Building Better Robots Science Frontiers Paperback

The second edition of this handbook provides a state-of-the-art overview on the various aspects in the rapidly developing field of robotics. Reaching for the human frontier, robotics is vigorously engaged in the growing challenges of new emerging domains. Interacting, exploring, and working with humans, the new generation of robots will increasingly touch people and their lives. The credible prospect of practical robots among humans is the result of the scientific endeavour of a half a century of robotic developments that established robotics as a modern scientific discipline. The ongoing vibrant expansion and strong growth of the field during the last decade has fueled this second edition of the Springer Handbook of Robotics. The first edition of the handbook soon became a landmark in robotics publishing and won the American Association of Publishers PROSE Award for Excellence in Physical Sciences & Mathematics as well as the organization's Award for Engineering & Technology. The second edition of the handbook, edited by two internationally renowned scientists with the support of an outstanding team of seven part editors and more than 200 authors, continues to be an authoritative reference for robotics researchers, newcomers to the field, and scholars from related disciplines. The contents have been restructured to achieve four main objectives: the enlargement of foundational topics for robotics, the enlightenment of design of various types of robotic systems, the extension of the treatment on robots moving in the environment, and the enrichment of advanced robotics applications. Further to an extensive update, fifteen new chapters have been introduced on emerging topics, and a new generation of authors have joined the handbook's team. A novel addition to the second edition is a comprehensive collection of multimedia references to more than 700 videos, which bring valuable insight into the contents. The videos can be viewed directly augmented into the text with a smartphone or tablet using a unique and specially designed app. Springer Handbook of Robotics Multimedia Extension Portal: http://handbookofrobotics.org/

Collected here are 112 papers concerned with all manner of new directions in manufacturing systems given at the 41st CIRP Conference on Manufacturing Systems. The high-quality material presented in this volume includes reports of work from both scientific and engineering standpoints and several invited and keynote papers addressing the current cutting edge and likely future trends in manufacturing systems. The book's subjects include: (1) new trends in manufacturing systems design: sustainable design, ubiquitous manufacturing, emergent synthesis, service engineering, value creation, cost engineering, human and social aspects of manufacturing, etc.; (2) new applications for manufacturing systems – medical, life-science, optics, NEMS, etc.; (3) intelligent use of advanced methods and new materials – new manufacturing process technologies, high-hardness materials, bio-medical materials, etc.; (4) integration and control for new machines – compound machine tools, rapid prototyping, printing process integration, etc.

'Illuminating, witty and written with a wide open mind' Sunday Times The idea of the seductive sex robot is the stuff of myth, legend and science fiction. From the myth of Laodamia in Ancient Greece to twenty-first century shows such as Westworld, robots in human form have captured our imagination, our hopes and our fears. But beyond the fantasies there are real and fundamental questions about our relationship with technology as it moves into the realm of robotics. Turned On explores how the emerging and future development of sexual companion robots might affect us and the society in which we live. It explores the social changes arising from emerging technologies, and our relationships with the machines that someday may care for us and about us. Sex robots are here, and here to stay, and more are coming. Computer scientist and sex-robot expert Kate Devlin is our guide as we seek to understand how this technology is developing. From robots in Greek myth and the fantastical automata of the Middle Ages through to the sentient machines of the future that embody the prominent AI debate, she explores the 'modern' robot versus the robot servants we were promised by twentieth century sci-fi, and delves into the psychological effects of the technology, and issues raised around gender politics, diversity, surveillance and violence. This book answers all the questions you've ever had about sex robots, as well as all the ones you haven't yet thought of.

Robot-Oriented Design introduces the design, innovation, and management methodologies that are key to the realization and implementation of the advanced concepts and technologies presented in the subsequent volumes of the Cambridge Handbooks on Construction Robotics series. This book describes the efficient deployment of advanced construction and building technology. It is concerned with the co-adaptation of construction products, processes, organization, and management, and with automated/robotic technology, so that the implementation of modern technology becomes easier and more efficient. It is also concerned with technology and innovation management methodologies and the generation of life cycle-oriented views related to the use of advanced technologies in construction.

