Building Better Robots Science Frontiers Paperback

Generation GrowBots: Materials, Mechanisms, and Biomimetic Design for Growing Robots **Robotics in Extreme Environments Robotics, Automation and Control** Advances in Modelling and Control of Soft Robots **Complexity and Self-Organization Advanced Control Methods in Marine Robotics Applications** **Building Better Robots** Haptics for Teleoperated Surgical Robotic Systems **New Frontiers in Human-robot Interaction Sex Robots and Vegan Meat** *Dynamics and Robust Control of Robot-Environment Interaction Frontiers in Robotics and Electromechanics* **OECD Digital Education Outlook 2021 Pushing the Frontiers with Artificial Intelligence, Blockchain and Robots** **Robotics, AI, and Humanity** Humanoid Robotics and Neuroscience Current Advances in Soft Robotics: Best Papers From RoboSoft 2018 Simultaneous Localization and Mapping *Robot-Assisted Learning and Education* **Consciousness in Humanoid Robots Frontiers in Neurorobotics – Editor's Pick 2021** *Robots and Art* **Cross-Modal Learning: Adaptivity, Prediction and Interaction Organic Pollutants Ten Years After the Stockholm Convention** Bio-inspired Physiological Signal(s) and Medical Image(s) Neural Processing Systems Based on Deep Learning and Mathematical Modeling for Implementing Bio-Engineering Applications in Medical and Industrial Fields **Will Robots Take Your Job?: A Plea for Consensus Robotics, AI, and Humanity Culturally Sustainable Social Robotics** *What Social Robots Can and Should Do* **Social Robotics** Metrics of Sensory Motor Coordination and Integration in Robots and Animals *Robots of Westinghouse, 1924-today Rapid Automation: Concepts, Methodologies, Tools, and Applications* **Modelling Human Motion** The Reasonable Robot *Tales from a Robotic World* **Darwin's Devices From Termite Den to Office Building Artificial Intelligence** Intrinsic motivations and open-ended development in animals, humans, and robots Interfacing Humans and Machines for Rehabilitation and Assistive Devices

Eventually, you will extremely discover a extra experience and ability by spending more cash. nevertheless when? attain you understand that you require to get those every needs later having significantly cash? Why dont you attempt to acquire something basic in the beginning? Thats something that will lead you to understand even more regarding the globe, experience, some places, in imitation of history, amusement, and a lot more?

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Interfacing Humans and Machines for Rehabilitation and Assistive Devices Jun 16 2019 Dr Jan Veneman is employed by Hocoma AG. All other Topic Editors declare no competing interests with regards to the Research Topic subject.

Cross-Modal Learning: Adaptivity, Prediction and Interaction Jan 04 2021

The Reasonable Robot Dec 23 2019 Argues that treating people and artificial intelligence differently under the law results in unexpected and harmful outcomes for social welfare.

Generation GrowBots: Materials, Mechanisms, and Biomimetic Design for Growing Robots Oct 25 2022

Robotics, AI, and Humanity Sep 12 2021 This open access book examines recent advances in how artificial intelligence (AI) and robotics have elicited widespread debate over their benefits and drawbacks for humanity. The emergent technologies have for instance implications within medicine and health care, employment, transport, manufacturing, agriculture, and armed conflict. While there has been considerable attention devoted to robotics/AI applications in each of these domains, a fuller picture of their connections and the possible consequences for our shared humanity seems needed. This volume covers multidisciplinary research, examines current research frontiers in AI/robotics and likely impacts on societal well-being, human – robot relationships, as well as the opportunities and risks for sustainable development and peace. The attendant ethical and religious dimensions of these technologies are addressed and implications for regulatory policies on the use and future development of AI/robotics technologies are elaborated.

Dynamics and Robust Control of Robot-Environment Interaction Dec 15 2021 This book covers the most attractive problem in robot control, dealing with the direct interaction between a robot and a dynamic environment, including the human-robot physical interaction. It provides comprehensive theoretical and experimental coverage of interaction control problems, starting from the mathematical modeling of robots interacting with complex dynamic environments, and proceeding to various concepts for interaction control design and implementation algorithms at different control layers. Focusing on the learning principle, it also shows the application of new and advanced learning algorithms for robotic contact tasks.

