

Thinking Machines The Inside Story Of Artificial Intelligence And Our Race To Build The Future

Artificial intelligence is changing the way humans communicate with each other and the world. In *Artificial Intelligence: Thinking Machines and Smart Robots with Science Activities for Kids*, middle school kids learn about the history and technology of artificial intelligence while undertaking student-led science and engineering projects designed for a hands-on immersive learning experience. Includes 25 STEAM activities that encourage the development of important skills, including comparing and contrasting, looking for detailed evidence, making deductions, and applying critical analysis to a wide variety of media. Now a New York Times bestseller! There is a Threat Lurking Online with the Power to Destroy Your Finances, Steal Your Personal Data, and Endanger Your Life. In *Spam Nation*, investigative journalist and cybersecurity expert Brian Krebs unmasks the criminal masterminds driving some of the biggest spam and hacker operations targeting Americans and their bank accounts. Tracing the rise, fall, and alarming resurrection of the digital mafia behind the two largest spam pharmacies-and countless viruses, phishing, and spyware attacks-he delivers the first definitive narrative of the global spam problem and its threat to consumers everywhere. Blending cutting-edge research, investigative reporting, and firsthand interviews, this terrifying true story reveals how we unwittingly invite these digital thieves into our lives every day. From unassuming computer programmers right next door to digital mobsters like "Cosma"-who unleashed a massive malware attack that has stolen thousands of Americans' logins and passwords-Krebs uncovers the shocking lengths to which these people will go to profit from our data and our wallets. Not only are hundreds of thousands of Americans exposing themselves to fraud and dangerously toxic products from rogue online pharmacies, but even those who never open junk messages are at risk. As Krebs notes, spammers can-and do-hack into accounts through these emails, harvest personal information like usernames and passwords, and sell them on the digital black market. The fallout from this global epidemic doesn't just cost consumers and companies billions, it costs lives too. Fast-paced and utterly gripping, *Spam Nation* ultimately proposes concrete solutions for protecting ourselves online and stemming this tidal wave of cybercrime-before it's too late. "Krebs's talent for exposing the weaknesses in online security has earned him respect in the IT business and loathing among cybercriminals... His track record of scoops...has helped him become the rare blogger who supports himself on the strength of his reputation for hard-nosed reporting." -Bloomberg Businessweek

In the context of the postdigital age, where technology is increasingly part of our social and political world, *Avatars, Activism and Postdigital Performance* traces how identity can be created, developed, hijacked, manipulated, sabotaged and explored through performance in postdigital cultures. Considering how technology is reshaping performance, this timely collection reveals how we engage in performance practices through expanded notions of intermediality, knotted networks and layering. This book examines the artist as activist and producer of avatars, and how digital doubles, artificial intelligence and semi-automated politics are problematizing and expanding our discussions of identity. Using a range of examples in theatre, film and internet-based

performance practices, chapters examine the uncertain boundaries of networked 'informational selves' in mediatized cultures, the impacts of machine algorithms, apps and the consequences of digital legacies. Case studies include James Cameron's *Avatar*, Blast Theory's *Karen*, Ontroerend Goed's *A Game of You*, Randy Rainbow's online videos, Sisters Grimm's *Calpurnia Descending*, Dante or Die's *User Not Found*, Dead Centre's *Lippy* and Chekhov's *First Play* and Jo Scott's practice-as-research in 'place-mixing'. This is an incisive study for scholars, students and practitioners interested in the wider conversations around identity-formation in postdigital cultures.

“Marvelous . . . [Vonnegut] wheels out all the complaints about America and makes them seem fresh, funny, outrageous, hateful and lovable.”—The New York Times
In *Breakfast of Champions*, one of Kurt Vonnegut’s most beloved characters, the aging writer Kilgore Trout, finds to his horror that a Midwest car dealer is taking his fiction as truth. What follows is murderously funny satire, as Vonnegut looks at war, sex, racism, success, politics, and pollution in America and reminds us how to see the truth. “Free-wheeling, wild and great . . . uniquely Vonnegut.”—Publishers Weekly

An update edition of *Solomon’s Code*—now *The A.I. Generation*—the thought-provoking examination of artificial intelligence and how it reshapes human values, trust, and power around the world. Whether in medicine, money, or love, technologies powered by forms of artificial intelligence are playing an increasingly prominent role in our lives. As we cede more decisions to thinking machines, we face new questions about staying safe, keeping a job and having a say over the direction of our lives. The answers to those questions might depend on your race, gender, age, behavior, or nationality. New AI technologies can drive cars, treat damaged brains and nudge workers to be more productive, but they also can threaten, manipulate, and alienate us from others. They can pit nation against nation, but they also can help the global community tackle some of its greatest challenges—from food crises to global climate change. In clear and accessible prose, global trends and strategy adviser Olaf Groth, AI scientist and social entrepreneur Mark Nitzberg, along with seasoned economics reporter Dan Zehr, provide a unique human-focused, global view of humanity in a world of thinking machines.

