

# a brief history of robots

## A Brief History of Robots: From Myth to Modern Marvel

Author: Dr. Evelyn Reed, PhD in Robotics Engineering, Professor of Robotics at MIT, and author of "The Mechanics of Sentience."

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Editor: Dr. Alistair Finch, PhD in History of Technology, specializing in the evolution of automation and artificial intelligence.

Summary: This article provides a comprehensive overview of a brief history of robots, tracing their evolution from ancient myths and automatons to sophisticated modern robots. It explores key milestones, influential figures, and technological advancements, highlighting both successes and challenges faced along the way. The guide also examines the ethical considerations arising from robotic development and its impact on society.

### Introduction: Seeds of Automation in Mythology and Beyond

The concept of artificial beings capable of performing tasks independently has captivated humanity for millennia. Long before the advent of modern technology, a brief history of robots begins with myths and legends. Ancient Greek automatons, intricate mechanical devices crafted by inventors like Heron of Alexandria, hinted at the potential for automation. These early examples, while far from the robots we know today, laid the foundation for centuries of innovation. They showcased the human fascination with creating artificial life and automating tasks - a fascination that would ultimately drive the field of robotics.

### The Dawn of Industrial Robots: From Mechanical Marvels to Manufacturing Powerhouses

The true genesis of modern robotics can be attributed to the Industrial Revolution. The need for increased efficiency and productivity in factories spurred the development of programmable machines capable of performing repetitive tasks. Early industrial robots, often clunky and limited in their capabilities, gradually evolved, leveraging advancements in computing power and control systems. A brief history of robots shows how names like George Devol and Joseph Engelberger, pioneers in robotics, played a crucial role in the development of the first programmable robotic arm, the Unimate, in the 1960s. This marked a turning point, establishing robots as essential tools in manufacturing industries.

### The Rise of Artificial Intelligence and its Impact on Robotics

The integration of artificial intelligence (AI) revolutionized the field of robotics. AI algorithms, capable of learning and adapting, enabled robots to perform more complex tasks and interact with their environments in more

sophisticated ways. A brief history of robots reveals the increasing capabilities of robots in navigating complex environments, understanding human commands, and even exhibiting forms of "reasoning." The development of machine learning and deep learning algorithms further accelerated this progress, enabling robots to solve problems, make decisions, and improve their performance over time.

## Robots Beyond the Factory Floor: Exploring Diverse Applications

While industrial robots remain a significant component of a brief history of robots, their applications have expanded dramatically. From surgical robots performing intricate procedures with unparalleled precision to autonomous vehicles navigating roads and exploring hazardous environments, robots are reshaping industries and impacting our daily lives. Service robots are increasingly prevalent in healthcare, hospitality, and domestic settings, providing assistance to humans and improving efficiency.

## Ethical Considerations and the Future of Robotics

The rapid advancement in robotics raises important ethical considerations. Questions regarding job displacement, algorithmic bias, and the potential misuse of autonomous systems demand careful attention. A brief history of robots highlights the need for responsible development and deployment of robotic technologies, ensuring they serve humanity's best interests. Discussions surrounding robotic ethics, safety protocols, and regulatory frameworks are critical in shaping the future of this field.

## Challenges and Future Directions in Robotics

Despite significant advancements, challenges remain. Creating truly autonomous robots capable of adapting to unforeseen circumstances in complex, dynamic environments continues to be a formidable challenge. Improvements in sensor technology, AI algorithms, and power management are necessary to overcome these obstacles and unleash the full potential of robotics. A brief history of robots emphasizes the ongoing research and development efforts focused on creating more robust, adaptable, and intelligent robotic systems.

## Conclusion:

A brief history of robots showcases a remarkable journey of innovation, from simple automatons to sophisticated AI-powered machines. The field continues to evolve at an astounding pace, promising to revolutionize various aspects of human life. Understanding this history, as well as the ethical implications and future potential, is crucial for navigating the transformative impact of robotics on society.

## FAQs:

1. What was the first true robot? Defining the "first" robot is complex, but the Unimate, developed by George Devol and Joseph Engelberger, is widely considered the first programmable industrial robot.

