The full text downloaded to your computer With eBooks you can: search for key concepts, words and phrases make highlights and notes as you study share your notes with friends eBooks are downloaded to your computer and accessible either offline through the Bookshelf (available as a free download), available online and also via the iPad and Android apps. Upon purchase, you'll gain instant access to this eBook. Time limit The eBooks products do not have an expiry date. You will continue to access your digital ebook products whilst you have your Bookshelf installed.

Proceedings of the First Symposium on Aviation Maintenance and Management collects selected papers from the conference of ISAMM 2013 in China held in Xi'an on November 25-28, 2013. The book presents state-of-the-art studies on the aviation maintenance, test, fault diagnosis, and prognosis for the aircraft electronic and electrical systems. The selected works can help promote the development of the maintenance and test technology for the aircraft complex systems. Researchers and engineers in the fields of electrical engineering and aerospace engineering can benefit from the book. Jinsong Wang is a professor at School of Mechanical and Electronic Engineering of Northwestern Polytechnical University, China.
Robotics and Automation Handbook
ICIE 2022
Proceedings of the 8th International Conference on Industrial Engineering
Modern Robotics
Advanced Computational Methods in Mechanical and Materials Engineering
Select Proceedings of ICRAME 2020
Human-friendly Technologies on Movement Assistance and Restoration for People with Disabilities

This book presents selected peer-reviewed papers presented at the International Conference on Innovative Technologies in Mechanical Engineering (ITME) 2019. The book discusses a wide range of topics in mechanical engineering such as mechanical systems, materials engineering, micro-machining, renewable energy, systems engineering, thermal engineering, additive manufacturing, automotive technologies, rapid prototyping, computer aided design and manufacturing. This book, in addition to assisting students and researchers working in various areas of mechanical engineering, can also be useful to researchers and professionals working in various allied and interdisciplinary fields.

As the capability and utility of robots has increased dramatically with new technology, robotic systems can perform tasks that are physically dangerous for humans, repetitive in nature, or require increased accuracy, precision, and sterile conditions to radically minimize human error. The Robotics and Automation Handbook addresses the major aspects of designing, fabricating, and enabling robotic systems and their various applications. It presents kinetic and dynamic methods for analyzing robotic systems, considering factors such as force and torque. From these analyses, the book develops several controls approaches, including servo actuation, hybrid control, and trajectory planning. Design aspects include determining specifications for a robot, determining its configuration, and utilizing sensors and actuators. The featured applications focus on how the specific difficulties are overcome in the development of the robotic system. With the ability to increase human safety and precision in applications ranging from handling hazardous materials and exploring extreme environments to manufacturing and medicine, the uses for robots are growing steadily. The Robotics and Automation Handbook provides a solid foundation for engineers and scientists interested in designing, fabricating, or utilizing robotic systems.

Written for senior level or first year graduate level robotics courses, this text includes material from traditional mechanical engineering, control theoretical material and computer science. It includes coverage of rigid-body transformations and forward and inverse positional kinematics.

This book presents the select proceedings of Congress on Advances in Materials Science and Engineering (CAMSE 2020). It focuses on the state-of-the-art research, development, and commercial prospective of recent advances in mechanical engineering. The book covers various synthesis and fabrication routes of functional and smart materials for applications in mechanical engineering, manufacturing, physics, chemical and biological sciences, metrology, optimization and artificial intelligence among others. This book will be a useful resource for researchers, academicians as well as professionals interested in the highly interdisciplinary field of materials science and mechanical engineering.

Advances in Mechanical Engineering and Material Science
Select Proceedings of ICAMR 2019
Select Proceedings of ICAMMM 2021
Recent Trends in Mechanical Engineering
CLAWAR 2022
Mechanical System Dynamics
Select Proceedings of ICAME 2020