Consciousness in Humanoid Robots Apr 07 2021 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.

Darwin's Devices Oct 21 2019 What happens when we let robots play the game of life? The challenge of studying evolution is that the history of life is buried in the past—we can't witness the dramatic events that shaped the adaptations we see today. But biorobotics expert John Long has found an ingenious way to overcome this problem: he creates robots that look and behave like extinct animals, subjects them to evolutionary pressures, lets them compete for mates and resources, and mutates their 'genes'. In short, he lets robots play the game of life. In Darwin's Devices, Long tells the story of these evolving biorobots—how they came to be, and what they can teach us about the biology of living and extinct species. Evolving biorobots can replicate creatures that disappeared from the earth long ago, showing us in real time what happens in the face of unexpected environmental challenges. Biomechanically correct models of backbones functioning as part of an autonomous robot, for example, can help us understand why the first vertebrates evolved them. But the most impressive feature of these robots, as Long shows, is their ability to illustrate the power of evolution to solve difficult technological challenges autonomously—without human input regarding what a workable solution might be. Even a simple robot can create complex behavior, often learning or evolving greater intelligence than humans could possibly program. This remarkable idea could forever alter the face of engineering, design, and even warfare. An amazing tour through the workings of a fertile mind, Darwin's Devices will make you rethink everything you thought you knew about evolution, robot intelligence, and life itself.

Artificial Intelligence Aug 19 2019 Thrilling new discoveries in science and technology are announced almost daily. Cutting-Edge Science and Technology keeps readers at the forefront of new research. Artificial Intelligencecovers a wide variety of topics in the emerging field of machine learning, including facial identification, voice recognition, video games, driverless cars, and robot helpers. High-impact photos and explanatory graphics and charts bring scientific concepts to life. Features include essential facts, a glossary, selected bibliography, websites, source notes, and an index. Aligned to Common Core Standards and correlated to state standards. Essential Library is an imprint of Abdo Publishing, a division of ABDO.

Frontiers in Neurorobotics – Editor's Pick 2021 Mar 06 2021

Complexity and Self-Organization Jun 21 2022

Advanced Control Methods in Marine Robotics Applications May 20 2022

Haptics for Teleoperated Surgical Robotic Systems Mar 18 2022 An important obstacle in Minimally Invasive Surgery (MIS) is the significant degradation of haptic feedback (sensation of touch) to the surgeon about surgical instrument's interaction with tissue. This monograph is concerned with devices and methods required for incorporating haptic feedback in master-slave robotic MIS systems. In terms of devices, novel mechanisms are designed including a surgical end-effector (slave) with full force sensing capabilities and a surgeon-robot interface (master) with full force feedback capabilities. Using the master-slave systems, various haptic teleoperation control schemes are compared in terms of stability and performance, and passivity-based time delay compensation for haptic teleoperation over a long distance is investigated. The monograph also compares haptic feedback with visual feedback and with substitution for haptic feedback by other sensory cues in terms of surgical task performance.

Building Better Robots Apr 19 2022 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.

Will Robots Take Your Job?: A Plea for Consensus Oct 01 2020 The trend that began with ATMs and do-it-yourself checkouts is moving at lightning speed. Everything from driving to teaching to the care of the elderly and, indeed, code-writing can now be done by smart machines. Conventional wisdom says there will be new jobs to replace those we lose – but is it so simple? And are we ready? Technology writer and think-tank director Nigel Cameron argues it's naive to believe we face a smooth transition. Whether or not there are "new" jobs, we face massive disruption as the jobs millions of us are doing get outsourced to machines. A twenty-first-century "rust belt" will rapidly corrode the labor market and affect literally hundreds of different kinds of jobs simultaneously. Robots won't design our future – we will. Yet shockingly, political leaders and policy makers don't seem to have this in their line of sight. So how should we assess and prepare for the risks of this unknown future?