Manufacturing Systems and Technologies for the New Frontier

Generation GrowBots: Materials, Mechanisms, and Biomimetic Design for Growing Robots

New Critical Essays

Strategic, Ethico-Legal and Decisional Implications

Science, Sex and Robots

The 41st CIRP Conference on Manufacturing Systems May 26 – 28, 2008, Tokyo, Japan

DARS is now a well-established conference that gathers every two years the main researchers in Distributed Robotics systems. Even if the field is growing, it has been maintained a one-track conference in order to enforce effective exchanges between the main researchers in the field. It now a well-established tradition to publish the main contributions as a book from Springer. There are already 5 books entitled "Distributed Autonomous Robotic Systems" 1 to 5.

Examines 12 of the most interesting facts about creating more adaptable and intelligent robots. Concise and understandable information is paired with colorful spreads full of photographs and sidebars.

This volume includes 15 papers from the National Academy of Engineering's 2006 U.S. Frontiers of Engineering (USFOE) Symposium held in September 2006. USFOE meetings bring together 100 outstanding engineers (ages 30 to 45) to exchange information about leading-edge technologies in a range of engineering fields. The 2006 symposium covered four topic areas: intelligent software systems and machines, the nano/bio interface, engineering personal mobility for the 21st century, and supply chain management. A paper by dinner speaker Dr. W. Dale Compton, Lillian M. Gilbreth Distinguished Professor of Industrial Engineering, Emeritus, is also included. The papers describe leading-edge research on commercializing auditory neuroscience, future developments in bionanotechnology, sustainable urban transportation, and managing disruptions to supply chains, among other topics. Appendixes include information about contributors, the symposium program, and a list of meeting participants. This is the twelfth volume in the USFOE series.

Just War scholarship has adapted to contemporary crises and situations. But its adaptation has spurned debate and conversation—a method and means of pushing its thinking forward. Now the Just War tradition risks becoming marginalized. This concern may seem out of place as Just War literature is proliferating, yet this literature remains welded to traditional conceptualizations of Just War. Caron E. Gentry and Amy E. Eckert argue that the tradition needs to be updated to deal with substate actors within the realm of legitimate authority, private military companies, and the questionable moral difference between the use of conventional and nuclear weapons. Additionally, as recent policy makers and scholars have tried to make the Just War criteria legalistic, they have weakened the tradition's ability to draw from and adjust to its contemporaneous setting. The essays in The Future of Just War seek to reorient the tradition around its core concerns of preventing the unjust use of force by states and limiting the harm inflicted on vulnerable populations such as civilian noncombatants. The pursuit of these challenges involves both a reclaiming of traditional Just War principles from those who would push it toward greater permissiveness with respect to war, as well as the application of Just War principles to emerging issues, such as the growing use of robotics in war or the privatization of force. These essays share a commitment to the idea that the tradition is more about a rigorous application of Just War principles than the satisfaction of a checklist of criteria to be met before waging "just" war in the service of national interest.

Building Better Robots

Design and Management Tools for the Deployment of Automation and Robotics in Construction

Art, Design and Science, Engineering and Medicine Frontier Collaborations

The Future of Just War

RoboCup 2007: Robot Soccer World Cup XI

Automating Cities

This book highlights the latest advancements in the use of automated systems in the design, construction, operation and future of the built environment and its occupants. It considers how the use of automated decision-making frameworks, artificial intelligence and other technologies of automation are presently impacting the practice of architects, engineers, project managers and contractors, and articulates the near future changes to workflows, legal frameworks and the wider AEC industry. This book surveys and compiles the use of city apps, robots that operate buildings and fabricate structural elements, 3D printing, drones, sensors, algorithms, and advanced prefabricated modules. The book also contributes to the growing literature on smart cities, and explores the impacts on data privacy and data sovereignty that arise through the use of sensors, digital twins and intelligent transport systems. It provides a useful reference for further research and development in the area of automation in design and construction to architects, engineers, project managers, superintendents and construction lawyers, contractors, policy makers, and students.