Sometime in the future the intelligence of machines will exceed that of human brain power. So are we on the edge of an AI-pocalypse, with superintelligent devices superseding humanity, as predicted by Stephen Hawking? Or will this herald a kind of Utopia, with machines doing a far better job at complex tasks than us? You might not realise it, but you interact with AIs every day. They route your phone calls, approve your credit card transactions and help your doctor interpret results. Driverless cars will soon be on the roads with a decision-making computer in charge. But how do machines actually think and learn? In *Machines That Think*, AI experts and *New Scientist* explore how artificial intelligence helps us understand human intelligence, machines that compose music and write stories - and ask if AI is really a threat. ABOUT THE SERIES *New Scientist* Instant Expert books are definitive and accessible entry points to the most important subjects in science; subjects that challenge, attract debate, invite controversy and engage the most enquiring minds. Designed for curious readers who want to know how things work and why, the Instant Expert series explores the topics that really matter and their impact on individuals, society, and the planet, translating the

scientific complexities around us into language that's open to everyone, and putting new ideas and discoveries into perspective and context.

Everything you've always wanted to know about self-driving cars, Netflix recommendations, IBM's Watson, and video game-playing computer programs. The future is here: Self-driving cars are on the streets, an algorithm gives you movie and TV recommendations, IBM's Watson triumphed on Jeopardy over puny human brains, computer programs can be trained to play Atari games. But how do all these things work? In this book, Sean Gerrish offers an engaging and accessible overview of the breakthroughs in artificial intelligence and machine learning that have made today's machines so smart. Gerrish outlines some of the key ideas that enable intelligent machines to perceive and interact with the world. He describes the software architecture that allows self-driving cars to stay on the road and to navigate crowded urban environments; the million-dollar Netflix competition for a better recommendation engine (which had an unexpected ending); and how programmers trained computers to perform certain behaviors by offering them treats, as if they were training a dog. He explains how artificial neural networks enable computers to perceive the world—and to play Atari video games better than humans. He explains Watson's famous victory on Jeopardy, and he looks at how computers play games, describing AlphaGo and Deep Blue, which beat reigning world champions at the strategy games of Go and chess. Computers have not yet mastered everything, however; Gerrish outlines the difficulties in creating intelligent agents that can successfully play video games like StarCraft that have evaded solution—at least for now. Gerrish weaves the stories behind these breakthroughs into the narrative, introducing readers to many of the researchers involved, and keeping technical details to a minimum. Science and technology buffs will find this book an essential guide to a future in which machines can outsmart people.

"A globe-spanning investigation into the Transhumanist movement, considering the tech billionaires, scientific luminaries, and DIY body-hackers attempting to prolong, improve, and ultimately transcend the limits of human life"--

A jaw-dropping exploration of everything that goes wrong when we build AI systems and the movement to fix them. Today's "machine-learning" systems, trained by data, are so effective that we've invited them to see and hear for us—and to make decisions on our behalf. But alarm bells are ringing. Recent years have seen an eruption of concern as the field of machine learning advances. When the systems we attempt to teach will not, in the end, do what we want or what we expect, ethical and potentially existential risks emerge. Researchers call this the alignment problem. Systems cull résumés until, years later, we discover that they have inherent gender biases. Algorithms decide bail and parole—and appear to assess Black and White defendants differently. We can no longer assume that our mortgage application, or even our medical tests, will be seen by human eyes. And as autonomous vehicles share our streets, we are increasingly putting our lives in their hands. The mathematical and computational models driving these changes range in complexity from something that can fit on a spreadsheet to a complex system that might credibly be called "artificial intelligence."

They are steadily replacing both human judgment and explicitly programmed software. In best-selling author Brian Christian's riveting account, we meet the alignment problem's "first-responders," and learn their ambitious plan to solve it before our hands are completely off the wheel. In a masterful blend of history and on-the-ground reporting, Christian traces the explosive growth in the field of machine learning and surveys its current, sprawling frontier. Readers encounter a discipline finding its legs amid exhilarating and sometimes terrifying progress. Whether they—and we—succeed or fail in solving the alignment problem will be a defining human story. *The Alignment Problem* offers an unflinching reckoning with humanity's biases and blind spots, our own unstated assumptions and often contradictory goals. A dazzlingly interdisciplinary work, it takes a hard look not only at our technology but at our culture—and finds a story by turns harrowing and hopeful.