Bio-inspired Physiological Signal(s) and Medical Image(s) Neural Processing Systems Based on Deep Learning and Mathematical Modeling for Implementing Bio-Engineering Applications in Medical and Industrial Fields Nov 02 2020

Sex Robots and Vegan Meat Jan 16 2022 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.

Simultaneous Localization and Mapping Jun 09 2021 Simultaneous localization and mapping (SLAM) is a process where an autonomous vehicle builds a map of an unknown environment while concurrently generating an estimate for its location. This book is concerned with computationally efficient solutions to the large scale SLAM problems using exactly sparse Extended Information Filters (EIF). The invaluable book also provides a comprehensive theoretical analysis of the properties of the information matrix in EIF-based algorithms for SLAM. Three exactly sparse information filters for SLAM are described in detail, together with two efficient and exact methods for recovering the state vector and the covariance matrix. Proposed algorithms are extensively evaluated both in simulation and through experiments.

Robots and Art Feb 05 2021 The first compendium on robotic art of its kind, this book explores the integration of robots into human society and our attitudes, fears and hopes in a world shared with autonomous machines. It raises questions about the benefits, risks and ethics of the transformative changes to society that are the consequence of robots taking on new roles alongside humans. It takes the reader on a journey into the world of the strange, the beautiful, the uncanny and the daring – and into the minds and works of some of the world's most prolific creators of robotic art. Offering an in-depth look at robotic art from the viewpoints of artists, engineers and scientists, it presents outstanding works of contemporary robotic art and brings together for the first time some of the most influential artists in this area in the last three decades. Starting from a historical review, this transdisciplinary work explores the nexus between robotic research and the arts and examines the diversity of robotic art, the encounter with robotic otherness, machine embodiment and human–robot interaction. Stories of difficulties, pitfalls and successes are recalled, characterising the multifaceted collaborations across the diverse disciplines required to create robotic art. Although the book is primarily targeted towards researchers, artists and students in robotics, computer science and the arts, its accessible style appeals to anyone intrigued by robots and the arts.

Organic Pollutants Ten Years After the Stockholm Convention Dec 03 2020 Ten years after coming into force of the Stockholm Convention on Persistent Organic Pollutants (POPs), a wide range of organic chemicals (industrial formulations, plant protection products, pharmaceuticals and personal care products, etc.) still poses the highest priority environmental hazard. The broadening of knowledge of organic pollutants (OPs) environmental fate and effects, as well as the decontamination techniques, is accompanied by an increase in significance of certain pollution sources (e.g. sewage sludge and dredged sediments application, textile industry), associated with a potential generation of new dangers for humans and natural ecosystems. The present book addresses these aspects, especially in the light of Organic Pollutants risk assessment as well as the practical application of novel analytical methods and techniques for removing OPs from the environment. Providing analytical and environmental update, this contribution can be particularly valuable for engineers and environmental scientists.

Frontiers in Robotics and Electromechanics Nov 14 2021 This book introduces intellectual control systems and electromechanics of heterogeneous robots. The book uncovers fundamental principles of robot control and recent developments in software and hardware of robots. The book presents solutions and discusses problems of single robotic devices as well as heterogeneous robotic teams while performing technological tasks that require informational, physical or energetic interaction with human users, environment and other robots. The book considers model–algorithmic and software–hardware control of ground, water and underwater robots, unmanned aerial vehicles, as well as their embedded and attached sub-systems, including manipulators, end-effectors, sensors, actuators, etc. The book will be useful for researchers of interdisciplinary issues related to robotics, electromechanics and artificial intelligence. The book is recommended for graduate students with a major/minor in the areas of robotics and mechatronics, management in technical systems, Internet of Things, artificial intelligence, electrical engineering, mechanical engineering and computer science.