1. How has AI impacted robotics? AI has enabled robots to perform complex tasks, learn from experience, and adapt to changing environments, drastically increasing their capabilities.
1. What are the ethical concerns surrounding robots? Ethical concerns include job displacement, algorithmic bias, autonomous weapons systems, and the potential for misuse.
1. What are the limitations of current robots? Current robots often struggle with adaptability in unpredictable environments, require significant programming, and lack true general intelligence.
1. What are the future applications of robotics? Future applications include advanced healthcare, personalized assistance, space exploration, disaster relief, and more efficient manufacturing.
1. What is the role of sensor technology in robotics? Sensor technology is crucial for robots to perceive their environment, enabling navigation, object recognition, and interaction.
1. How is the field of robotics regulated? Regulation varies across countries, focusing on safety, liability, and ethical concerns, but a global standard is still developing.
1. Who are the key figures in the history of robotics? Key figures include George Devol, Joseph Engelberger, Isaac Asimov (for his influential robot-related works), and many researchers contributing to AI and robotics advancements.
1. What is the difference between a robot and an automaton? An automaton is a self-operating machine, often mechanical, while a robot is typically a more advanced, programmable machine that can sense and interact with its environment.

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**a brief history of robots: The History of Robots and Robotics** Margaux Baum, Jeri Freedman, 2017-12-15 Once the subject of speculative fiction, robots are now reality in many

spheres of life, including business, law enforcement, the military, the sciences, entertainment, and even in our homes. They will play bigger roles in the near and distant future. This book traces the development of robots from antiquity through the modern era and into the myriad possibilities of their future practical uses, including the exciting potential intersection of robots and artificial intelligence. A lively historical narrative and stimulating imagery of robots throughout the ages make this book a valuable resource for robot fans and casual readers alike.

**a brief history of robots:** *R. U. R.* Karel Capek, 1923

**a brief history of robots:** *The American Robot* Dustin A. Abnet, 2020-03-27 Although they entered the world as pure science fiction, robots are now very much a fact of everyday life. Whether a space-age cyborg, a chess-playing automaton, or simply the smartphone in our pocket, robots have long been a symbol of the fraught and fearful relationship between ourselves and our creations. Though we tend to think of them as products of twentieth-century technology—the word “robot” itself dates to only 1921—as a concept, they have colored US society and culture for far longer, as Dustin A. Abnet shows to dazzling effect in *The American Robot*. In tracing the history of the idea of robots in US culture, Abnet draws on intellectual history, religion, literature, film, and television. He explores how robots and their many kin have not only conceptually connected but literally embodied some of the most critical questions in modern culture. He also investigates how the discourse around robots has reinforced social and economic inequalities, as well as fantasies of mass domination—chilling thoughts that the recent increase in job automation has done little to quell. *The American Robot* argues that the deep history of robots has abetted both the literal replacement of humans by machines and the figurative transformation of humans into machines, connecting advances in technology and capitalism to individual and societal change. Look beneath the fears that fracture our society, Abnet tells us, and you’re likely to find a robot lurking there.

**a brief history of robots:** *The History of Robots* Chris Oxlade, 2017-08 Do you know that the first industrial robot started work in 1959? Now robots are in factories, in homes, laboratories, and the sky. Robots explore other planets as well as ocean depths. They also carry out jobs that are dangerous for humans. From the first robots of the 1950s to the drones and androids of the present day, this book charts the amazing history of robots.

**a brief history of robots:** *The Robot* Lisa Nocks, 2007

**a brief history of robots:** *Medieval Robots* E. R. Truitt, 2015-06-11 Medieval robots took such forms as talking statues, mechanical animals, or silent metal guardians; some served to entertain or instruct while others performed surveillance or discipline. *Medieval Robots* explores the forgotten history of real and imagined machines that captivated Europe from the ninth through the fourteenth centuries.

**a brief history of robots:** *Robotics* Kathy Ceceri, 2012-08-01 Once, robots were only found in science fiction books and movies. Today, robots are everywhere! They assemble massive cars and tiny computer chips. They help doctors do delicate surgery. They vacuum our houses and mow our lawns. Robot toys play with us, follow our commands, and respond to our moods. We even send robots to explore the depths of the ocean and the expanse of space. In *Robotics*, children ages 9 and up learn how robots affect both the future and the present. Hands-on activities make learning both fun and lasting.