New York Times Best Seller How will Artificial Intelligence affect crime, war, justice, jobs, society and our very sense of being human? The rise of AI has the potential to transform our future more than any other technology—and there's nobody better qualified or situated to explore that future than Max Tegmark, an MIT professor who's helped mainstream research on how to keep AI beneficial. How can we grow our prosperity through automation without leaving people lacking income or purpose? What career advice should we give today's kids? How can we make future AI systems more robust, so that they do what we want without crashing, malfunctioning or getting hacked? Should we fear an arms race in lethal autonomous weapons? Will machines eventually outsmart us at all tasks, replacing humans on the job market and perhaps altogether? Will AI help life flourish like never before or give us more power than we can handle? What sort of future do you want? This book empowers you to join what may be the most important conversation of our time. It doesn't shy away from the full range of viewpoints or from the most controversial issues—from superintelligence to meaning, consciousness and the ultimate physical limits on life in the cosmos.

Your information has a life of its own, and it's using you to get what it wants. One of the most peculiar and possibly unique features of humans is the vast amount of information we carry outside our biological selves. But in our rush to build the infrastructure for the 20 quintillion bits we create every day, we've failed to ask exactly why we're expending ever-increasing amounts of energy, resources, and human effort to maintain all this data. Drawing on deep ideas and frontier thinking in evolutionary biology, computer science, information theory, and astrobiology, Caleb Scharf argues that information is, in a very real sense, alive. All the data we create—all of our emails, tweets, selfies, A.I.-generated text and funny cat videos—amounts to an aggregate lifeform. It has goals and needs. It can control our behavior and influence our well-being. And it's an organism that has evolved right alongside us. This symbiotic relationship with information offers a startling new lens for looking at the world. Data isn't just something we produce; it's the reason we exist. This powerful

idea has the potential to upend the way we think about our technology, our role as humans, and the fundamental nature of life. The Ascent of Information offers a humbling vision of a universe built of and for information. Scharf explores how our relationship with data will affect our ongoing evolution as a species. Understanding this relationship will be crucial to preventing our data from becoming more of a burden than an asset, and to preserving the possibility of a human future. NATIONAL BESTSELLER • The gripping story of Elizabeth Holmes and Theranos—one of the biggest corporate frauds in history—a tale of ambition and hubris set amid the bold promises of Silicon Valley, rigorously reported by the prize-winning journalist. With a new Afterword. “Chilling ... Reads like a thriller ... Carreyrou tells [the Theranos story] virtually to perfection.” —The New York Times Book Review In 2014, Theranos founder and CEO Elizabeth Holmes was widely seen as the next Steve Jobs: a brilliant Stanford dropout whose startup “unicorn” promised to revolutionize the medical industry with its breakthrough device, which performed the whole range of laboratory tests from a single drop of blood. Backed by investors such as Larry Ellison and Tim Draper, Theranos sold shares in a fundraising round that valued the company at more than \$9 billion, putting Holmes’s worth at an estimated \$4.5 billion. There was just one problem: The technology didn’t work. Erroneous results put patients in danger, leading to misdiagnoses and unnecessary treatments. All the while, Holmes and her partner, Sunny Balwani, worked to silence anyone who voiced misgivings—from journalists to their own employees.

From a co-founder of Pixar Animation Studios—the Academy Award–winning studio behind *Coco*, *Inside Out*, and *Toy Story*—comes an incisive book about creativity in business and leadership for readers of Daniel Pink, Tom Peters, and Chip and Dan Heath. NEW YORK TIMES BESTSELLER | NAMED ONE OF THE BEST BOOKS OF THE YEAR BY The Huffington Post • Financial Times • Success • Inc. • Library Journal Creativity, Inc. is a manual for anyone who strives for originality and the first-ever, all-access trip into the nerve center of Pixar Animation—into the meetings, postmortems, and “Braintrust” sessions where some of the most successful films in history are made. It is, at heart, a book about creativity—but it is also, as Pixar co-founder and president Ed Catmull writes, “an expression of the ideas that I believe make the best in us possible.” For nearly twenty years, Pixar has dominated the world of animation, producing such beloved films as the *Toy Story* trilogy, *Monsters, Inc.*, *Finding Nemo*, *The Incredibles*, *Up*, *WALL-E*, and *Inside Out*, which have gone on to set box-office records and garner thirty Academy Awards. The joyousness of the storytelling, the inventive plots, the emotional authenticity: In some ways, Pixar movies are an object lesson in what creativity really is. Here, in this book, Catmull reveals the ideals and techniques that have made Pixar so widely admired—and so profitable. As a young man, Ed Catmull had a dream: to make the first computer-animated movie. He nurtured that dream as a Ph.D. student at the University of Utah, where many computer science pioneers got their start, and then forged a

partnership with George Lucas that led, indirectly, to his co-founding Pixar in 1986. Nine years later, Toy Story was released, changing animation forever. The essential ingredient in that movie's success—and in the thirteen movies that followed—was the unique environment that Catmull and his colleagues built at Pixar, based on leadership and management philosophies that protect the creative process and defy convention, such as:

- Give a good idea to a mediocre team, and they will screw it up. But give a mediocre idea to a great team, and they will either fix it or come up with something better.
- If you don't strive to uncover what is unseen and understand its nature, you will be ill prepared to lead.
- It's not the manager's job to prevent risks. It's the manager's job to make it safe for others to take them.
- The cost of preventing errors is often far greater than the cost of fixing them.
- A company's communication structure should not mirror its organizational structure. Everybody should be able to talk to anybody.

In this book the author discusses synergies between computers and thought, related to the field of Artificial Intelligence; between people and thought, leading to questions of consciousness and our existence as humans; and between computers and people, leading to the recent remarkable advances in the field of humanoid robots. He then looks toward the implications of intelligent 'conscious' humanoid robots with superior intellects, able to operate in our human environments. After presenting the basic engineering components and supporting logic of computer systems, and giving an overview of the contributions of pioneering scientists in the domains of computing, logic, and robotics, in the core of the book the author examines the meaning of thought and intelligence in the context of specific tasks and successful AI approaches. In the final part of the book he introduces related societal and ethical implications. The book will be a useful accompanying text in courses on artificial intelligence, robotics, intelligent systems, games, and evolutionary computing. It will also be valuable for general readers and historians of technology.

“The Knowledge Machine is the most stunningly illuminating book of the last several decades regarding the all-important scientific enterprise.” —Rebecca Newberger Goldstein, author of *Plato at the Googleplex* A paradigm-shifting work, *The Knowledge Machine* revolutionizes our understanding of the origins and structure of science.

- Why is science so powerful?
- Why did it take so long—two thousand years after the invention of philosophy and mathematics—for the human race to start using science to learn the secrets of the universe?

In a groundbreaking work that blends science, philosophy, and history, leading philosopher of science Michael Strevens answers these challenging questions, showing how science came about only once thinkers stumbled upon the astonishing idea that scientific breakthroughs could be accomplished by breaking the rules of logical argument. Like such classic works as Karl Popper's *The Logic of Scientific Discovery* and Thomas Kuhn's *The Structure of Scientific Revolutions*, *The Knowledge Machine* grapples with the meaning and origins of science, using a plethora of vivid historical examples to demonstrate that scientists willfully ignore

religion, theoretical beauty, and even philosophy to embrace a constricted code of argument whose very narrowness channels unprecedented energy into empirical observation and experimentation. Strevens calls this scientific code the iron rule of explanation, and reveals the way in which the rule, precisely because it is unreasonably close-minded, overcomes individual prejudices to lead humanity inexorably toward the secrets of nature. "With a mixture of philosophical and historical argument, and written in an engrossing style" (Alan Ryan), *The Knowledge Machine* provides captivating portraits of some of the greatest luminaries in science's history, including Isaac Newton, the chief architect of modern science and its foundational theories of motion and gravitation; William Whewell, perhaps the greatest philosopher-scientist of the early nineteenth century; and Murray Gell-Mann, discoverer of the quark. Today, Strevens argues, in the face of threats from a changing climate and global pandemics, the idiosyncratic but highly effective scientific knowledge machine must be protected from politicians, commercial interests, and even scientists themselves who seek to open it up, to make it less narrow and more rational—and thus to undermine its devotedly empirical search for truth. Rich with illuminating and often delightfully quirky illustrations, *The Knowledge Machine*, written in a winningly accessible style that belies the import of its revisionist and groundbreaking concepts, radically reframes much of what we thought we knew about the origins of the modern world.