This study explores ways in which digital skills can be developed and harnessed to support sustainable development in a current context of technological change. It discusses the types of skills that countries need to prepare the future workforces for the changing world and to maximise the development opportunities offered by existing and emerging technologies. It examines the potential of existing and emerging digital technologies in building and enhancing digital skills. The study also dwells upon technologies for education among other subjects..

This book provides cross-cultural ethical exploration of sex robots and their social impact. What are the implications of sex robots and related technological innovations for society and culture? How should we evaluate the significance of sexual relations with robots that look like women, men or children? Critics argue that sex robots present a clear risk to real persons and a social degradation that will increase sexual violence, objectify women, encourage pedophilia, reinforce negative body images, increase forms of sexual dysfunction, and pass on sexually transmitted disease. Proponents judge robotic sexual companionship as just another step in the exploration of human desire. They see sex robots, and similar technology, such as virtual reality pornography, as providing autonomy affirming companionship for the lonely and a relatively harmless outlet for sexual fantasies that avoids the use of human prostitutes and thus reduces sexual victimization. Some appreciate sex robots as a social evil, others as a positive good, and still others as a harmless pastime. How we come to terms with such conceptual and moral concerns will have significant implications for society and the future of human relations. This book is of great interest to researchers in bioethics, human sexual behavior, AI ethics, and philosophy of sex.

This book explores whether the new capabilities made possible by precision-strike technologies are reshaping approaches to international intervention. Since the end of the Cold War, US technological superiority has led to a more proactive and, some would argue, high risk approach to international military intervention. New technologies including the capacity to mount precision military strikes from high-level bombing campaigns and, more recently, the selective targeting of individuals from unmanned aerial vehicles (UAVs) have facilitated air campaigns, supported by Special Forces, without the commitment of large numbers of troops on the ground. Such campaigns include, for example, NATO's high-level aerial bombardment of Milosevic's forces in Kosovo in 1999 and of Gaddafi's in Libya in 2011, and the US operation involving Special Forces against Osama Bin Laden. The development of UAVs and electronic data intercept technologies has further expanded the potential scope of interventions, for example against Islamic militants in the tribal areas of Pakistan. This volume examines three key and interrelated dimensions of these new precision-strike capabilities: (1) the strategic and foreign policy drivers and consequences; (2) the legal and moral implications of the new capabilities; and (3), the implications for decision-making at the strategic, operational and tactical levels. This book will be of much interest to students of war and technology, air power, international intervention, security studies and IR.

Building the iCub Mindware: Open-source Software for Robot Intelligence and Autonomy

Robot-Oriented Design

Consciousness in Humanoid Robots

Ideation, Translation, Realization: Seed Idea Group Summaries

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Precision Strike Warfare and International Intervention

This book constitutes the proceedings of the 11th RoboCup International Symposium, held in Atlanta, GA, USA, in July 2007, immediately after the 2007 RoboCupSoccer, RoboCupRescue and RoboCupJunior competitions. Papers presented at the symposium focused on topics related to these three events and to artificial intelligence and robotics in general. The 18 revised full papers and 42 revised poster papers included in the book were selected from 133 submissions. Each paper was reviewed by at least three program committee members. The program committee also nominated two papers for the Best Paper and Best Student Paper awards, respectively. The book provides a valuable source of reference and inspiration for R&D professionals and educationalists active or interested in robotics and artificial intelligence.