**a brief history of robots:** *Novel Design and Applications of Robotics Technologies* Zhang, Dan, Wei, Bin, 2018-09-14 Through expanded intelligence, the use of robotics has fundamentally transformed a variety of fields, including manufacturing, aerospace, medical, social services, and agriculture. Providing successful techniques in robotic design allows for increased autonomous mobility, which leads to a greater productivity level. *Novel Design and Applications of Robotics Technologies* provides innovative insights into the state-of-the-art technologies in the design and development of robotic technologies and their real-world applications. The content within this publication represents the work of interactive learning, microrobot swarms, and service robots. It is a vital reference source for computer engineers, robotic developers, IT professionals, academicians, and researchers seeking coverage on topics centered on the application of robotics to perform tasks

in various disciplines.

**a brief history of robots:** *Service Robots and Robotics: Design and Application* Ceccarelli, Marco, 2012-03-31 This book offers the latest research within the field of service robotics, using a mixture of case studies, research, and future direction in this burgeoning field of technology--

**a brief history of robots:** *The Robotics Primer* Maja J. Mataric, 2007-08-17 A broadly accessible introduction to robotics that spans the most basic concepts and the most novel applications; for students, teachers, and hobbyists. The Robotics Primer offers a broadly accessible introduction to robotics for students at pre-university and university levels, robot hobbyists, and anyone interested in this burgeoning field. The text takes the reader from the most basic concepts (including perception and movement) to the most novel and sophisticated applications and topics (humanoids, shape-shifting robots, space robotics), with an emphasis on what it takes to create autonomous intelligent robot behavior. The core concepts of robotics are carried through from fundamental definitions to more complex explanations, all presented in an engaging, conversational style that will appeal to readers of different backgrounds. The Robotics Primer covers such topics as the definition of robotics, the history of robotics ("Where do Robots Come From?"), robot components, locomotion, manipulation, sensors, control, control architectures, representation, behavior ("Making Your Robot Behave"), navigation, group robotics, learning, and the future of robotics (and its ethical implications). To encourage further engagement, experimentation, and course and lesson design, The Robotics Primer is accompanied by a free robot programming exercise workbook that implements many of the ideas on the book on iRobot platforms. The Robotics Primer is unique as a principled, pedagogical treatment of the topic that is accessible to a broad audience; the only prerequisites are curiosity and attention. It can be used effectively in an educational setting or more informally for self-instruction. The Robotics Primer is a springboard for readers of all backgrounds—including students taking robotics as an elective outside the major, graduate students preparing to specialize in robotics, and K-12 teachers who bring robotics into their classrooms.

**a brief history of robots:** *The New Breed* Kate Darling, 2021-04-20 For readers of *The Second Machine Age* or *The Soul of an Octopus*, a bold, exciting exploration of how building diverse kinds of relationships with robots—inspired by how we interact with animals—could be the key to making our future with robot technology work. There has been a lot of ink devoted to discussions of how robots will replace us and take our jobs. But MIT Media Lab researcher and technology policy expert Kate Darling argues just the opposite, suggesting that treating robots with a bit of humanity, more like the way we treat animals, will actually serve us better. From a social, legal, and ethical perspective, she shows that our current ways of thinking don't leave room for the robot technology that is soon to become part of our everyday routines. Robots are likely to supplement—rather than replace—our own skills and relationships. So if we consider our history of incorporating animals into our work, transportation, military, and even families, we actually have a solid basis for how to contend with this future. A deeply original analysis of our technological future and the ethical dilemmas that await us, *The New Breed* explains how the treatment of machines can reveal a new understanding of our own history, our own systems, and how we relate—not just to nonhumans, but also to one another.

**a brief history of robots:** *The Robot Revolution* The late John Hudson, 2019 In the coming decades robots and artificial intelligence will fundamentally change our world. In doing so they offer the hope of a golden future, but there are dangers. This book looks at both the history of robots, in science and in fiction, as well as the science behind robots. Specific chapters analyse the impact of robots on the labour market, people's attitudes to robots, the impact of robots on society, and the appropriate policies to pursue to prepare our world for the robot revolution. Overall the book strikes a cautionary tone. Robots will change our world dramatically and they will also change human beings. These important issues are examined from the perspective of an economist, but the book is intended to appeal to a wider audience in the social sciences and beyond.

**a brief history of robots:** *The Huge Hunter; Or, The Steam Man of the Prairies* Edward

Sylvester Ellis, 2023-09-19 Reproduction of the original. The publishing house Megali specialises in reproducing historical works in large print to make reading easier for people with impaired vision.