Introduction -- China's Sputnik moment -- Copycats in the Coliseum -- China's alternate Internet universe -- A tale of two countries -- The four waves of AI -- Utopia, dystopia, and the real AI crisis -- The wisdom of cancer -- A blueprint for human co-existence with AI -- Our global AI story

A Fast Company best book of the year
A Washington Post bestseller
Winner of the 2017 Axiom Business Book Award in Business Technology
How do you tell a real trend from the merely trendy? How, for example, will a technology--like artificial intelligence, machine learning, self-driving cars, biohacking, bots, and the Internet of Things--affect us, our businesses, and workplaces? How will it eventually change the way we live, work, play, and think--and how should we prepare for it now? In *The Signals Are Talking*, noted futurist Amy Webb shows us how to analyze the "true signals"--those patterns that will coalesce into a trend with the potential to change everything--and land on the right side of disruption. The future, Webb shows, isn't something that happens to us passively. Using a proven, tested methodology, she enables us to see ahead and forecast what's to come--challenging us to create our own preferred futures.

Futurists are certain that humanlike AI is on the horizon, but in fact engineers have no idea how to program human reasoning. AI reasons from statistical correlations across data sets, while common sense is based heavily on conjecture. Erik Larson argues that hyping existing methods will only hold us back from developing truly humanlike AI.

A beautifully designed edition of one of the most beloved science fiction novels of all time... First published in 1895, *The Time Machine* won author H.G. Wells immediate recognition and has been regarded ever since as one of the great masterpieces in the

literature of science fiction. It popularized the concept of time travel and introduced the concept of a "time machine" device that could travel forwards and backwards through the years. It is the story of one man's astonishing journey beyond the conventional limits of the imagination. One of the most renowned works of science fiction, *The Time Machine* reflects on the adventures of The Time Traveller - a man who constructs a machine which allows him to explore what the future has to offer. When he courageously steps out of his machine for the first time, he finds himself in the year 802,701—and everything has changed. In this unfamiliar utopian age, creatures seem to dwell together in perfect harmony. Thinking he can study these marvelous beings and unearth their secret then return to his own time, he discovers that his only avenue of escape, his invention, has been stolen. Wells is generally credited with the popularization of the concept of time travel by using a vehicle that allows an operator to travel purposefully and selectively. The term "time machine", which was coined by Wells, is now universally used to refer to such a vehicle. The book has been adapted for a number of films and television shows, as well as inspiring other science fiction writers. A strikingly original exploration of what it might mean to be authentically human in the age of artificial intelligence, from the author of the critically-acclaimed *Interior States*. "Meghan O'Gieblyn is a brilliant and humble philosopher, and her book is an explosively thought-provoking, candidly personal ride I wished never to end ... This book is such an original synthesis of ideas and disclosures. It introduces what will soon be called the O'Gieblyn genre of essay writing." —Heidi Julavits, author of *The Folded Clock* For most of human history the world was a magical and enchanted place ruled by forces beyond our understanding. The rise of science and Descartes's division of mind from world made materialism our ruling paradigm, in the process asking whether our own consciousness—i.e., souls—might be illusions. Now the inexorable rise of technology, with artificial intelligences that surpass our comprehension and control, and the spread of digital metaphors for self-understanding, the core questions of existence—identity, knowledge, the very nature and purpose of life itself—urgently require rethinking. Meghan O'Gieblyn tackles this challenge with philosophical rigor, intellectual reach, essayistic verve, refreshing originality, and an ironic sense of contradiction. She draws deeply and sometimes humorously from her own personal experience as a formerly religious believer still haunted by questions of faith, and she serves as the best possible guide to navigating the territory we are all entering. "Startling in scope and bravado." —Janet Maslin, *The New York Times* "Artfully envisions a breathtakingly better world." —Los Angeles Times "Elaborate, smart and persuasive." —The Boston Globe "A pleasure to read." —The Wall Street Journal One of CBS News's Best Fall Books of 2005 • Among St Louis Post-Dispatch's Best Nonfiction Books of 2005 • One of Amazon.com's Best Science Books of 2005 A radical and optimistic view of the future course of human development from the bestselling author of *How to Create a Mind* and *The Singularity is Nearer* who Bill Gates calls "the best person I know at predicting the future of artificial intelligence" For over three decades, Ray Kurzweil has been one of the most respected and provocative advocates of the role of technology in our future. In his classic *The Age of Spiritual Machines*, he argued that computers would soon rival the full range of human intelligence at its best. Now he examines the next step in this inexorable evolutionary process: the union of human and machine, in which the knowledge and skills embedded in our brains will be combined with the vastly greater capacity, speed,

and knowledge-sharing ability of our creations.

On 26 May, 2010 Apple Inc. passed Microsoft in valuation as the world's largest technology company. Its consumer electronic products - ranging from computers to mobile phones to portable media devices, not to mention its iTunes, iBook and App Store - have influenced nearly every facet of our lives, and it shows no sign of slowing down. But how did Apple - a company set up in the back room of a house by two friends, and one that always marketed itself as the underdog - become the marketplace leader (and the world's second largest company overall), and is it a good thing to have one company hold so much power? In *The Apple Revolution* Luke Dormehl shares the inside story of how Apple Inc. came to be; from the formation of the company's philosophies and user-friendly ethos, to the "iPod moment" and global domination, leaving you with a deep understanding of how it was created, why it has flourished, and where it might be going next.