Intrinsic motivations and open-ended development in animals, humans, and robots Jul 18 2019 The aim of this Research Topic for Frontiers in Psychology under the section of Cognitive Science and Frontiers in Neurorobotics is to present state-of-the-art research, whether theoretical, empirical, or computational investigations, on open-ended development driven by intrinsic motivations. The topic will address questions such as: How do motivations drive learning? How are complex skills built up from a foundation of simpler competencies? What are the neural and computational bases for intrinsically motivated learning? What is the contribution of intrinsic motivations to wider cognition? Autonomous development and lifelong open-ended learning are hallmarks of intelligence. Higher mammals, and especially humans, engage in activities that do not appear to directly serve the goals of survival, reproduction, or material advantage. Rather, a large part of their activity is intrinsically motivated - behavior driven by curiosity, play, interest in novel stimuli and surprising events, autonomous goal-setting, and the pleasure of acquiring new competencies. This allows the cumulative acquisition of knowledge and skills that can later be used to accomplish fitness-enhancing goals. Intrinsic motivations continue during adulthood, and in humans artistic creativity, scientific discovery, and subjective well-being owe much to them. The study of intrinsically motivated behavior has a long history in psychological and ethological research, which is now being reinvigorated by perspectives from neuroscience, artificial intelligence and computer science. For example, recent neuroscientific research is discovering how neuromodulators like dopamine and noradrenaline relate not only to extrinsic rewards but also to novel and surprising events, how brain areas such as the superior colliculus and the hippocampus are involved in the perception and processing of events, novel stimuli, and novel associations of stimuli, and how violations of predictions and expectations influence learning and motivation. Computational approaches are characterizing the space of possible reinforcement learning algorithms and their augmentation by intrinsic reinforcements of different kinds. Research in robotics and machine learning is yielding systems with increasing autonomy and capacity for self-improvement: artificial systems with motivations that are similar to those of real organisms and support prolonged autonomous learning. Computational research on intrinsic motivation is being complemented by, and closely interacting with, research that aims to build hierarchical architectures capable of acquiring, storing, and exploiting the knowledge and skills acquired through intrinsically motivated learning. Now is an important moment in the study of intrinsically motivated open-ended development, requiring

contributions and integration across a large number of fields within the cognitive sciences. This Research Topic aims to contribute to this effort by welcoming papers carried out with ethological, psychological, neuroscientific and computational approaches, as well as research that cuts across disciplines and approaches.

Robotics, Automation and Control Aug 23 2022 This book was conceived as a gathering place of new ideas from academia, industry, research and practice in the fields of robotics, automation and control. The aim of the book was to point out interactions among various fields of interests in spite of diversity and narrow specializations which prevail in the current research. The common denominator of all included chapters appears to be a synergy of various specializations. This synergy yields deeper understanding of the treated problems. Each new approach applied to a particular problem can enrich and inspire improvements of already established approaches to the problem.

Robots of Westinghouse, 1924-today Mar 26 2020 The Robots of Westinghouse 1924 - Today is a comprehensive history of all of the robots or mechanical men that Westinghouse built from 1924 through the 1950's. For the first time a true and accurate history has been compiled to show the genius behind the automation of the first true robots built in America. The book contains many rare photographs and information that has never been in print, along with anecdotes from the original engineers and designers. The best known and most famous of the Westinghouse Robots is "Elektro" built for the New York World's Fair of 1939 & 1940. "Elektro" was not the first nor the last robot that was made and this book will give insights into a lost piece of Americana. These robots were made in a time of wonderment where everything was possible and technology would solve the all the world's problems. A book that lends itself to all ages and interests. If your interests lean towards World's Fair history, robots, early technology, electronics and Americana this book will fill an important piece history that has been missing for years.

Social Robotics May 28 2020 This book constitutes the refereed proceedings of the 12th International Conference on Social Robotics, ICSR 2020, held in Golden, CO, USA, in November 2020. The conference was held virtually. The 57 full papers presented were carefully reviewed and selected from 101 submissions. The theme of the 2020 conference is Entertaining Robots. The papers focus on the following topics: human-robot trust and human-robot teaming, robot understanding and following of social and moral norms, physical and interaction design of social robots, verbal and nonverbal robot communication, interactive robot learning, robot motion and proxemics, and robots in domains such as education and healthcare.