A timely investigation into the forces that are driving innovation in the four core areas of human experience: birth, food, sex, and death. In Sex Robots & Vegan Meat, award-winning journalist and documentary-maker Jenny Kleeman takes us on a journey into the world of the people who are changing what it means to be human. Focusing on four central pillars of the human experience-birth, food, sex, and death-Kleeman examines the people who are driving some truly amazing (and perhaps worrying) innovations. We are on the brink of seismic changes in the ways we live and die, from babies grown in artificial wombs to lab-produced meat; from sex robots able to hold polite conversation (and otherwise) to being able to choose to end our days with the perfect, painless, automated death. Our journey from cradle to grave is developing in ways which involve more and more technology, and less and less human interaction. Might these advances in technology serve to rob us of our humanity? In this book Jenny Kleeman takes a profound look at what the future might have in store-and asks some provocative questions along the way. Jenny Kleeman places these scientists front and center and asks what is driving and motivating them? Are they entrepreneurs in it for the greater good of human advancement, or might there be more sinister-i.e. monetary-motivations in play? Gleeman is a skilled and subtle interrogator and travels with the reader on a fascinating exploration of the changes afoot, their implications for who we are as a society-and as human beings. It's an immersive, eye-opening, and hugely entertaining journey into a world of extraordinary visionaries on the frontline of a social revolution.

Topic editor Rustam Stolkin is director of A.R.M Robotics Ltd. All other topic editors declare no competing interests with regards to the Research Topic subject.

Intelligence and autonomy are among the most extraordinary capacities blossomed by human evolution. Yet, endowing humanoid robots with these two crucial capabilities is still one of the biggest problems for the robotics community, despite decades of research. On the software side, algorithms for artificial intelligence are still at an embryonic stage. On the hardware side, robotic actuators are a far cry from the muscular human system in terms of flexibility and adaptability, which in turn reduces autonomy and robustness. Underneath the nature of algorithms for intelligence and technology for autonomy, the importance of efficient, scalable implementations of robust software goes without saying. Among the large variety of humanoid robots, the iCub has emerged as one of the most diffused research platforms. It has been developed as part of the RobotCub EU project and subsequently adopted by more than 35 laboratories worldwide. Collaborations across laboratories are encouraged by writing code and libraries openly available. As a consequence, iCub is considered to be the ideal platform for experimenting and advancing open-source software for research in several domains, ranging from motor control to cognitive systems.

Advances in Modelling and Control of Soft Robots

Springer Handbook of Robotics

Sex Robots and Vegan Meat

Social Impact and the Future of Human Relations

Max Axiom STEM Adventures

This book aims to give policy makers an overview of the evolution of science, technology and innovation (STI) policies in a selected number of East Asian countries. China, Japan, Republic of Korea and Singapore have transformed their economies and societies in recent decades. From STI policies that enabled catch-up growth, these countries have evolved towards policies that are more aligned with sustainable development through integrating social, economic and environmental dimensions into their STI policies. The forthcoming Fourth Industrial Revolution is also reshaping STI policies in these countries as governments prepare to support the development of frontier technologies such as artificial intelligence, as well as respond to the impacts of these technologies on their societies and economies. Governments are also evolving themselves as the public sector opens up to integrating innovations from civil society and the private sector and further strengthen the innovation capacity of the public sector to improve policy making processes and deliver services to their constituents. All three themes are explored in this book in separate chapters, through a comparative analysis of the STI policies of China, Japan, Republic of Korea and Singapore. The experiences of these countries can serve as useful references for other countries in the Asia-Pacific region and beyond that are interested in utilizing national level STI policies to achieve sustainable development, particularly in the context of the emergence of frontier technologies.

Building Better Robots12-Story Library

This book gathers the proceedings of the 10th International Conference on Frontier Computing, held in Singapore, on July 10–13, 2020, and provides comprehensive coverage of the latest advances and trends in information technology, science, and engineering. It addresses a number of broad themes, including communication networks, business intelligence and knowledge management, web intelligence, and related fields that inspire the development of information technology. The respective contributions cover a wide range of topics: database and data mining, networking and communications, web and Internet of things, embedded systems, soft computing, social network analysis, security and privacy, optical communication, and ubiquitous/pervasive computing. Many of the papers outline promising future research directions, and the book benefits students, researchers, and professionals alike. Further, it offers a useful reference guide for newcomers to the field.