Methods of contro1151 Mechanical master-slave telemanipulators 151 Powered telemanipulators 152 Servo control of unilateral telemanipulators 152 Bilateral servo manipulators 155 Special characteristics of teleoperators 158 Design criteria for teleoperators 159 Vehicles and transporters 160 Applications of teleoperators 161 Remote handling of radioactive materials 161 Remote handling of explosive and toxic materials 161 Telemanipulation of heavy objects 163 Underwater teleoperation 163 Teleoperation in space and planetary exploration 164 Telemanipulators for the disabled 164 Computer assisted teleoperation 166 Bibliographic notes 170 Chapter 9: Mobile robots 171 Introduction 171 Land surface robots 171 Arrangements of wheels and tracks 171 Unusual wheel and track arrangements 172 Navigation for land vehicles 174 Teleoperation 174 Dead reckoning 175 Inertial navigation 175 Tracking from a fixed base; beacons 175 Satellite navigation 175 Map matching 175 Wall following 176 Route planning 176 Control and communication 176 Sensors for mobile robots 177 Body orientation and angular rates 1 77 Body position, speed and acceleration 177 Terrain scanning 178 Types and applications of mobile robots 179 Education and research 179 Remote handling 183 Military mobile robots 183 Fire-fighting and rescue 187 Construction 188 Mining 188 Planetary exploration 188 Legged robots 188 Comparison of legs and wheels 189 Leg number and arrangement 189 Leg number 189 Leg disposition 190 Relative leg length 190 Leg construction 190 Control 191 Climbing robots 195 Robot submersibles 196 Uses of submersible robots 199 Robots in air and space 201 Space 202 Bibliographic notes 204 Chapter 10: Automated guided vehicles 205

This book provides in-depth knowledge to solve engineering, geometrical, mathematical, and scientific problems with the help of advanced computational methods with a focus on mechanical and materials engineering. Divided into three subsections covering design and fluids, thermal engineering and materials engineering, each chapter includes exhaustive literature review along with thorough analysis and future research scope. Major topics covered pertains to computational fluid dynamics, mechanical performance, design, and fabrication including wide range of applications in industries as automotive, aviation, electronics, nuclear and so forth. Covers computational methods in design and fluid dynamics with a focus on computational fluid dynamics Explains advanced material applications and manufacturing in labs using novel alloys and introduces properties in material Discusses fabrication of graphene reinforced magnesium metal matrix for orthopedic applications Illustrates simulation and optimization gear transmission, heat sink and heat exchangers application Provides unique problem-solution approach including solutions, methodology, experimental setup, and results validation This book is aimed at researchers, graduate students in mechanical engineering, computer fluid dynamics,fluid mechanics, computer modeling, machine parts, and mechatronics.

This book presents the select peer-reviewed proceedings of the International Conference on Futuristic Trends in Mechanical Engineering (ICOFTIME 2020). The contents focus on latest research in different areas of mechanical engineering such as additive manufacturing, vibrations, robotics and automation, nano and smart materials, green energy, supply chain management, aviation, and biomechanics. The book also includes numerical and optimization methods relevant for several real-life mechanical engineering problems. Given its contents, this book will prove useful for researchers and professionals alike.

This volume includes select papers presented during the 4th International and 19th National Conference on Machines and Mechanism (iNaCoMM 2019), held in Indian Institute of Technology, Mandi. It presents research on various aspects of design and analysis of machines and mechanisms by academic and industry researchers.

Introduction to Robotics
Proceedings of iNaCoMM 2017
MECHANICS AND CONTROL
Numerical Analysis of Vibrations of Structures under Moving Inertial Load
Design and Modeling of Mechanical Systems
Proceedings of iNaCoMM 2019
Advances in Motion Sensing and Control for Robotic Applications

This volume is based on the proceedings of the 28th International Conference on CAD/CAM, Robotics and Factories of the Future. This book specially focuses on the positive changes made in the field of robotics, CAD/CAM and future outlook for emerging manufacturing units. Some of the important topics discussed in the conference are product development and sustainability, modeling and simulation, automation, robotics and handling systems, supply chain management and logistics, advanced manufacturing processes, human aspects in engineering activities, emerging scenarios in engineering education and training. The contents of this set of proceedings will prove useful to both researchers and practitioners.

This book presents the select proceedings of the 3rd International Conference on Computational and Experimental Methods in Mechanical Engineering (ICCEMME 2020). The book discusses the recent researches and concrete findings in the field of mechanical design and automation with its allied branches. Various topics covered in this book include modeling and simulation, application of modelling to complex real-world systems, application of machine or deep learning in mechanical problems, artificial intelligence, vehicle design, robotics, vehicle dynamics and control, biomechanics, and vibration-related problems. Given its content, the book will be useful for beginners, researchers, and professionals interested in the field of mechanical engineering.