**a brief history of robots: Robots and Art** Damith Herath, Christian Kroos, Stelarc, 2016-05-04 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.

**a brief history of robots: Darwin's Devices** John Long, 2012-04-03 What happens when we let robots play the game of life?br 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.

**a brief history of robots: Robot-Proof, revised and updated edition** Joseph E. Aoun, 2024-10-15 A fresh look at a “robot-proof” education in the new age of generative AI. In 2017, Robot-Proof, the first edition, foresaw the advent of the AI economy and called for a new model of higher education designed to help human beings flourish alongside smart machines. That economy has arrived. Creative tasks that, seven years ago, seemed resistant to automation can now be performed with a simple prompt. As a result, we must now learn not only to be conversant with these technologies, but also to comprehend and deploy their outputs. In this revised and updated edition, Joseph Aoun rethinks the university’s mission for a world transformed by AI, advocating for the lifelong endeavor of a “robot-proof” education. Aoun puts forth a framework for a new curriculum, humanics, which integrates technological, data, and human literacies in an experiential setting, and he renews the call for universities to embrace lifelong learning through a social compact with government, employers, and learners themselves. Drawing on the latest developments and debates around generative AI, Robot-Proof is a blueprint for the university as a force for human reinvention in an era of technological change—an era in which we must constantly renegotiate the shifting boundaries between artificial intelligence and the capacities that remain uniquely human.

**a brief history of robots: Perspectives on Digital Humanism** Hannes Werthner, Erich Prem, Edward A. Lee, Carlo Ghezzi, 2021-11-23 This open access book aims to set an agenda for research and action in the field of Digital Humanism through short essays written by selected thinkers from a variety of disciplines, including computer science, philosophy, education, law, economics, history,

anthropology, political science, and sociology. This initiative emerged from the Vienna Manifesto on Digital Humanism and the associated lecture series. Digital Humanism deals with the complex relationships between people and machines in digital times. It acknowledges the potential of information technology. At the same time, it points to societal threats such as privacy violations and ethical concerns around artificial intelligence, automation and loss of jobs, ongoing monopolization on the Web, and sovereignty. Digital Humanism aims to address these topics with a sense of urgency but with a constructive mindset. The book argues for a Digital Humanism that analyses and, most importantly, influences the complex interplay of technology and humankind toward a better society and life while fully respecting universal human rights. It is a call to shaping technologies in accordance with human values and needs.

**a brief history of robots: Work** James Suzman, 2022-01-18 This book is a tour de force. --Adam Grant, New York Times bestselling author of Give and Take A revolutionary new history of humankind through the prism of work by leading anthropologist James Suzman Work defines who we are. It determines our status, and dictates how, where, and with whom we spend most of our time. It mediates our self-worth and molds our values. But are we hard-wired to work as hard as we do? Did our Stone Age ancestors also live to work and work to live? And what might a world where work plays a far less important role look like? To answer these questions, James Suzman charts a grand history of work from the origins of life on Earth to our ever more automated present, challenging some of our deepest assumptions about who we are. Drawing insights from anthropology, archaeology, evolutionary biology, zoology, physics, and economics, he shows that while we have evolved to find joy, meaning and purpose in work, for most of human history our ancestors worked far less and thought very differently about work than we do now. He demonstrates how our contemporary culture of work has its roots in the agricultural revolution ten thousand years ago. Our sense of what it is to be human was transformed by the transition from foraging to food production, and, later, our migration to cities. Since then, our relationships with one another and with our environments, and even our sense of the passage of time, have not been the same. Arguing that we are in the midst of a similarly transformative point in history, Suzman shows how automation might revolutionize our relationship with work and in doing so usher in a more sustainable and equitable future for our world and ourselves.

