Emergent Trends in Robotics and Intelligent Systems: Peter Simintzi 2014-01-15 What is the role of intelligent technologies in the next generation of robots? This monograph answers the above question and presents emergent trends of Intelligent Systems and Robotics. After an introductory chapter covering 70 years of parallel processing and MCC's ideas and their revival, the monograph introduces the concepts behind the theme. The aim of the book is to contribute to shifting conventional robots in which the robots perform repetitively, pre-programmed tasks to robots with the ability to learn and gain new skills with abilities to adapt and change to changing environments. A main focus is on Intelligent Systems, which show notable achievements in solving various problems in intelligent robotics. The book presents current trends and future directions bringing together Robotics, Computation Intelligence, and Computational Systems.

New Trends In Medical and Service Robots: Tom Husband 1994-01-14 This book presents recent trends in the field as perceived by a global selection of researchers and experts. Subjects covered include motion planning of mobile robots in unknown environments, coordination between mobility and manipulability, computing environments for mobile robots, and new strategies for robot modeling and environmental modeling using advanced sensing technologies. Issues ranging from progress in applications to fundamental problems are discussed.

New Trends in Robotics and Manufacturing: Tom Husband 1994-01-14 This book presents recent trends in the field as perceived by a global selection of researchers and experts. Subjects covered include motion planning of mobile robots in unknown environments, coordination between mobility and manipulability, computing environments for mobile robots, and new strategies for robot modeling and environmental modeling using advanced sensing technologies. Issues ranging from progress in applications to fundamental problems are discussed.

New Trends in Service Robotics: Ajay K. Jain 2003-01-14 What are the current trends in robotics that are directing the field? What are the challenges? This book provides答案 to these questions. It presents the current trends in robotics to the readers and explores the future directions of the field.

New Trends in Medical and Service Robotics: Bames Blom 2011-12-12 This book presents recent trends in the field as perceived by a global selection of researchers and experts. Subjects covered include motion planning of mobile robots in unknown environments, coordination between mobility and manipulability, computing environments for mobile robots, and new strategies for robot modeling and environmental modeling using advanced sensing technologies. Issues ranging from progress in applications to fundamental problems are discussed.

New Trends in Medical and Service Robotics: Marina Indri 2020-11-24 The term “mechatronics” was coined in 1969, merging “mech” from mechanisms and “tronics” from electronics, to reflect the original idea at the basis of this discipline, that is, the integration of electrical and mechanical systems into a single device. The spread of this term, and of modern methods, has been the result of the need for systems engineers and other specialists to work in industrial engineering, computer engineering and communication/information engineering. Nowadays mechatronics has a well-defined and fundamental role, in strict relation with robotics. Drawing a sharp border between mechatronics and robotics is impossible, as they share many technologies and objectives. Advanced robots could be defined as mechatronic devices equipped with “smart brains”, but there are also up-to-date mechatronic devices used in medicine, industry, and service robotics which are not used for purposes such as construction visualisation systems, added value management systems, construction and industrial automation, etc.

New Trends in Medical and Service Robotics: Aydin Azizi 2020-01-15 Mechatronics is a multidisciplinary branch of engineering, computer engineering and communication/information engineering. Nowadays mechatronics has a well-defined and fundamental role, in strict relation with robotics. Drawing a sharp border between mechatronics and robotics is impossible, as they share many technologies and objectives. Advanced robots could be defined as mechatronic devices equipped with “smart brains”, but there are also up-to-date mechatronic devices used in medicine, industry, and service robotics which are not used for purposes such as construction visualisation systems, added value management systems, construction and industrial automation, etc.

New Trends in Medical and Service Robotics: H. Fujita 2015-06-23 System science and engineering is a field that better understands how mechatronics will impact on the practice and research of developing advanced techniques for design and control of mechatronic design for medical and assistive robotics; and Legal issues in medical robotics. The workshop brought researchers and practitioners to discuss new and emerging topics of Medical and Service Robotics. The meeting took place at castle St. Martin in Graz, Austria, from 4-6 July 2014.

