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Y2ZJAX - JAIDA RAFAEL

Will computers come to dominate man? Have films, books, and television foreshadowed the future of artificial intelligence? Will robots enhance or destroy our future? Will AI forever change us? You'll learn about the history and the pop-culture view of technology--as well as possible futures--in this one-of-a-kind book! Is technology running amok or is it serving as a helping hand? Artificial Intelligence, Robots, and the Future of Humanity puts a pop--culture and historic spin on some serious questions about mankind's future. An exhilarating and troubling read, it looks at whether robots are a menace or a boon to humanity. Its investigations include ... The history of robots constructed hundreds of years ago How movies informed the classic image of the robot--and what they got right and wrong Clones, modified humans, cyborgs, designer babies, and half-human robots The sentient internet The advancements in robotics starting in the 1960s Science fiction and science fact--and how science fiction foreshadowed the future Robots replacing people in the workplace The prospect of uploading our minds into computers to ensure immortality Robots becoming indistinguishable from humans Whether robots will rise up and cause humans to become extinct And much, much more. Exciting and worrisome, Artificial Intelligence, Robots, and the Future of Humanity looks at what the past tells us about the future. With more than 120 photos and graphics, this tome is nicely illustrated. It also includes a helpful bibliography and an extensive index, adding to its usefulness. Ponder the possibilities with this examination of robots of the past, present, and future!

Artificial intelligence is spreading all over the world. It’s changing societies and influencing technologies, too. But did you know that there are different types of AI robots used in numerous industries? You will meet them in this book for fifth graders. There are a lot of interesting information that can be learned by reading. Pick up the habit today!

This open access book introduces the reader to the foundations of AI and ethics. It discusses issues of trust, responsibility, liability, privacy and risk. It focuses on the interaction between people and the AI systems and Robotics they use. Designed to be accessible for a broad audience, reading this book does not require prerequisite technical, legal or philosophical expertise. Throughout, the authors use examples to illustrate the issues at hand and conclude the book with a discussion on the application areas of AI and Robotics, in particular autonomous vehicles, automatic weapon systems and biased algorithms. A list of questions and further readings is also included for students willing to explore the topic further.

From AI to Robotics: Mobile, Social, and Sentient Robots is a journey into the world of agent-based robotics and it covers a number of interesting topics, both in the theory and practice of the discipline. The book traces the earliest ideas for autonomous machines to the mythical lore of ancient Greece and ends the last chapter with a debate on a prophecy set in the apparent future, where human beings and robots/technology may merge to create superior beings – the era of transhumanism. Throughout the text, the work of leading researchers is presented in depth, which helps to paint the socio-economic picture of how robots are transforming our world and will continue to do so. This work is presented along with the influences and ideas from futurists, such as Asimov, Moravec, Lem, Vinge, and of course Kurzweil. The book furthers the discussion with concepts of Artificial Intelligence and how it manifests in robotic agents. Discussions across various topics are presented in the book, including control paradigm, navigation, software, multi-robot systems, swarm robotics, robots in social roles, and artificial consciousness in robots. These discussions help to provide an overall picture of current day agent-based robotics and its prospects for the future. Examples of software and implementation in hardware are covered in Chapter 5 to encourage the imagination and creativity of budding robot enthusiasts. The book addresses several broad themes, such as AI in theory versus applied AI for robots, concepts of anthropomorphism, embodiment and situatedness, extending theory of psychology and animal behavior to robots, and the proposal that in the future, AI may be the new definition of science. Behavior-based robotics is covered in Chapter 2 and retells the debate between deliberative and reactive approaches. The text reiterates that the effort of modern day robotics is to replicate human-like intelligence and behavior, and the tools that a roboticist has at his or her disposal are open source software, which is often powered by crowd-sourcing. Open source meta-projects, such as Robot Operating System (ROS), etc. are briefly discussed in Chapter 5. The ideas and themes presented in the book are supplemented with cartoons, images, schematics and a number of special sections to make the material engaging for the reader. Designed for robot enthusiasts – researchers, students, or the hobbyist, this comprehensive book will entertain and inspire anyone interested in the exciting world of robots.