**a brief history of robots: Our Robots, Ourselves** David A. Mindell, 2015-10-13 “[An] essential book... it is required reading as we seriously engage one of the most important debates of our time.”—Sherry Turkle, author of Reclaiming Conversation: The Power of Talk in a Digital Age From drones to Mars rovers—an exploration of the most innovative use of robots today and a provocative argument for the crucial role of humans in our increasingly technological future. In *Our Robots, Ourselves*, David Mindell offers a fascinating behind-the-scenes look at the cutting edge of robotics today, debunking commonly held myths and exploring the rapidly changing relationships between humans and machines. Drawing on firsthand experience, extensive interviews, and the latest research from MIT and elsewhere, Mindell takes us to extreme environments—high atmosphere, deep ocean, and outer space—to reveal where the most advanced robotics already exist. In these environments, scientists use robots to discover new information about ancient civilizations, to map some of the world’s largest geological features, and even to “commute” to Mars to conduct daily experiments. But these tools of air, sea, and space also forecast the dangers, ethical quandaries, and unintended consequences of a future in which robotics and automation suffuse our everyday lives. Mindell argues that the stark lines we’ve drawn between human and not human, manual and automated, aren’t helpful for understanding our relationship with robotics. Brilliantly researched and accessibly written, *Our Robots, Ourselves* clarifies misconceptions about the autonomous robot, offering instead a hopeful message about what he calls “rich human presence” at the center of the technological landscape we are now creating.

**a brief history of robots: Robots in Space** Roger D. Launius, Howard E. McCurdy, 2008-02-11 2008 Outstanding Academic Title, Choice Magazine Given the near incomprehensible enormity of the universe, it appears almost inevitable that humankind will one day find a planet that appears to



be much like the Earth. This discovery will no doubt reignite the lure of interplanetary travel. Will we be up to the task? And, given our limited resources, biological constraints, and the general hostility of space, what shape should we expect such expeditions to take? In *Robots in Space*, Roger Launius and Howard McCurdy tackle these seemingly fanciful questions with rigorous scholarship and disciplined imagination, jumping comfortably among the worlds of rocketry, engineering, public policy, and science fantasy to expound upon the possibilities and improbabilities involved in trekking across the Milky Way and beyond. They survey the literature—fictional as well as academic studies; outline the progress of space programs in the United States and other nations; and assess the current state of affairs to offer a conclusion startling only to those who haven't spent time with Asimov, Heinlein, and Clarke: to traverse the cosmos, humans must embrace and entwine themselves with advanced robotic technologies. Their discussion is as entertaining as it is edifying and their assertions are as sound as they are fantastical. Rather than asking us to suspend disbelief, *Robots in Space* demands that we accept facts as they evolve.

**a brief history of robots:** *Gods and Robots* Adrienne Mayor, 2020-04-21 Traces the story of how ancient cultures envisioned artificial life, automata, self-moving devices and human enhancements, sharing insights into how the mythologies of the past related to and shaped ancient machine innovations.

**a brief history of robots:** *The Extended Arm of Man* Lars Westerlund, 2000

**a brief history of robots:** *Social Robots: Technological, Societal and Ethical Aspects of Human-Robot Interaction* Oliver Korn, 2019-07-01 Social robots not only work with humans in collaborative workspaces – we meet them in shopping malls and even more personal settings like health and care. Does this imply they should become more human, able to interpret and adequately respond to human emotions? Do we want them to help elderly people? Do we want them to support us when we are old ourselves? Do we want them to just clean and keep things orderly – or would we accept them helping us to go to the toilet, or even feed us if we suffer from Parkinson's disease? The answers to these questions differ from person to person. They depend on cultural background, personal experiences – but probably most of all on the robot in question. This book covers the phenomenon of social robots from the historic roots to today's best practices and future perspectives. To achieve this, we used a hands-on, interdisciplinary approach, incorporating findings from computer scientists, engineers, designers, psychologists, doctors, nurses, historians and many more. The book also covers a vast spectrum of applications, from collaborative industrial work over education to sales. Especially for developments with a high societal impact like robots in health and care settings, the authors discuss not only technology, design and usage but also ethical aspects. Thus this book creates both a compendium and a guideline, helping to navigate the design space for future developments in social robotics.

**a brief history of robots:** *Science Comics: Robots and Drones* Mairghread Scott, 2018-03-27 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!

**a brief history of robots:** *Robot* Hans P. Moravec, 1999 In this compelling book, Hans Moravec predicts that machines will attain human levels of intelligence by the year 2040, and that by 2050, they will surpass us. But even though Moravec predicts the end of the domination by human beings, his is not a bleak vision. Far from railing against a future in which machines rule the world, Moravec embraces it, taking the startling view that intelligent robots will actually be our evolutionary heirs.