From Termite Den to Office Building Sep 19 2019 Learn about how nature has inspired technological innovations with this book on the similarities between termite dens and a new office building design. Integrating both historical and scientific perspectives, this book explains how termite dens inspired a new office building design. Readers will make connections and examine the relationship between the two concepts. Sidebars, photographs, a glossary, and a concluding chapter on important people in the field add detail and depth to this informational text on biomimicry.

Metrics of Sensory Motor Coordination and Integration in Robots and Animals Apr 26 2020 This book focuses on a critical issue in the study of physical agents, whether natural or artificial: the quantitative modelling of sensory–motor coordination. Adopting a novel approach, it defines a common scientific framework for both the intelligent systems designed by engineers and those that have evolved naturally. As such it contributes to the widespread adoption of a rigorous quantitative and refutable approach in the scientific study of 'embodied' intelligence and cognition. More than 70 years after Norbert Wiener's famous book Cybernetics: or Control and Communication in the Animal and the Machine (1948), robotics, AI and life sciences seem to be converging towards a common model of what we can call the 'science of embodied intelligent/cognitive agents'. This book is interesting for an interdisciplinary community of researchers, technologists and entrepreneurs working at the frontiers of robotics and AI, neuroscience and general life and brain sciences.

Modelling Human Motion Jan 24 2020 The new frontiers of robotics research foresee future scenarios where artificial agents will leave the laboratory to progressively take part in the activities of our daily life. This will require robots to have very sophisticated perceptual and action skills in many intelligence-demanding applications, with particular reference to the ability to seamlessly interact with humans. It will be crucial for the next generation of robots to understand their human partners and at the same time to be intuitively understood by them. In this context, a deep understanding of human motion is essential for robotics applications, where the ability to detect, represent and recognize human dynamics and the capability for generating appropriate movements in response sets the scene for higher-level tasks. This book provides a comprehensive overview of this challenging research field, closing the loop between perception and action, and between human-studies and robotics. The book is organized in three main parts. The first part focuses on human motion perception, with contributions analyzing the neural substrates of human action understanding, how perception is influenced by motor control, and how it develops over time and is exploited in social contexts. The second part considers motion perception from the computational perspective, providing perspectives on cutting-edge solutions available from the Computer Vision and Machine Learning research fields, addressing higher-level perceptual tasks. Finally, the third part takes into account the implications for robotics, with chapters on how motor control is achieved in the latest generation of artificial agents and how such technologies have been exploited to favor human-robot interaction. This book considers the complete human-robot cycle, from an examination of how humans perceive motion and act in the world, to models for motion perception and control in artificial agents. In this respect, the book will provide insights into the perception and action loop in humans and machines, joining together aspects that are often addressed in independent investigations. As a consequence, this book positions itself in a field at the intersection of such different disciplines as Robotics, Neuroscience, Cognitive Science, Psychology, Computer Vision, and Machine Learning. By bridging these different research domains, the book offers a common reference point for researchers interested in human motion for different applications and from different standpoints, spanning Neuroscience, Human Motor Control, Robotics, Human-Robot Interaction, Computer Vision and Machine Learning. Chapter 'The Importance of the Affective Component of Movement in Action Understanding' of this book is available open access under a CC BY 4.0 license at link.springer.com.