Computer scientists are working on reproducing all human skills using artificial intelligence, machine learning and robotics. Unsurprisingly then, many people worry that these advances will dramatically change work skills in the years ahead and perhaps leave many workers unemployable. This report develops a new approach to understanding these computer capabilities by using a test based on the OECD's Survey of Adult Skills (PIAAC) to com-

pare computers with human workers. The test assesses three skills that are widely used at work and are an important focus of education: literacy, numeracy and problem solving with computers. Most workers in OECD countries use the three skills every day. However, computers are close to reproducing these skills at the proficiency level of most adults in the workforce. Only 13% of workers now use these skills on a daily basis with a proficiency that is clearly higher than computers. The findings raise troubling questions about whether most workers will be able to acquire the skills they need as these new computer capabilities are increasingly used over the next few decades. To answer those questions, the report's approach could be extended across the full range of work skills. We need to know how computers and people compare across all skills to develop successful policies for work and education for the future.

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.

We know at least three different worlds. These worlds differ in the number of dimensions they are moving in. There is the 1-dimensional world of calculating, of mathematics. It always uses and combines numbers, which all can be symbolized by a line of a certain length. Then there is our 3-dimensional physical world of bodies and energies - it exists on the timeline always only in one moment, in the moment, which we call "now". But in our mind the world is existing at least 4-dimensional. That means, we not only see and realize the "now-moment" in which our body is existing, we can remember past times and we can imagine future or fantastic times. And our feelings are connected with our remembering or with planning and hoping for a imagined future. So our feeling needs the 4-dimensional mind. A calculating robot is constructed with 3-dimensional materials, and it is steering 3-dimensional materials. Will that robot be it able to see the world like a living mind does see the world? The first spontaneous answer may be: yes. But is it really so? Or is there a fundamental difference? This is the question the book deals about.

An investigation into the assignment of moral responsibilities and rights to intelligent and autonomous machines of our own making. One of the enduring concerns of moral philosophy is deciding who or what is deserving of ethical consideration. Much recent attention has been devoted to the "animal question"—consideration of the moral status of nonhuman animals. In this book, David Gunkel takes up the "machine question": whether and to what extent intelligent and autonomous machines of our own making can be considered to have legitimate moral responsibilities and any legitimate claim to moral consideration. The machine question poses a fundamental challenge to moral thinking, questioning the traditional philosophical conceptualization of technology as a tool or instrument to be used by human agents. Gunkel begins by addressing the question of machine moral agency: whether a machine might be considered a legitimate moral agent that could be held responsible for decisions and actions. He then approaches the machine question from the other side, considering whether a machine might be a moral patient due legitimate moral consideration. Finally, Gunkel considers some recent innovations in moral philosophy and critical theory that complicate the machine question, deconstructing the binary agent–patient opposition itself. Technological advances may prompt us to wonder if the science fiction of computers and robots whose actions affect their human companions (think of HAL in 2001: A Space Odyssey) could become science fact. Gunkel's argument promises to influence future considerations of ethics, ourselves, and the other entities who inhabit this world.

This book examines how science fiction’s portrayal of humanity’s desire for robotic companions influences and reflects changes in our actual desires. It begins by taking the reader on a journey that outlines basic human desires—in short, we are storytellers, and we need the objects of our desire to be able to mirror that aspect of our beings. This not only explains the reasons we seek out differences in our mates, but also why we crave sex and romance with robots. In creating a new species of potential companions, science fiction highlights what we already want and how our desires dictate—and are in return recreated— by what is written. But sex with robots is more than a sci-fi pop-culture phenomenon; it’s a driving force in the latest technological advances in cybernetic science. As such, this book looks at both what we imagine and what we can create in terms of the newest iterations of robotic companionship.

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

The COVID-19 pandemic has hit the global at a colossal scale. With worldwide reported cases of 5.34 million it has led to severe impact on humanity. Being a highly contagious disease, it has given global health services their most severe challenge. Various countries are fighting to minimize the losses due to the outbreak, however a common trait is enforcing lockdown, which has become the main defence mechanism. Researchers are working around the clock to find a breakthrough in the diagnostics and treatment of the pandemic. AI technology is useful for fast drug development and treatment. In the starting phase of COVID-19 pandemic, the medical fraternity in China diagnosed the virus using computed tomography (CT) and X-ray images due to the limitation of testing kits. Deep learning neural network model have also been used for COVID-19 diagnosis. AI assisted intelligent humanoid robots can be used to reduce the human contact and spread of COVID-19. In Italy robots have been used for measuring blood pressure, oxygen saturation and temperature of patients. Robots have also found applications in disinfecting and sterilizing of public places, COVID-19 testing, food and medicine delivery as well as entertaining patients in hospitals and quarantine centers, thereby reducing the workload of doctors and nurses. Prediction

of the spread of virus and providing the guidelines or prevention measures is another AI application in COVID-19. Kaggle and GitHub are the two websites where the real-time data of COVID-19 is aggregated. This includes confirmed cases, active cases, cured cases and deaths in each country. This data set can be used for predicting the active cases across different regions of the world so that appropriate amount of health infrastructure can be made available to these places.