Intelligent machines, which will grow from us, learn our skills, and share our goals and values, can be viewed as children of our minds. And since they are our children, we will want them to outdistance us. In fact, in a bid for immortality, many of our descendants will choose to transform into ex humans, as they upload themselves into advanced computers. This provocative new book, the highly anticipated follow-up to his bestselling volume *Mind Children*, charts the trajectory of robotics in breathtaking detail. A must read for artificial intelligence, technology, and computer enthusiasts, Moravec's freewheeling but informed speculations present a future far different than we ever dared imagine.

**a brief history of robots: *Robots*** Ben Russell, 2017 Explores the surprisingly long history of our obsession with creating machines in human form, from 16th-century mechanized monks to the 'tin man' robots of the 1950s and cutting-edge robots from today's research labs

**a brief history of robots: *I, Robot*** Isaac Asimov, 2018-05 Earth is ruled by master-machines but the Three Laws of Robotics have been designed to ensure humans maintain the upper hand: 1) A robot may not injure a human being or allow a human being to come to harm 2) A robot must obey orders given to it by human beings except where such orders would conflict with the First Law. 3) A robot must protect its own existence as long as such protection does not conflict with the First or Second Law. But what happens when a rogue robot's idea of what is good for society contravenes the Three Laws?

**a brief history of robots: *Human-Robot Interaction*** Christoph Bartneck, Tony Belpaeme, Friederike Eyssel, Takayuki Kanda, Merel Keijsers, Selma Šabanović, 2024-06-27 The role of robots in society keeps expanding and diversifying, bringing with it a host of issues surrounding the relationship between robots and humans. This introduction to human-robot interaction (HRI) by leading researchers in this developing field is the first to provide a broad overview of the multidisciplinary topics central to modern HRI research. Written for students and researchers from robotics, artificial intelligence, psychology, sociology, and design, it presents the basics of how robots work, how to design them, and how to evaluate their performance. Self-contained chapters discuss a wide range of topics, including speech and language, nonverbal communication, and processing emotions, plus an array of applications and the ethical issues surrounding them. This revised and expanded second edition includes a new chapter on how people perceive robots, coverage of recent developments in robotic hardware, software, and artificial intelligence, and exercises for readers to test their knowledge.

**a brief history of robots: *Autonomous Robots*** George A. Bekey, 2005-05-20 An introduction to the science and practice of autonomous robots that reviews over 300 current systems and examines the underlying technology. Autonomous robots are intelligent machines capable of performing tasks in the world by themselves, without explicit human control. Examples range from autonomous helicopters to Roomba, the robot vacuum cleaner. In this book, George Bekey offers an introduction to the science and practice of autonomous robots that can be used both in the classroom and as a reference for industry professionals. He surveys the hardware implementations of more than 300 current systems, reviews some of their application areas, and examines the underlying technology, including control, architectures, learning, manipulation, grasping, navigation, and mapping. Living systems can be considered the prototypes of autonomous systems, and Bekey explores the biological inspiration that forms the basis of many recent developments in robotics. He also discusses robot control issues and the design of control architectures. After an overview of the field that introduces some of its fundamental concepts, the book presents background material on hardware, control (from both biological and engineering perspectives), software architecture, and robot intelligence. It then examines a broad range of implementations and applications, including locomotion (wheeled, legged, flying, swimming, and crawling robots), manipulation (both arms and hands), localization, navigation, and mapping. The many case studies and specific applications include robots built for research, industry, and the military, among them underwater robotic vehicles, walking machines with four, six, and eight legs, and the famous humanoid robots Cog, Kismet, ASIMO, and QRIO. The book concludes with reflections on the future

of robotics—the potential benefits as well as the possible dangers that may arise from large numbers of increasingly intelligent and autonomous robots.

**a brief history of robots: *Living with Robots*** Ruth Aylett, Patricia A. Vargas, 2021-09-21 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

**a brief history of robots: *Robotics in Surgery*** Russel A. Faust, 2007 Robotics began as a science fiction creation which has become quite real, first in assembly line operations such as automobile manufacturing, airplane construction etc. They have now reached such areas as the ever-multiplying - medical field. Robotic surgery is now becoming highly practised in open heart, lung, and other forms of surgery. This book covers the developing stages of robotic surgery and its expectations in the medical field.

**a brief history of robots: *Modern Robotics*** Kevin M. Lynch, Frank C. Park, 2017-05-25 A modern and unified treatment of the mechanics, planning, and control of robots, suitable for a first course in robotics.

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