In factories! In the sky! In your cars and phones! In your own home! Robots are everywhere! And they have been for a lot longer than you might realize. From tea-serving robots in feudal Japan to modern rovers exploring Mars, robots have been humanity's partners, helpers, and protectors for centuries! Join one of the world's earliest robots, a mechanical bird named Pouli, as he explores where robots came from, how they work, and where they're going in this informative and hilarious new book! Ever dreamt of building your own best friend? It might be easier than you think! Every volume of Science Comics offers a complete introduction to a particular topic—dinosaurs, coral reefs, the solar system, volcanoes, bats, flying machines, and more. These gorgeously illustrated graphic novels offer wildly entertaining views of their subjects. Whether you're a fourth grader doing a natural science unit at school or a thirty year old with a secret passion for airplanes, these books are for you!

Robotics in Extreme Environments

Advances in Mechatronics and Biomechanics towards Efficient Robot Actuation

12 Incredible Projects You Can Build

Frontier Computing

Encyclopedia of the Sciences of Learning

The Space Frontiers

Join super scientist Max Axiom as he explores the technology behind and everyday use of robots in our world. Science and engineering content central to the STEM Initiative comes alive in full-color graphic novel format. Max's adventures make it all fun!

This book collects papers selected by an international program committee for presentation at the 8th International Symposium on Distributed Autonomous Robotic Systems. The papers present state of the art research advances in the field of distributed robotics. What makes this book distinctive is the emphasis on using multiple robots and on making them autonomous, as opposed to being teleoperated. Novel algorithms, system architectures, technologies, and numerous applications are covered.

Simple text and illustrations describe technological advancements in the field of robotics.

Over the past century, educational psychologists and researchers have posited many theories to explain how individuals learn, i.e. how they acquire, organize and deploy knowledge and skills. The 20th century can be considered the century of psychology on learning and related fields of interest (such as motivation, cognition, metacognition etc.) and it is fascinating to see the various mainstreams of learning, remembered and forgotten over the 20th century and note that basic assumptions of early theories survived several paradigm shifts of psychology and epistemology. Beyond folk psychology and its na ï ve theories of learning, psychological learning theories can be grouped into some basic categories, such as behaviorist learning theories, connectionist learning theories, cognitive learning theories, constructivist learning theories, and social learning theories. Learning theories are not limited to psychology and related fields of interest but rather we can find the topic of learning in various disciplines, such as philosophy and epistemology, education, information science, biology, and – as a result of the emergence of computer technologies – especially also in the field of computer sciences and artificial intelligence. As a consequence, machine learning struck a chord in the 1980s and became an important field of the learning sciences in general. As the learning sciences became more specialized and complex, the various fields of interest were widely spread and separated from each other; as a consequence, even presently, there is no comprehensive overview of the sciences of learning or the central theoretical concepts and vocabulary on which researchers rely. The Encyclopedia of the Sciences of Learning provides an up-to-date, broad and authoritative coverage of the specific terms mostly used in the sciences of learning and its related fields, including relevant areas of instruction, pedagogy, cognitive sciences, and especially machine learning and knowledge engineering. This modern compendium will be an indispensable source of information for scientists, educators, engineers, and technical staff active in all fields of learning. More specifically, the Encyclopedia provides fast access to the most relevant theoretical terms provides up-to-date, broad and authoritative coverage of the most important theories within the various fields of the learning sciences and adjacent sciences and communication technologies; supplies clear and precise explanations of the theoretical terms, cross-references to related entries and up-to-date references to important research and publications. The Encyclopedia also contains biographical entries of individuals who have substantially contributed to the sciences of learning; the entries are written by a distinguished panel of researchers in the various fields of the learning sciences.

Building Better Jobs in an Age of Intelligent Machines

Robots Rising

The Work of the Future

Reports on Leading-Edge Engineering from the 2006 Symposium

Sex Robots

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From ancient times to the present day, scientifically inclined women in many cultures have had to battle against the traditional belief that men are more cognitively adept than women. At times throughout history, women were persecuted for their attempts to break down traditional gender barriers. Today, women scientists and mathematicians must continue to defend the quality of their work and demand the respect they deserve in the mathematical and scientific communities.A to Z of Women in Science and Math, Revised Edition profiles 195 women who fought against these stereotypes throughout history and all over the world to forge new discoveries and theories that would eventually change the way we view science. This thoroughly revised book updates the story of each individual to the present day and features 38 new profiles. Among the profiles included are those of chemists, astronomers, geologists, environmental scientists, and a range of other professions and careers. In addition, new photographs have been added, and the bibliography has been updated. Subject indexes allow the reader to search by such professions as microbiology and paleontology.Additional subject indexes organize individuals by country of birth, country of major scientific activity, and year of birth.