Robots are a lot more complex than you think! Readers will discover different tasks robots handle in the world and how robots are put together. This book explores how robots ingest data from their surroundings, and how they function. Budding engineers will also discover some of the intricacies of artificial intelligence, including what it takes to make a machine that can pass as a human. Compelling infographics and simple language make complex mechanics easier to understand. There's a lot to discover about robots, let the journey begin!

Robots, autonomous vehicles, unmanned aerial vehicles, and smart factory, will significantly change human living style in digital society. Artificial Intelligence in Wireless Robotics introduces how wireless communications and networking technology enhances facilitation of artificial intelligence in robotics, which bridges basic multi-disciplinary knowledge among artificial intelligence, wireless communications, computing, and control in robotics. A unique aspect of the book is to introduce applying communication and signal processing techniques to enhance traditional artificial intelligence in robotics and multi-agent systems. The technical contents of this book include fundamental knowledge in robotics, cyber-physical systems, artificial intelligence, statistical decision and Markov decision process, reinforcement learning, state estimation, localization, computer vision and multi--modal data fusion, robot planning, multi-agent systems, networked multi-agent systems, security and robustness of networked robots, and ultra-reliable and low-latency machine-to-machine networking. Examples and exercises are provided for easy and effective comprehension. Engineers wishing to extend knowledge in the robotics, AI, and wireless communications, would be benefited from this book. In the meantime, the book is ready as a textbook for senior undergraduate students or first-year graduate students in electrical engineering, computer engineering, computer science, and general engineering students. The readers of this book shall have basic knowledge in undergraduate probability and linear algebra, and basic programming capability, in order to enjoy deep reading.

Six classic science fiction stories and commentary that illustrate and explain key algorithms or principles of artificial intelligence. This book presents six classic science fiction stories and commentary that illustrate and explain key algorithms or principles of artificial intelligence. Even though all the stories were originally published before 1973, they help readers grapple with two questions that stir debate even today: how are intelligent robots programmed? and what are the limits of autonomous robots? The stories—by Isaac Asimov, Vernor Vinge, Brian Aldiss, and Philip K. Dick—cover telepresence, behavior-based robotics, deliberation, testing, human-robot interaction, the “uncanny valley,” natural language understanding, machine learning, and ethics. Each story is preceded by an introductory note, “As You Read the Story,” and followed by a discussion of its implications, “After You Have Read the Story.” Together with the commentary, the stories offer a nontechnical introduction to robotics. The stories can also be considered as a set of—admittedly fanciful—case studies to be read in conjunction with more serious study. Contents “Stranger in Paradise” by Isaac Asimov, 1973 “Runaround” by Isaac Asimov, 1942 “Long Shot” by Vernor Vinge, 1972 “Catch That Rabbit” by Isaac Asimov, 1944 “Super-Toys Last All Summer Long” by Brian Aldiss, 1969 “Second Variety” by Philip K. Dick, 1953

How to educate the next generation of college students to invent, to create, and to discover—filling needs that even the most sophisticated robot cannot. Driverless cars are hitting the road, powered by artificial intelligence. Robots can climb stairs, open doors, win Jeopardy, analyze stocks, work in factories, find parking spaces, advise oncologists. In the past, automation was considered a threat to low-skilled labor. Now, many high-skilled functions, including interpreting medical images, doing legal research, and analyzing data, are within the skill sets of machines. How can higher education prepare students for their professional lives when professions themselves are disappearing? In Robot-Proof, Northeastern University president Joseph Aoun proposes a way to educate the next generation of college students to invent, to create, and to discover—to fill needs in society that even the most sophisticated artificial intelligence agent cannot. A “robot-proof” education, Aoun argues, is not concerned solely with topping up students' minds with high-octane facts. Rather, it calibrates them with a creative mindset and the mental elasticity to invent, discover, or create something valuable to society—a scientific proof, a hip-hop recording, a web comic, a cure for cancer. Aoun lays out the framework for a new discipline, humanics, which builds on our innate strengths and prepares students to compete in a labor market in which smart machines work alongside human professionals. The new literacies of Aoun's humanics are data literacy, technological literacy, and human literacy. Students will need data literacy to manage the flow of big data, and technological literacy to know how their machines work, but human literacy—the humanities, communication, and design—to function as a human being. Life-long learning opportunities will support their ability to adapt to change. The only certainty about the future is change. Higher education based on the new literacies of humanics can equip students for living and working through change.