This two volume set LNAI 8102 and LNAI 8103 constitutes the refereed proceedings of the 6th International Conference on Intelligent Robotics and Applications, ICIRA 2013, held in Busan, South Korea, in September 2013. The 147 revised full papers presented were carefully reviewed and selected from 184 submissions. The papers discuss various topics from intelligent robotics, automation and mechatronics with particular emphasis on technical challenges associated with varied applications such as biomedical application, industrial automation, surveillance and sustainable mobility.

Robotics is an applied engineering science that has been referred to as a combination of machine tool technology and computer science. It includes diverse fields such as machine design, control theory, microelectronics, computer programming, artificial intelligence, human factors and production theory. The present book provides a comprehensive introduction to robotics. The book covers a fair amount of kinematics and dynamics of the robots. It also covers the sensors and actuators used in robotics system. This book will be useful for mechanical, electrical, electronics and computer engineering students. Key Features Latest technological developments in robotics * Robotic classifications, robot programming, robotic sensors and actuators. * Kinematics and dynamic analysis of the Robot * Modular systems in robotics Advances in Robotics systems * Fuzzy logic control in Robotic systems * Biped robot * Bio-mimetic robot * Robot safety and layout * Robot calibration Numerical examples Relative merits and demerits of different robot systems About Author: Appu Kuttan KK is working as professor in Mechanical Engineering, NITK, Surathkal. He has worked as Head of the department during 2000-2004. Eleven Ph.D students have completed their degree under his guidance. He has contributed more than one hundred papers in international and national journals and conferences. He has 25 years of teaching and 22 years of research experience. His areas of interest are CAD/CAM, Robotics, Mechatronics, Finite element method, Smart materials and Control engineering
Robot Mechanisms
CLAWAR 2021
Advances in Mechatronics, Manufacturing, and Mechanical Engineering
Select Proceedings of IPROMM 2020
Select Proceedings of ICAST 2020
Robotics for Sustainable Future
Machines, Mechanism and Robotics

The 5th International Congress on Design and Modeling of Mechanical Systems (CMSM) was held in Djerba, Tunisia on March 25-27, 2013 and followed four previous successful editions, which brought together international experts in the fields of design and modeling of mechanical systems, thus contributing to the exchange of information and skills and leading to a considerable progress in research among the participating teams. The fifth edition of the congress (CMSM ?2013), organized by the Unit of Mechanics, Modeling and Manufacturing (U2MP) of the National School of Engineers of Sfax, Tunisia, the Mechanical Engineering Laboratory (MBL) of the National School of Engineers of Monastir, Tunisia and the Mechanics Laboratory of Sousse (LMS) of the National School of Engineers of Sousse, Tunisia, saw a significant increase of the international participation. This edition brought together nearly 300 attendees who exposed their work on the following topics: mechatronics and robotics, dynamics of mechanical systems, fluid structure interaction and vibroacoustics, modeling and analysis of materials and structures, design and manufacturing of mechanical systems. This book is the proceedings of CMSM ?2013 and contains a careful selection of high quality contributions, which were exposed during various sessions of the congress. The original articles presented here provide an overview of recent research advancements accomplished in the field mechanical engineering.

One of the major application targets of service robots is to use them as assistive devices for rehabilitation. This book introduces some latest achievements in the field of rehabilitation robotics and assistive technology for people with disabilities and aged people. The book contains results from both theoretical and experimental works and reviews on some new advanced rehabilitation devices which has been recently transferred to the industry. Significant parts of the book are devoted to the assessment of new rehabilitation technologies, the evaluation of prototype devices with end-users, the safety of rehabilitation robots, and robot-assisted neurorehabilitation. The book is a representative selection of the latest trends in rehabilitation robotics and can be used as a reference for teaching on mechatronic devices for rehabilitation.

This book reports on topics at the interface between manufacturing, mechanical and chemical engineering. It gives special emphasis to CAD/CAE systems, information management systems, advanced numerical simulation methods and computational modeling techniques, and their use in product design, industrial process optimization and in the study of the properties of solids, structures, and fluids. Control theory, ICT for engineering education as well as ecological design, and food technologies are also among the topics discussed in the book. Based on the 2nd International Conference on Design, Simulation, Manufacturing: The Innovation Exchange (DSMIE-2019), held on June 11-14, 2019, in Lutsk, Ukraine, the book provides academics and professionals with a timely overview and extensive information on trends and technologies behind current and future developments of Industry 4.0, innovative design and renewable energy generation.

Advances in Materials Research
Introduction to Robotics: Pearson New International Edition PDF eBook