Culturally Sustainable Social Robotics Jul 30 2020 The subject of social robotics has enormous projected economic significance. However, social robots not only present us with novel opportunities but also with novel risks that go far beyond safety issues. It is a potentially highly disruptive technology which could negatively affect the most valuable parts of the fabric of human

social interactions in irreparable ways. Since engineering educations do not yet offer the necessary competences to analyze, holistically assess, and constructively mitigate these risks, new alliances must be established between engineering and SSH disciplines, with special emphasis on the humanities (i.e. disciplines specializing in the analysis of socio-cultural interactions and human experience). The Robophilosophy Conference Series was established in 2014 with the purpose of creating a new forum and catalyzing the research discussion in this important area of applied humanities research, with focus on robophilosophy. Robophilosophy conferences have been the world's largest venues for humanities research in and on social robotics. The book at hand presents the proceedings of Robophilosophy Conference 2020: Culturally Sustainable Social Robotics, the fourth event in the international, biennial Robophilosophy Conference Series, which brought together close to 400 participants from 29 countries. The speakers of the conference, whose contributions are collected in this volume, were invited to offer concrete proposals for how the Humanities can help to shape a future where social robotics is guided by the goals of enhancing socio-cultural values rather than by utility alone. The book is divided into 3 parts; Abstracts of Plenaries, which contains 6 plenary sessions; Session Papers, with 44 papers under 8 thematic categories; and Workshops, containing 25 items on 5 selected topics. Providing concrete proposals from philosophers and other SSH researchers for new models and methods, this book will be of interest to all those involved in developing artificial 'social' agents in a culturally sustainable way that is also – a fortiori – ethically responsible.

Humanoid Robotics and Neuroscience Aug 11 2021 Humanoid robots are highly sophisticated machines equipped with human-like sensory and motor capabilities. Today we are on the verge of a new era of rapid transformations in both science and engineering—one that brings together technological advancements in a way that will accelerate both neuroscience and robotics. Humanoid Robotics and Neuroscience: Science, Engineering and Society presents the contributions of prominent scientists who explore key aspects of the further potential of these systems. Topics include: Neuroscientific research findings on dexterous robotic hand control Humanoid vision and how understanding the structure of the human eye can lead to improvements in artificial vision Humanoid locomotion, motor control, and the learning of motor skills Cognitive elements of humanoid robots, including the neuroscientific aspects of imitation and development The impact of robots on society and the potential for developing new systems and devices to benefit humans The use of humanoid robotics can help us develop a greater scientific understanding of humans, leading to the design of better engineered systems and machines for society. This book assembles the work of scientists on the cutting edge of robotic research who demonstrate the vast possibilities in this field of research.

Robotics in Extreme Environments Sep 24 2022 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.

New Frontiers in Human-robot Interaction Feb 17 2022 Human–Robot Interaction (HRI) considers how people can interact with robots in order to enable robots to best interact with people. HRI presents many challenges with solutions requiring a unique combination of skills from many fields, including computer science, artificial intelligence, social sciences, ethology and engineering. We have specifically aimed this work to appeal to such a multi-disciplinary audience. This volume presents new and exciting material from HRI researchers who discuss research at the frontiers of HRI. The chapters address the human aspects of interaction, such as how a robot may understand, provide feedback and act as a social being in interaction with a human, to experimental studies and field implementations of human–robot collaboration ranging from joint action, robots practically and safely helping people in real world situations, robots helping people via rehabilitation and robots acquiring concepts from communication. This volume reflects current trends in this exciting research field.

OECD Digital Education Outlook 2021 Pushing the Frontiers with Artificial Intelligence, Blockchain and Robots Oct 13 2021 How might digital technology and notably smart technologies based on artificial intelligence (AI), learning analytics, robotics, and others transform education? This book explores such question. It focuses on how smart technologies currently change education in the classroom and the management of educational organisations and systems.

Rapid Automation: Concepts, Methodologies, Tools, and Applications Feb 23 2020 Through expanded intelligence, the use of robotics has fundamentally transformed the business industry. Providing successful techniques in robotic design allows for increased autonomous mobility, which leads to a greater productivity and production level. Rapid Automation: Concepts, Methodologies, Tools, and Applications provides innovative insights into the state-of-the-art technologies in the design and development of robotics and their real-world applications in business processes. Highlighting a range of topics such as workflow automation tools, human-computer interaction, and swarm robotics, this multi-volume book is ideally designed for computer engineers, business managers, robotic developers, business and IT professionals, academicians, and researchers.