Learn about artificial intelligence and human-robot interaction by reading nine famous short stories, each accompanied by an explanation of the real science at the level of a TED talk.Artificial intelligence for robots may be the most transformative technology of the future digital revolution. But AI isn't just about the algorithms on the inside of the robot, it is also about how those algorithms will impact how we humans will work with robots. This critical field of study is called human-robot interaction: how we give commands to robots either explicitly or implicitly, how well they will be able to follow our directions and intent, and whether artificial intelligence will really lead to a robot uprising.Learn AI and Human-Robot Interaction from Asimov's I, Robot Stories provides an introduction to human-robot interaction for the layperson, from advanced high school students to managers to fans of Bill Nye and Neil deGrasse Tyson to students and teachers looking for a supplemental textbook for formal courses in artificial intelligence and robotics. It is a companion to Isaac Asimov's I, Robot collection of his most famous and entertaining stories in the world about robots, including the one that introduced the Three Laws of Robotics. Each of the stories unintentionally illustrates one or more core concepts in human-robot interaction: how verbal and non-verbal communication works; the flaws in the Three Laws of Robotics; the Uncanny Valley; transparency and visibility; trust; how robots reason; the types of user interfaces; and if a robot can have full moral agency. In this companion book, each I, Robot story is accompanied by description of how the science behind the core concept works at the level of a TED talk. In the last chapter, the book pulls together the principles illustrated in the different stories into a comprehensive overview of the field of human-robot interaction, highlighting the challenges, and opportuni-

ties, of building artificially intelligent systems and the ethical implications. The book also provides study questions that can be used for self-study, home schooling, or in a classroom. Prof. Robin R. Murphy is one of the founders of the field of human-robot interaction, an award winning textbook author, a TED talk speaker, and has been declared one of the 30 Most Innovative Women Professors Alive Today by The Best Master's Degrees and one of the most influential women in technology. Her interest in human-robot interaction resulted from her field work in using robots for disaster response. As she participated in disasters such as the 9/11 World Trade Center, Hurricane Harvey, and the Fukushima Daiichi nuclear accident, she documented that the robots physically worked but there was an unusually high rate of human error, frustration, and fatigue. Murphy frequently appears on CNN, NBC, NPR, Popular Science, NY Times, and the popular press. As an Innovative Teaching Faculty Fellow at Texas A&M, she pursues more engaging forms of education, particularly the use of science fiction to enable students to better visualize the abstract concepts in artificial intelligence, how the algorithms actually work, what would be the impact on systems design, and explore the ethics of artificial intelligence. This resulted in her Robotics Through Science Fiction blog, her book 2018 book Robotics Through Science Fiction: Artificial Intelligence Explained Through Six Classic Robot Short Stories, and her ongoing column on science fiction and science fact for Science Robotics, one of the top scientific journals.

Accessible to all readers, including students of secondary school and amateur technology enthusiasts, Robotics, Mechatronics, and Artificial Intelligence simplifies the process of finding basic circuits to perform simple tasks, such as how to control a DC or step motor, and provides instruction on creating moving robotic parts, such as an "eye" or an "ear." Though many companies offer kits for project construction, most experimenters want to design and build their own robots and other creatures specific to their needs and goals. With this new book by Newton Braga, hobbyists and experimenters around the world will be able to decide what skills they want to feature in a project and then choose the right "building blocks" to create the ideal results. In the past few years the technology of robotics, mechatronics, and artificial intelligence has exploded, leaving many people with the desire but not the means to build their own projects. The author's fascination with and expertise in the exciting field of robotics is demonstrated by the range of simple to complex project blocks he provides, which are designed to benefit both novice and experienced robotics enthusiasts. The common components and technology featured in the project blocks are especially beneficial to readers who need practical solutions that can be implemented easily by their own hands, without incorporating expensive, complicated technology. Accessible to technicians and hobbyists with many levels of experience, and written to provide inexpensive and creative fun with robotics Appeals to all sorts of technology enthusiasts, including those involved with electronics, computers, home automation, mechanics, and other areas