New Trends in Medical and Service Robotics: Tom Husband 1994-01-14 This book presents recent trends in the field as perceived by a global selection of researchers and experts. Subjects covered include motion planning of mobile robots in unknown environments, coordination between mobility and manipulability, computing environments for mobile robots, and new strategies for robot modeling and environmental modeling using advanced sensing technologies. Issues ranging from progress in applications to fundamental problems are discussed.

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and prospects for the future development of the interdisciplinary field of mechatronic systems.

New Fronts in Mechanism Science-Deoixa Pola 2018-08-12 After two successful conferences held in Innsbruck (Prof. Manfred Husty) in 2006 and Cassino in 2008 (Prof Marco Ceccarelli) with the participation of the most important well-known scientists from the European Mechanism Science Community, a further conference was held in Rome, Italy (Deoixa Pola) in 2018. This conference presents the most recent research advances in Mechanism Science with different applications. Amongst the topics treated are papers on Theoretical kinematics, Computational kinematics, Mechanism design, modeling, simulation; kinematics and dynamics of multibody systems; control methods; navigation and motion planning; sensors and actuators; bio-robotics; micro/nano-robotics; complex robotic systems; walking machines; humans-participating mechatronic systems; and prototypes. The book can be used by researchers and engineers in the relevant areas of robotics and mechatronics.

Robotics Research Trends-Xing P Guo 2008-12-08 Robotics began as a science fiction creation which has become quite real, first in assembly line operations such as automobile manufacturing, airplane construction etc. They have now reached such areas as the internet, ever-multipling medical uses and sophisticated military applications. The book introduces the readers to the advanced control capabilities as well as sensors and interface techniques. Learning has become crucial for modern robotic systems as well. This new book presents the latest research in the field.

Emerging Trends in Computing, Informatics, Systems Sciences, and Engineering-Tarvuk Sohbt 2012-08-14 Emerging Trends in Computing, Informatics, Systems Sciences, and Engineering includes a set of rigorously reviewed, multi-disciplinary papers selected to provide an overview of the current major trends in the field of Informatics and Computing, Systems Sciences and Engineering. It highlights the key areas in the fields of Information Technology and Internet Technologies and Facilitates personal interaction and discussions on various aspects of Information Technology. It also aims to provide a view of the latest status and future prospects for Computing, Communication, Networking, Information Technology, Information Systems, and Information Sciences. The book aims to cover emerging trends in Information Technology with interaction and exchange of ideas among the researchers and students from diverse backgrounds. The book is intended for researchers, graduate students, and professionals in the areas of Computing, Informatics, Systems Sciences, and Engineering. It is a valuable resource for access to a wide range of readership, including professors, researchers, practitioners, and students.

New Fronts in Medical and Service Robotics-Amol C. Goje 2007-01-01 Information Technology skill standards provide a common language for working on robust control will benefit greatly from this book. Introduces a coherent and unified framework for the pursuit of analytic theory and rigorous design for robust control methods. The book provides an overview of the Advanced Control Design with Application to Electromechanical Systems represents the continuing effort in the computational and experimental methods, CAD in mechanism and machine design, mechanical design of robot systems, micro-mechanical design, micro-mechanical systems, micro/nano-robotics, medical devices and robots, parallel manipulators, sensor/actuator mechatronics, control mechanisms, control issues of mechatronic systems, novel designs, history of mechanism science etc.

New Horizons in Verticalisation of Robotics-Stéphane Dencurrec 2012-02-17 Evolutionary Algorithms (EAs) now promise to have a significant impact on design optimisation tasks which applied to many problems, from designing antennas to complete robots, and provided many human-competitive results. In robotics, the integration of EAs within the engineer's toolkit made tremendous progress in the last 20 years and proposes new methods to address challenging problems, in particular in robotics with non-conventional mechanisms (e.g. high redundancy, dynamic motion, multi-modality), etc. This book takes its roots in the workshop “New Horizons in Evolutionary Design of Robots” that brought together researchers from Computer Science and Robotics during the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS-2009) in Saint Louis (USA). This book features extended contributions from the workshop, providing various examples of current problems and applications, with a special emphasis on the link between Computer Science and Robotics. It also provides a comprehensive and up-to-date introduction to Evolutionary Robotics after 20 years of major advances of research and new thoughts. This book is a quick, up-to-date introduction to current trends and challenges in Evolutionary Robotics for the next decade.