Science and art were not always two separate entities. Historically, times of great scientific progress occurred during profound movements in art, the two disciplines working together to enrich and expand humanity's understanding of its place in this cosmos. Only recently has a dividing line been drawn, and this seeming dichotomy misses some of the fundamental similarities between the two endeavors. At the National Academies Keck Futures Initiative Conference on Art, Design and Science, Engineering and Medicine Frontier Collaborations: Ideation, Translation, and Realization, participants spent 3 days exploring diverse challenges at the interface of science, engineering, and medicine. They were arranged into Seed Groups that were intentionally diverse, to encourage the generation of new approaches by combining a range of different types of contributions. The teams included creative practitioners from the fields of art, design, communications, science, engineering, and medicine, as well as representatives from private and public funding agencies, universities, businesses, journals, and the science media.

Take a journey into the New Space Frontier! It is easy to imagine that the space shuttle's retirement has edged the Space Age toward closure, at least in terms of human flight beyond the bounds of earth. In fact, there are more people-carrying ships being constructed now than at any time since Yuri Gagarin became the first man in space half a century ago. Some are already servicing the International Space Station - which, incidentally, has ensured a permanent human presence in space for the last two decades, and is set to continue and expand for decades yet to come. What's more, NASA is no longer the only big player in the space game. Commercial, non-governmental space exploration is becoming a reality rather than just a pipe dream. What orbital adventures await us in the next five decades? Will humans ever again head into deep space, as the Apollo astronauts once did? NASA's new hardware is aimed toward asteroid missions, and ultimately, Mars, but there is a significant chance that a government funded space agency will not be the only - or even the first - organization to send humans across the solar system. Get ready to experience the excitement of adventure with New Space Frontier. Through gorgeous photography and engaging writing, noted space and science author Piers Bizony speculates beyond just today's hardware and explores what might be possible for the next generation.

Trust in Human-Robot Interaction addresses the gamut of factors that influence trust of robotic systems. The book presents the theory, fundamentals, techniques and diverse applications of the behavioral, cognitive and neural mechanisms of trust in human-robot interaction, covering topics like individual differences, transparency, communication, physical design, privacy and ethics. Presents a repository of the open questions and challenges in trust in HRI Includes contributions from many disciplines participating in HRI research, including psychology, neuroscience, sociology, engineering and computer science Examines human information processing as a foundation for understanding HRI Details the methods and techniques used to test and quantify trust in HRI

A Fifty-Year History of Space Stations

Evolution of Science, Technology and Innovation Policies for Sustainable Development

The Experience of China, Japan, the Republic of Korea and Singapore

Building Digital Competencies to Benefit From Frontier Technologies

Should Robots Have Standing? The Moral and Legal Status of Social Robots

Frontiers of Engineering

Why the United States lags behind other industrialized countries in sharing the benefits of innovation with workers and how we can remedy the problem. The United States has too many low-quality, low-wage jobs. Every country has its share, but those in the United States are especially poorly paid and often without benefits. Meanwhile, overall productivity increases steadily and new technology has transformed large parts of the economy, enhancing the skills and paychecks of higher paid knowledge workers. What's wrong with this picture? Why have so many workers benefited so little from decades of growth? The Work of the Future shows that technology is neither the problem nor the solution. We can build better jobs if we create institutions that leverage technological innovation and also support workers though long cycles of technological transformation. Building on findings from the multiyear MIT Task Force on the Work of the Future, the book argues that we must foster institutional innovations that complement technological change. Skills programs that emphasize work-based and hybrid learning (in person and online), for example, empower workers to become and remain productive in a continuously evolving workplace. Industries fueled by new technology that augments workers can supply good jobs, and federal investment in R&D can help make these industries worker-friendly. We must act to ensure that the labor market of the future offers benefits, opportunity, and a measure of economic security to all.