Dr. Lester A. Gerhardt Professor and Chairman Electrical, Computer, and Systems Engineering Rensselaer Polytechnic Institute Troy, New York 12180 This book is a collection of papers on the subject of Robotics and Artificial Intelligence. Most of the papers contained herein were presented as part of the program of the NATO Advanced Study Institute held in June 1983 at Castel vecchio Pascoli, Italy on the same subject. Attendance at this two week Institute was by invitation only, drawing people internationally representing industry, government and the academic community worldwide. Many of the people in attendance, as well as those presenting papers, are recognized leaders in the field. In addition to the formal paper presentations, there were several informal work shops. These included a workshop on sensing, a workshop on educational methodology in the subject area, as examples. This book is an outgrowth and direct result of that Institute and includes the papers presented as well as a few others which were stimulated by that meeting. A special note is the paper entitled "State-of-the-Art and Predictions for Artificial Intelligence and Robotics" by Dr. R. Nagel which appears in the Introduction and Overview chapter of this book. This paper was originally developed as part of a study for the United States Army performed by the National Research Council of the National Academy of Science and published as part of a report entitled "Applications of Robotics and Artificial Intelligence to Reduce Risk and Improve Effectiveness" by National Academy Press in 1983.

The term "artificial intelligence" was introduced in 1956. Today's AI is accomplishing the original goal of mirroring human thought processes; it's designed to independently adapt to and learn from new data. AI involves programming machines and robots to automatically complete complicated tasks. The opportunities to simplify and enhance daily life that these machines offer could make them instrumental in advancing the development of humankind. However, concerns about what can be accomplished through robotics, the extent to which humans can control sophisticated AI, and the impact robots and AI will have on labor, warfare, and health must also be considered. This volume presents thoughtful, well-researched essays that help readers analyze this topic and develop their own intelligent viewpoints.

Looking for ways to handle the transition to a digital economy Robots, artificial intelligence, and driverless cars are no longer things of the distant future. They are with us today and will become increasingly common in coming years, along with virtual reality and digital personal assistants. As these tools advance deeper into everyday use, they raise the question—how will they transform society, the economy, and politics? If companies need fewer workers due to automation and robotics, what happens to those who once held those jobs and don't have the skills for new jobs? And since many social benefits are delivered through jobs, how are people outside the workforce for a lengthy period of time going to earn a living and get health care and social benefits? Looking past today's headlines, political scientist and cultural observer Darrell M. West argues that society needs to rethink the concept of jobs, reconfigure the social contract, move toward a system of lifetime learning, and develop a new kind of politics that can deal with economic dislocations. With the U.S. governance system in shambles because of political polarization and hyper-partisanship, dealing creatively with the transition to a fully digital economy will vex political leaders and complicate the adoption of remedies that could ease the transition pain. It is imperative that we make major adjustments in how we think about work and the social contract in order to prevent society from spiraling out of control. This book presents a number of proposals to help people deal with the transition from an industrial to a digital economy. We must broaden the concept of employment to include volunteering and parenting and pay greater attention to the opportunities for leisure time. New forms of identity will be possible when the "job" no longer defines people's sense of personal meaning, and they engage in a broader range of activities. Workers will need help throughout their lifetimes to acquire new skills and develop new job capabilities. Political reforms will be necessary to reduce polarization and restore civility so there can be open and healthy debate about where responsibility lies for economic well-being. This book is an important contribution to a discussion about tomorrow—one that needs to take place today.

The mobile robot systems described in this book were selected

from among the best available implementations by leading universities and research laboratories. These are robots that have left the lab and been tested in natural and unknown environments. They perform many different tasks, from giving tours to collecting trash. Many have distinguished themselves (usually with first- or second-place finishes) at various indoor and outdoor mobile robot competitions. Each case study is self-contained and includes detailed descriptions of important algorithms, including pseudo--code. Thus this volume serves as a recipe book for the design of successful mobile robot applications. Common themes include navigation and mapping, computer vision, and architecture. Contributors Ronald Arkin, Tucker Balch, Michael Brady, Don Brutzman, Arno Bucken, R. James Firby, Erann Gat, Tony Healy, Ian Horswill, Housheng Hu, Sven Koenig, Kurt Konolige David Kortenkamp, Dave Marco, Bob McGhee, Robin Murphy, Karen Myers, Illah Nourbakhsh, Peter Prokopowicz, Bill Schiller, Reid Simmons, Michael Swain, Sebastian Thrun