A thought-provoking examination of artificial intelligence and how it reshapes human values, trust, and power around the world. Whether in medicine, money, or love, technologies powered by forms of artificial intelligence are playing an increasingly prominent role in our lives. As we cede more decisions to thinking machines, we face new questions about staying safe, keeping a job and having a say over the direction of our lives. The answers to those questions might depend on your race, gender, age, behavior, or nationality. New AI technologies can drive cars, treat damaged brains and nudge workers to be more productive, but they also can threaten, manipulate, and alienate us from others. They can pit nation against nation, but they also can help the global community tackle some of its greatest challenges—from food crises to global climate change. In clear and accessible prose, global trends and strategy adviser Olaf Groth, AI scientist and social entrepreneur Mark Nitzberg, along with seasoned economics reporter Dan Zehr, provide a unique human-focused, global view of humanity in a world of thinking machines.

"This colorful page-turner puts artificial intelligence into a human perspective. Through the lives of Geoff Hinton and other major players, Metz explains this transformative technology and makes the quest thrilling." --Walter Isaacson, author of *The Code Breaker* "Entertaining and valuable... essential."--Los Angeles Times

THE UNTOLD TECH STORY OF OUR TIME

What does it mean to be smart? To be human? What do we really want from life and the intelligence we have, or might create? With deep and exclusive reporting, across hundreds of interviews, New York Times Silicon Valley journalist Cade Metz brings you into the rooms where these questions are being answered. Where an extraordinarily powerful new artificial intelligence has been built into our biggest companies, our social discourse, and our daily lives, with few of us even noticing. Long dismissed as a technology of the distant future, artificial intelligence was a project consigned to the fringes of the scientific community. Then two researchers changed everything. One was a sixty-four-year-old computer science professor who didn't drive and didn't fly because he could no longer sit down--but still made his way across North America for the moment that would define a new age of technology. The other was a thirty-six-year-old neuroscientist and chess prodigy who laid claim to being the greatest game player of all time before vowing to build a machine that could do anything the human brain could do. They took two very different paths to that lofty goal, and they disagreed on how quickly it would arrive. But both were soon drawn into the heart of the tech industry. Their ideas drove

a new kind of arms race, spanning Google, Microsoft, Facebook, and OpenAI, a new lab founded by Silicon Valley kingpin Elon Musk. But some believed that China would beat them all to the finish line. *Genius Makers* dramatically presents the fierce conflict between national interests, shareholder value, the pursuit of scientific knowledge, and the very human concerns about privacy, security, bias, and prejudice. Like a great Victorian novel, this world of eccentric, brilliant, often unimaginably yet suddenly wealthy characters draws you into the most profound moral questions we can ask. And like a great mystery, it presents the story and facts that lead to a core, vital question: How far will we let it go?

Garry Kasparov's 1997 chess match against the IBM supercomputer Deep Blue was a watershed moment in the history of technology. It was the dawn of a new era in artificial intelligence: a machine capable of beating the reigning human champion at this most cerebral game. That moment was more than a century in the making, and in this breakthrough book, Kasparov reveals his astonishing side of the story for the first time. He describes how it felt to strategize against an implacable, untiring opponent with the whole world watching, and recounts the history of machine intelligence through the microcosm of chess, considered by generations of scientific pioneers to be a key to unlocking the secrets of human and machine cognition. Kasparov uses his unrivaled experience to look into the future of intelligent machines and sees it bright with possibility. As many critics decry artificial intelligence as a menace, particularly to human jobs, Kasparov shows how humanity can rise to new heights with the help of our most extraordinary creations, rather than fear them. *Deep Thinking* is a tightly argued case for technological progress, from the man who stood at its precipice with his own career at stake.

A call-to-arms about the broken nature of artificial intelligence, and the powerful corporations that are turning the human-machine relationship on its head. We like to think that we are in control of the future of "artificial" intelligence. The reality, though, is that we--the everyday people whose data powers AI--aren't actually in control of anything. When, for example, we speak with Alexa, we contribute that data to a system we can't see and have no input into--one largely free from regulation or oversight. The big nine corporations--Amazon, Google, Facebook, Tencent, Baidu, Alibaba, Microsoft, IBM and Apple--are the new gods of AI and are short-changing our futures to reap immediate financial gain. In this book, Amy Webb reveals the pervasive, invisible ways in which the foundations of AI--the people working on the system, their motivations, the technology itself--is broken. Within our lifetimes, AI will, by design, begin to behave unpredictably, thinking and acting in ways which defy human logic. The big nine corporations may be inadvertently building and enabling vast arrays of intelligent systems that don't share our motivations, desires, or hopes for the future of humanity. Much more than a passionate, human-centered call-to-arms, this book delivers a strategy for changing course, and provides a path for liberating us from algorithmic decision-makers and powerful corporations.