Building a conscious robot is a scientific and technological challenge. Debates about the possibility of conscious robots and the related positive outcomes and hazards for human beings are today no longer confined to philosophical circles. Robot consciousness is a research field aimed at a two-part goal: on the one hand, scholars working in robot consciousness take inspiration from biological consciousness to build robots that present forms of experiential and functional consciousness. On the other hand, scholars employ robots as tools to better understand biological consciousness. Thus, part one of the goal concerns the replication of aspects of biological consciousness in robots, by unifying a variety of approaches from AI and robotics, cognitive robotics, epigenetic and affective robotics, situated and embodied robotics, developmental robotics, anticipatory systems, and biomimetic robotics. Part two of the goal is pursued by employing robots to advance and mark progress in the study of consciousness in humans and animals. Notably, neuroscientists involved in the study of consciousness do not exclude the possibility that robots may be conscious. This eBook comprises a collection of thirteen manuscripts and an Editorial published by Frontiers in Robotics and Artificial Intelligence, under the section Humanoid Robotics, and Frontiers in Neurorobotics, on the topic "Consciousness in Humanoid Robots." This compendium aims at collating the most recent theoretical studies, models, and case studies of machine consciousness that take the humanoid robot as a frame of reference. The content in the articles may be applied to many different kinds of robots, and to software agents as well.

Discusses major scientists and scientific issues and discoveries of the last half of the twentieth century.

Bring a robot to life without programming or assembly language skills! There's never been a better time to explore the world of the nearly human. With the complete directions supplied by popular electronics author John Iovine, you can: • Build your first walking, talking, sensing, thinking robot • Create 12 working robotic projects, using the fully illustrated instructions provided • Get the best available introduction to robotics, motion control, sensors, and neural intelligence • Put together basic modules to build sophisticated 'bots of your own design • Construct a robotic arm that responds to your spoken commands • Build a realistic, functional robotic hand • Apply sensors to detect bumps, walls, inclines , and roads • Give your robot expertise and neural intelligence You geteverything you need to create 12 exciting robotic projects using off-the-shelf products and workshop-built devices, including a complete parts list. Also ideal for anyone interested in electronic and motion control, this cult classic gives you the building blocks you need to go practically anywhere in robotics.

A to Z of Women in Science and Math

Venturing into Earth Orbit and Beyond

Science Frontiers, 1946 to the Present

Turned On

The Remarkable World of Robots

Past, Present, and Future

The International Space Station (ISS) is the largest man-made structure to orbit Earth and has been conducting research for close to a decade and a half. Yet it is only the latest in a long line of space stations and laboratories that have flown in orbit since the early 1970s. The histories of these earlier programs have been all but forgotten as the public focused on other, higher-profile adventures such as the Apollo moon landings. A vast trove of stories filled with excitement, danger, humor, sadness, failure, and success, Outposts on the Frontier reveals how the Soviets and the Americans combined strengths to build space stations over the past fifty years. At the heart of these scientific advances are people of both greatness and modesty. Jay Chladek documents the historical tapestry of the people, the early attempts at space station programs, and how astronauts and engineers have contributed to and shaped the ISS in surprising ways. Outposts on the Frontier delves into the intriguing stories behind the USAF Manned Orbiting Laboratory, the Almaz and Salyut programs, Skylab, the Apollo-Soyuz Test Project, Spacelab, Mir station, Spacehab, and the ISS and gives past-due attention to Vladimir Chelomei, the Russian designer whose influence in space station development is as significant as Sergei Korolev's in rocketry. Outposts on the Frontier is an informative and dynamic history of humankind's first outposts on the frontier of space.

Intrinsically Motivated Open-Ended Learning in Autonomous Robots

Adventures at the Frontier of Birth, Food, Sex, and Death

Science Comics: Robots and Drones

Outposts on the Frontier

New Space Frontiers

Proceedings of FC 2020