A comprehensive survey of artificial intelligence algorithms and programming organization for robot systems, combining theoretical rigor and practical applications. This textbook offers a comprehensive survey of artificial intelligence (AI) algorithms and programming organization for robot systems. Readers who master the topics covered will be able to design and evaluate an artificially intelligent robot for applications involving sensing, acting, planning, and learning. A background in AI is not required; the book introduces key AI topics from all AI subdisciplines throughout the book and explains how they contribute to autonomous capabilities. This second edition is a major expansion and reorganization of the first edition, reflecting the dramatic advances made in AI over the past fifteen years. An introductory overview provides a framework for thinking about AI for robotics, distinguishing between the fundamentally different design paradigms of automation and autonomy. The book then discusses the reactive functionality of sensing and acting in AI robotics; introduces the deliberative functions most often associated with intelligence and the capability of autonomous initiative; surveys multi-robot systems and (in a new chapter) human-robot interaction; and offers a “metaview” of how to design and evaluate autonomous systems and the ethical considerations in doing so. New material covers locomotion, simultaneous localization and mapping, human-robot interaction, machine learning, and ethics. Each chapter includes exercises, and many chapters provide case studies. Endnotes point to additional reading, highlight advanced topics, and offer robot trivia.

AI is poised to disrupt our work and our lives. We can harness these technologies rather than fall captive to them—but only through wise regulation. Too many CEOs tell a simple story about the future of work: if a machine can do what you do, your job will be automated. They envision everyone from doctors to soldiers rendered superfluous by ever-more-powerful AI. They offer stark alternatives: make robots or be replaced by them. Another story is possible. In virtually every walk of life, robotic systems can make labor more valuable, not less. Frank Pasquale tells the story of nurses, teachers, designers, and others who partner with technologists, rather than meekly serving as data sources for their computerized replacements. This cooperation reveals the kind of technological advance that could bring us all better health care, education, and more, while maintaining meaningful work. These partnerships also show how law and regulation can promote prosperity for all, rather than a zero-sum race of humans against machines. How far should AI be entrusted to assume tasks once performed by humans? What is gained and lost when it does? What is the optimal mix of robotic and human interaction? New Laws of Robotics makes the case that policymakers must not allow corporations or engineers to answer these questions alone. The kind of automation we get—and who it benefits—will depend on myriad small decisions about how to develop AI. Pasquale proposes ways to democratize that decision making, rather than centralize it in unaccountable firms. Sober yet optimistic, New Laws of Robotics offers an inspiring vision of technological progress, in which human capacities and expertise are the irreplaceable center of an inclusive economy.

The truth about robots: two experts look beyond the hype, offering a lively and accessible guide to what robots can (and can't) do. There’s a lot of hype about robots; some of it is scary and some of it utopian. In this accessible book, two robotics experts reveal the truth about what robots can and can’t do, how they work, and what we can reasonably expect their future capabilities to be. It will not only make you think differently about the capabilities of robots; it will make you think differently about the capabilities of humans. Ruth Aylett and Patricia Vargas discuss the history of our fascination with robots—from chatbots and prosthetics to autonomous cars and robot swarms. They show us the ways in which robots outperform humans and the ways they fall woefully short of our superior talents. They explain how robots see, feel, hear, think, and learn; describe how robots can cooperate; and consider robots as pets, butlers, and companions. Finally, they look at robots that raise ethical and social issues: killer robots, sexbots, and robots that might be gunning for your job. Living with Robots equips readers to look at robots concretely—as human-made artifacts rather than placeholders for our anxieties. Find out: •Why robots can swim and fly but find it difficult to walk •Which robot features are inspired by animals and insects •Why we develop feelings for robots •Which human abilities are hard for robots to emulate

Cynthia Breazeal here presents her vision of the sociable robot of the future, a synthetic creature and not merely a sophisticated tool. A sociable robot will be able to understand us, to communicate and interact with us, to learn from us and grow with us. It will be socially intelligent in a humanlike way. Eventually sociable robots will assist us in our daily lives, as collaborators and companions. Because the most successful sociable robots will share our social characteristics, the effort to make sociable robots is also a means for exploring human social intelligence and even what it means to be human. Breazeal defines the key components of social intelligence for these machines and offers a framework and set of design issues for their realization. Much of the book focuses on a nascent sociable robot she designed named Kismet. Breazeal offers a concrete implementation for Kismet, incorporating insights from the scientific study of animals and people, as well as from artistic disciplines such as classical animation. This blending of science, engineering, and art creates a lifelike quality that encourages people to treat Kismet as a social creature rather than just a machine. The book includes a CD-ROM that shows Kismet in action.