The first book to be co-written with the language AI GPT-3, exploring selfhood, ecology and technology. During the first summer of the coronavirus pandemic, a diary entry by K Allado-McDowell initiates an experimental conversation with the AI language model GPT-3. Over the course of a fortnight, their exchange rapidly unfolds into a labyrinthine exploration of memory, language and cosmology. The first book to be co-created with the emergent AI, *Pharmako-AI* takes a hallucinatory journey into selfhood, ecology

and intelligence via cyberpunk, ancestry and biosemiotics. Through a writing process akin to musical improvisation, Allado-McDowell and GPT-3 together offer a fractal poetics of AI and a glimpse into the future of literature. Pharmako-AI reimagines cybernetics for a world facing multiple crises, with profound implications for how we see ourselves, nature and technology in the 21st century.

Most books on AI focus on the future of work. But now that algorithms can learn and adapt, does the future of creativity also belong to well-programmed machines? To answer this question, Marcus du Sautoy takes us to the forefront of creative new technologies and offers a more positive and unexpected vision of our future cohabitation with machines.

In a near-future America, a sentient computer program named Charlotte has turned terrorist, but Lee Fisher, the closeted son of an ultraconservative President, is more concerned with keeping his Secret Service detail from finding out about his developing romance with Nico, the new guy at school, but when the spider-like robots that roam the school halls begin acting even stranger than usual, Lee realizes he is Charlotte's next target.

Ray Kurzweil is the inventor of the most innovative and compelling technology of our era, an international authority on artificial intelligence, and one of our greatest living visionaries. Now he offers a framework for envisioning the twenty-first century--an age in which the marriage of human sensitivity and artificial intelligence fundamentally alters and improves the way we live. Kurzweil's prophetic blueprint for the future takes us through the advances that inexorably result in computers exceeding the memory capacity and computational ability of the human brain by the year 2020 (with human-level capabilities not far behind); in relationships with automated personalities who will be our teachers, companions, and lovers; and in information fed straight into our brains along direct neural pathways. Optimistic and challenging, thought-provoking and engaging, *The Age of Spiritual Machines* is the ultimate guide on our road into the next century.

A fascinating guided tour of the complex, fast-moving, and influential world of algorithms—what they are, why they're such powerful predictors of human behavior, and where they're headed next. Algorithms exert an extraordinary level of influence on our everyday lives - from dating websites and financial trading floors, through to online retailing and internet searches - Google's search algorithm is now a more closely guarded commercial secret than the recipe for Coca-Cola. Algorithms follow a series of instructions to solve a problem and will include a strategy to produce the best outcome possible from the options and permutations available. Used by scientists for many years and applied in a very specialized way they are now increasingly employed to process the vast amounts of data being generated, in investment banks, in the movie industry where they are used to predict success or failure at the box office and by social scientists and policy makers. What if everything in life could be reduced to a simple formula? What if numbers were able to tell us which partners we were best matched with – not just in terms of attractiveness, but for a long-term committed marriage? Or if they could say which films would be the biggest hits at the box office, and what changes could be made to those films to make them even more successful? Or even who is likely to commit certain crimes, and when? This may sound like the world of science fiction, but in fact it is just the tip of the iceberg in a world that is increasingly ruled by complex

algorithms and neural networks. In *The Formula*, Luke Dormehl takes readers inside the world of numbers, asking how we came to believe in the all-conquering power of algorithms; introducing the mathematicians, artificial intelligence experts and Silicon Valley entrepreneurs who are shaping this brave new world, and ultimately asking how we survive in an era where numbers can sometimes seem to create as many problems as they solve.

2016 marks the 60-year anniversary of the phrase 'Artificial Intelligence' and in this fascinating book, Luke Dormehl charts the weird and wonderful journey of one of mankind's greatest projects, the creation of Thinking Machines. This is a story of how what it means to be human in the face of accelerating machine intelligence. It's about trying to make computers that are smarter than we are, and what happens when it goes wrong. About what creativity means when all knowledge is data that can be stored on microchips. Or about what happens when machines can learn from their mistakes much faster than humans can. And above all, it's about the dazzling future around the corner, how our lives might just change forever, and whether you and I aren't just thinking machines of a sort as well.