Advances in Modelling and Control of Soft Robots Jul 22 2022

Tales from a Robotic World Nov 21 2019 Stories from the future of intelligent machines—from rescue drones to robot spouses—and accounts of cutting-edge research that could make it all possible. Tech prognosticators promised us robots—autonomous humanoids that could carry out any number of tasks. Instead, we have robot vacuum cleaners. But, as Dario Floreano and Nicola Nosengo report, advances in robotics could bring those rosy predictions closer to reality. A new generation of robots, directly inspired by the intelligence and bodies of living organisms, will be able not only to process data but to interact physically with humans and the environment. In this book, Floreano, a roboticist, and Nosengo, a science writer, bring us tales from the future of intelligent machines—from rescue drones to robot spouses—along with accounts of the cutting-edge research that could make it all possible. These stories from the not-so-distant future show us robots that can be used for mitigating effects of climate change, providing healthcare, working with humans on the factory floor, and more. Floreano and Nosengo tell us how an application of swarm robotics could protect Venice from flooding, how drones could reduce traffic on the congested streets of mega-cities like Hong Kong, and how a "long-term relationship model" robot could supply sex, love, and companionship. After each fictional scenario, they explain the technologies that underlie it, describing advances in such areas as soft robotics, swarm robotics, aerial and mobile robotics, humanoid robots, wearable robots, and even biohybrid robots based on living cells. Robotics technology is no silver bullet for all the world's problems—but it can help us tackle some of the most pressing

challenges we face.

What Social Robots Can and Should Do Jun 28 2020 Social robotics drives a technological revolution of possibly unprecedented disruptive potential, both at the socio-economic and the socio-cultural level. The rapid development of the robotics market calls for a concerted effort across a wide spectrum of academic disciplines to understand the transformative potential of human-robot interaction. This effort cannot succeed without the special expertise in the study of socio-cultural interactions, norms, and values that humanities research provides. This book contains the proceedings of the conference "What Social Robots Can and Should Do," Robophilosophy 2016 / TRANSOR 2016, held in Aarhus, Denmark, in October 2016. The conference is the second event in the biennial Robophilosophy conference series, this time combined with an event of the Research Network for Transdisciplinary Studies in Social Robotics (TRANSOR). Featuring 13 plenaries and 74 session and workshop talks, the event turned out to be the world's largest conference in Humanities research in and on social robotics. The book is divided into 3 sections: Part I and Part III contain the abstracts of plenary lectures and contributions to 6 workshops: Artificial Empathy; Co-Designing Children Robot Interaction; Human-Robot Joint Action; Phronesis for Machine Ethics?; Robots in the Wild; and Responsible Robotics. Part II contains short papers for presentations in 7 thematically organized sessions: methodological issues; ethical tasks and implications; emotions in human robot interactions; education, art and innovation; artificial meaning and rationality; social norms and robot sociality; and perceptions of social robots. The book will be of interest to researchers in philosophy, anthropology, sociology, psychology, linguistics, cognitive science, robotics, computer science, and art. Since all contributions are prepared for an interdisciplinary readership, they are highly accessible and will be of interest to policy makers and educators who wish to gauge the challenges and potentials of putting robots in society.

Robotics, AI, and Humanity Aug 31 2020 This open access book examines recent advances in how artificial intelligence (AI) and robotics have elicited widespread debate over their benefits and drawbacks for humanity. The emergent technologies have for instance implications within medicine and health care, employment, transport, manufacturing, agriculture, and armed conflict. While there has been considerable attention devoted to robotics/AI applications in each of these domains, a fuller picture of their connections and the possible consequences for our shared humanity seems needed. This volume covers multidisciplinary research, examines current research frontiers in AI/robotics and likely impacts on societal well-being, human – robot relationships, as well as the opportunities and risks for sustainable development and peace. The attendant ethical and religious dimensions of these technologies are addressed and implications for regulatory policies on the use and future development of AI/robotics technologies are elaborated.