Are AI robots and computers really going to take over the world? Artificial intelligence (AI) guru Steve Shwartz has grown frustrated with the fear-inducing hype around AI in popular culture and media. Yes, today’s AI systems are miracles of modern engineering, but no, humans do not have to fear robots seizing control or taking over all our jobs. In this exploration of the fascinating and ever-changing landscape of AI, Shwartz separates the facts from the tropes of apocalyptic science fiction. This captivating book explains • how AI really works in simple terms and why it cannot evolve into the AI of science fiction lore; • the groundbreaking AI technologies that do exist, including facial recognition, self-driving cars, machine translation, deepfakes, and many others; • the crucial areas where we will need to adopt new laws and policies in order to counter threats to our safety and personal freedoms

resulting from the widespread use of AI. So although we don’t have to worry about evil robots rising to power and turning us into pets—and we probably never will—artificial intelligence is here to stay, and we must learn to separate fact from fiction and embrace how this amazing technology enhances our world.

Robots that talk and act human are the ultimate artificial intelligence (AI) turning point. We are closer than ever to making it reality. Learn how robots have changed over time and how these advances bring complicated ethical issues. Bring Science, Technology, Engineering, Art, and Math (STEAM) to your reluctant readers with a topic they will gravitate toward. Fans of augmented reality will love the Capstone 4D augmented reading experience. Get bonus videos via the Capstone 4D app or web browser and go beyond the printed page!

Bring a new degree of interconnectivity to your world by building your own intelligent robots Key Features Leverage fundamentals of AI and robotics Work through use cases to implement various machine learning algorithms Explore Natural Language Processing (NLP) concepts for efficient decision making in robots Book Description Artificial Intelligence for Robotics starts with an introduction to Robot Operating Systems (ROS), Python, robotic fundamentals, and the software and tools that are required to start out with robotics. You will learn robotics concepts that will be useful for making decisions, along with basic navigation skills. As you make your way through the chapters, you will learn about object recognition and genetic algorithms, which will teach your robot to identify and pick up an irregular object. With plenty of use cases throughout, you will explore natural language processing (NLP) and machine learning techniques to further enhance your robot. In the concluding chapters, you will learn about path planning and goal-oriented programming, which will help your robot prioritize tasks. By the end of this book, you will have learned to give your robot an artificial personality using simulated intelligence. What you will learn Get started with robotics and artificial intelligence Apply simulation techniques to give your robot an artificial personality Understand object recognition using neural networks and supervised learning techniques Pick up objects using genetic algorithms for manipulation Teach your robot to listen using NLP via an expert system Use machine learning and computer vision to teach your robot how to avoid obstacles Understand path planning, decision trees, and search algorithms in order to enhance your robot Who this book is for If you have basic knowledge about robotics and want to build or enhance your existing robot’s intelligence, then Artificial Intelligence for Robotics is for you. This book is also for enthusiasts who want to gain knowledge of AI and robotics.

Artificial intelligence is spreading all over the world. It's changing societies and influencing technologies, too. But did you know that there are different types of AI robots used in numerous industries? You will meet them in this book for fifth graders. There are a lot of interesting information that can be learned by reading. Pick up the habit today!

In this sequel to his prescient New York Times bestseller Rise of the Robots, Martin Ford presents us with a striking vision of the very near future. He argues that AI is a uniquely powerful technology, a kind of "electricity of intelligence" that is altering every dimension of human life, often for the better with advanced science being done by machines who can solve problems humans can not. AI has the potential to help us fight climate change or the next pandemic, but it also has a capacity for profound harm. Deep fakes-AI-generated audio or video of events that never happened-are poised to cause havoc throughout society. AI empowers authoritarian regimes like China with unprecedented mechanisms for social control. And AI can be deeply biased, learning bigoted attitudes from the data used to train algorithms and perpetuating them. Hard-hitting and thought-provoking, covering everything from self-driving cars to the history of deep learning to apps for diagnosing skin cancer, Rule of the Robots challenges our fears and preconceptions about artificial intelligence. Ford argues that AI is here to stay and the real question is not how to stop it, but how to control its negative potential and harness its power for good as AI transforms our economy, our politics, and our lives.