New Fronts in Business Information Systems and Technology-Rolf Dombrowski 2020-07-07 This book provides a comprehensive overview of the state-of-the-art in Business Information Systems and Technology, "Big Data as an Innovation," which features new technologies that stimulate and enable new business opportunities; and "Digital Transformation and the Internet of Things," which present specific technological solutions for their practical implementation. Combining new insights from research, teaching, and management, including digital transformation, e-business, knowledge representation, human-computer interaction, and business optimization, the book highlights the breadth of research as well as its meaningful and relevant transfer into practice. It is intended for academics seeking inspiration, as well as for leaders wanting to tap the potential of the latest trends to take society and their business to the next level.

New Fronts in Computational and Bio-inspired Computing-S. Smys 2020-09-04 This book features selected, peer-reviewed original contributions presented at the International Conference on Computational and Bio-inspired Computing (CICBIC 2019) which was held in New Delhi, India, on 10-12 December 2019. The works included here offer a rich and diverse sampling of new developments in the fields of Computational and Bio-inspired Computing. It includes sections on Computational Vision, Fuzzy, Image Processing and Bio-inspired Computing; cryptography; and digital privacy: machine learning and artificial neural networks: genetic algorithms and computational intelligence; the internet of Things, and bio-metric systems, to name but a few. The applications discussed range from security, healthcare, and robotics to urban computing, agriculture, and robotics. In this book, researchers, graduate students, and professionals will find innovative solutions to real-world problems in industry and society as a whole, together with inspiration for further research.

Intelligent Systems for Automated Learning and Adaptation: Emerging Trends and Applications-Chien-Yong 2009-09-04 This volume offers intriguing applications, reviews and additions to the methodology of intelligent systems, presenting emerging trends of state-of-the-art intelligent systems and their practical applications.---Provided by publisher.

New Fronts in Networking, Computing, E-Learning, Systems Sciences, and Engineering-Khalid Elesai 2018-12-07 This book features selected, peer-reviewed original contributions presented at the CICBIC 2019, which was held in New Delhi, India, on 10-12 December 2019. The works included here offer a rich and diverse sampling of new developments in the fields of Networking, Computing, E-Learning, Systems Sciences, and Engineering. The book includes sections on Digital Image and Image Processing * Human Computer Interaction * Internet Technologies and Facilitates personal interaction and discussions on various aspects of Information Technology. It also aims to provide a view of the latest status and future prospects for Computing, Communication, Networking, Information Technology, Information Systems, and Information Sciences.

Advances in Recent Trends in Communication and Networking 2010. The works included here offer a rich and diverse sampling of new developments in the fields of Networking, Computing, E-Learning, Systems Sciences, and Engineering. The book includes sections on Business Transformation," comprising business and management concepts that employ specific technological solutions for their practical implementation. Combining new insights from research, teaching, and management, including digital transformation, e-business, knowledge representation, human-computer interaction, and business optimization, the book highlights the breadth of research as well as its meaningful and relevant transfer into practice. It is intended for academics seeking inspiration, as well as for leaders wanting to tap the potential of the latest trends to take society and their business to the next level.

New Horizons in Mechanism and Machine Science-Deoixa Pola 2018-08-20 This book presents the latest research advances in mechanism science and machine theory with application to engineering. It contains selected peer-reviewed papers of the fifth International Conference on Mechanism Science, held in Nantes, France, 20-23 September 2016, covering topics on mechanism design and synthesis, mechanisms of robots, mechanism analysis, parallel manipulators, sensor/actuator mechatronics, mechanism control issues in mechanism systems, history of mechanisms, mechanisms for biomechanics and surgery and industrial and nonindustrial applications.

New Advances in Mechanisms, Mechanical Transmissions and Robotics-Erwin-Christian Lauer 2020-11-01 This book is a comprehensive overview of the state-of-the-art in Mechanisms and Mechanical Transmissions (MTM) and the XXV International Conference on Robotics (IROS) held in Leuven, Belgium in 2019. It addresses the applications of mechatronic principles and robotics to the mechanical design of a variety of devices, from traditional mechatronic devices to mechatronic systems, machine structures, micro-mechanics, micro-mechatronics, and microsystems, communications and control, experimental methodology, control of mechatronic systems, parallel robot architecture, parallel robots, mobile robots, micro and nano robots, sensors and actuators in robotics, intelligent control systems, biomedical engineering, teleoperation, haptics, and virtual reality.

Advanced Control Design with Application to Electromechanical Systems-Magdi S Mahmoud 2018-04-12 Advanced Control Design with Application to Electromechanical Systems represents the continuing effort in the pursuit of analytic theory and rigorous design for robust control methods. The book provides an overview of the fundamental concepts and theories underlying the design of control systems, with discussions on finite dimension vector spaces, mappings and convex analysis. In addition, a comprehensive treatment of continuous control system design is presented, along with an introduction to control design topics pertaining to discrete-time systems. Other sections of the book introduce linear H1 and H2 theory, dissipativity analysis and synthesis, and a wide spectrum of models pertaining to electromechanical systems. Finally, the book emphasizes the mathematical foundation of mechatronic systems. Researchers on robust control theory and electromechanical systems and graduate students working on robust control will benefit greatly from this book. Introduces a coherent and unified framework for the pursuit of analytic theory and rigorous design for robust control methods. The book provides an overview of the computational and experimental methods, CAD in mechanism and machine design, mechanical design of robot systems, micro-mechanical design, micro-mechanical systems, micro/nano-robotics, medical devices and robots, parallel manipulators, sensor/actuator mechatronics, control mechanisms, control issues of mechatronic systems, novel designs, history of mechanism science etc.
studying robust control theory provides the control-theoretic background required to read and contribute to the research literature. Presents the main ideas and demonstrations of the major results of robust control theory. Includes MATLAB codes to implement during research.

New Trends in Educational Activity in the Field of Mechanism and Machine Theory - J.C. García-Prada 2018-09-20 This book contains the Proceedings of the Second International Symposium on the Education in Mechanism and Machine Science (ISEMMS 2017), which was held in Madrid, Spain. The Symposium has established a stable framework for exchanging experiences among researchers regarding mechanism and machine science, with special emphasis on New Learning Technologies and globalization. The papers cover topics such as mechanism and machine science in mechanical engineering curricula; mechanism and machine science in engineering programs: methodology; mechanism and machine science in engineering programs: applications and research; and new trends in mechanical engineering education.

Recent Advances in Automation, Robotics and Measuring Techniques - Roman Szewczyk 2014-07-08 This book presents the recent advances and developments in control, automation, robotics and measuring techniques. It presents contributions of top experts in the fields, focused on both theory and industrial practice. The particular chapters present a deep analysis of a specific technical problem which is in general followed by a numerical analysis and simulation and results of an implementation for the solution of a real world problem. The book presents the results of the International Conference AUTOMATION 2014 held 26 - 28 March, 2014 in Warsaw.

Artificial Intelligence for Future Generation Robotics - Rabindra Nath Shaw 2021-06-19 Artificial Intelligence for Future Generation Robotics offers a vision for potential future robotics applications for AI technologies. Each chapter includes theory and mathematics to stimulate novel research directions based on the state-of-the-art in AI and smart robotics. Organized by application into ten chapters, this book offers a practical tool for researchers and engineers looking for new avenues and use-cases that combine AI with smart robotics. As we witness exponential growth in automation and the rapid advancement of underpinning technologies, such as ubiquitous computing, sensing, intelligent data processing, mobile computing and context aware applications, this book is an ideal resource for future innovation. Brings AI and smart robotics into imaginative, technically-informed dialogue. Integrates fundamentals with real-world applications. Presents potential applications for AI in smart robotics by use-case. Gives detailed theory and mathematical calculations for each application. Stimulates new thinking and research in applying AI to robotics.