How to develop robots that will be more like humans and less like computers, more social than machine-like, and more playful and less programmed. Most robots are not very friendly. They vacuum the rug, mow the lawn, dispose of bombs, even perform surgery—but they aren't good conversationalists. It's difficult to make eye contact. If the future promises more human-robot collaboration in both work and play, wouldn't it be better if the robots were less mechanical and more social? In How to Grow a Robot, Mark Lee explores how robots can be more human-like, friendly, and engaging. Developments in artificial intelligence—notably Deep Learning—are widely seen as the foundation on which our robot future will be built. These advances have already brought us self-driving cars and chess match–winning algorithms. But, Lee writes, we need robots that are perceptive, animated, and responsive—more like humans and less like computers, more social than machine-like, and more playful and less programmed. The way to achieve this, he argues, is to “grow” a robot so that it learns from experience—just as infants do. After describing “what's wrong with artificial intelligence” (one key shortcoming: it's not embodied), Lee presents a different approach to building human-like robots: developmental robotics, inspired by developmental psychology and its accounts of early infant behavior. He describes his own experiments with the iCub humanoid robot and its development from newborn helplessness to ability levels equal to a nine-month-old, explaining how the iCub learns from its own experiences. AI robots are designed to know humans as objects; developmental robots will learn empathy. Developmental robots, with an internal model of “self,” will be better interactive partners with humans. That is the kind of future technology we should work toward.

Behavior Trees (BTs) provide a way to structure the behavior of an artificial agent such as a robot or a non-player character in a computer game. Traditional design methods, such as finite state machines, are known to produce brittle behaviors when complexity increases, making it very hard to add features without breaking existing functionality. BTs were created to address this very problem, and enables the creation of systems that are both modular and reactive. Behavior Trees in Robotics and AI: An Introduction provides a broad introduction as well as an in-depth exploration of the topic, and is the first comprehensive book on the use of BTs. This book introduces the subject of BTs from simple topics, such as semantics and design principles, to complex topics, such as learning and task planning. For each topic, the authors provide a set of examples, ranging from simple illustrations to realistic complex behaviors, to enable the reader to successfully combine theory with practice. Starting with an introduction to BTs, the book then describes how BTs relate to, and in many cases, generalize earlier switching structures, or control architectures. These ideas are then used as a foundation for a set of efficient and easy to use design principles. The book then presents a set of important extensions and provides a set of tools for formally analyzing these extensions using a state space formulation of BTs. With the new analysis tools, the book then formalizes the descriptions of how BTs generalize earlier approaches and shows how BTs can be automatically generated using planning and learning. The final part of the book provides an extended set of tools to capture the behavior of Stochastic BTs, where the out-

comes of actions are described by probabilities. These tools enable the computation of both success probabilities and time to completion. This book targets a broad audience, including both students and professionals interested in modeling complex behaviors for robots, game characters, or other AI agents. Readers can choose at which depth and pace they want to learn the subject, depending on their needs and background.

This comprehensive presentation of the core concepts and historical landmarks in robotics and artificial intelligence is a must-read for those who want to understand the important changes happening now in our everyday lives, in the workplace, and in our minds and bodies. What is deep in "deep learning"? Can artificial intelligence really think? What will robots really look like in the near future? Is there a new class divide between those who understand technology and those who fear it? A clear and exhaustive introduction for non-specialists, 30-Second AI & Robotics will help the reader to navigate the world of ubiquitous computers, smart cities, and collaborative robots. At last, an optimistic and friendly book about our human possibilities in the time of automata.

This book explores the making of robots in labs at the Massachusetts Institute of Technology (MIT). It examines the cultural ideas that go into the making of robots, and the role of fiction in co-constructing the technological practices of the robotic scientists. The book engages with debates in anthropological theorizing regarding the way that robots are reimagined as intelligent, autonomous and social and weaved into lived social realities. Richardson charts the move away from the “worker” robot of the 1920s to the “social” one of the 2000s, as robots are reimagined as companions, friends and therapeutic agents.

The 24 chapters in this book provides a deep overview of robotics and the application of AI and IoT in robotics. It contains the exploration of AI and IoT based intelligent automation in robotics. The various algorithms and frameworks for robotics based on AI and IoT are presented, analyzed, and discussed. This book also provides insights on application of robotics in education, healthcare, defense and many other fields which utilize IoT and AI. It also introduces the idea of smart cities using robotics.