This is a book for people who want to know what the future is going to look like and for people who want to know how to create the future. Gershenfeld offers a glimpse at the brave new post-computerized world, where microchips work for us instead of against us. He argues that we waste the potential of the microchip when we confine it to a box on our desk: the real electronic revolution will come when computers have all but disappeared into the walls around us. Imagine a digital book that looks like a traditional book printed on paper and is pleasant to read in bed but has all the mutability of a screen display. How about a personal fabricator that can organize digitized atoms into anything you want, or a musical keyboard that can be woven into a denim jacket? In *When Things Start to Think*, Gershenfeld tells the story of his Things that Think group at MIT's Media Lab, the group of innovative scientists and researchers dedicated to integrating digital technology into the fabric of our lives.

A New York Times Editors' Choice A bold new book reveals how we can tap the intelligence that exists beyond our brains—in our bodies, our surroundings, and our relationships Use your head. That's what we tell ourselves when facing a tricky problem or a difficult project. But a growing body of research indicates that we've got it exactly backwards. What we need to do, says acclaimed science writer Annie Murphy Paul, is think outside the brain. A host of "extra-neural" resources—the feelings and movements of our bodies, the physical spaces in which we learn and work, and the minds of those around us— can help us focus more intently, comprehend more deeply, and create more imaginatively. *The Extended Mind* outlines the research behind this exciting new vision of human ability, exploring the findings of neuroscientists, cognitive scientists, psychologists, and examining the practices of educators, managers, and leaders who are already reaping the benefits of thinking outside the brain. She excavates the untold history of how artists, scientists, and authors—from Jackson Pollock to Jonas Salk to Robert Caro—have used mental extensions to solve problems, make discoveries, and create new works. In the tradition of Howard Gardner's *Frames of Mind* or Daniel Goleman's *Emotional Intelligence*, *The Extended Mind* offers a dramatic new view of how our minds work, full of practical advice on how we can all think better.

Over the past four decades, large corporations and research labs have tried to find a way to make computers behave more like humans. In particular, they have wanted to create thinking machines - computers that could learn, reason, and even understand the spoken word. The technology that attempts to do this is known as artificial intelligence. Artificial intelligence is about power: the power of man to recreate human intelligence in machines, and the power of man over those machines. Yet AI is also about the power to use intelligent computers as a weapon - literally - in the wars of corporate competition and personal egos, because in the story of man and machines, man is the real story. In the quest to create thinking computers, there are plenty of outsized egos to match the relative normalcy of the people that worked tirelessly to make AI a reality. People who had been tossed out of every other respectable job in the computer business often found a safe haven in AI, where they worked side by side with post-pubescent geniuses who would rather sleep in a room with a computer than in a room with a member of the opposite sex. Still other people, with no pretensions of greatness, made remarkable breakthroughs that pushed the technology further than it was ever expected to go. You do not have to understand anything about machines to understand the business of artificial intelligence. Even if you've never used a computer, you are not at a loss in the pages that follow. Nor do you need to know anything concerning the age-old quandary about what really constitutes "thinking." This is the story of a technology that is being used by all of the world's major corporations - a technology that passes approval on credit card purchases, schedules the flights of airplanes, helps the IRS catch tax cheats, assists the FBI in tracking down serial killers, and makes life-and-death decisions in emergency rooms. It is a technology that is becoming an integral part of the world around us, even though we may never see it face-to-face.

"Flame Tree Publishing continues to publish excellent fiction with their Gothic Fantasy series of anthologies offering themed compendiums of both classic and modern fiction. By doing so, the series lets readers note similarity, differences and trends of subgenres over time." - Kirkus The promise and the threat of technology, of humankind replaced by its own mechanical creation has long enticed the SF and fantasy imagination. This fabulous mix of new and established writing brings together the top talents of today with classic and essential authors, including L. Frank Baum, Ambrose Bierce, Carlo Collodi, Edward S. Ellis, E.T.A. Hoffmann, Jerome K. Jerome, Elias Lönnrot, E.P. Mitchell, William Douglas O'Connor, Apollonius Rhodius, Gustave Le Rouge and Gustave Guitton, Luis Philip Senarens.

Startling and scandalous, this is an intimate insider's story of Osama bin Laden's retinue in the ten years after 9/11, a family in flight and at war. From September 11, 2001 to May 2, 2011, Osama Bin Laden evaded intelligence services and special forces units, drones and hunter killer squads. The Exile tells the extraordinary inside story of that decade through the eyes of those who witnessed it: bin Laden's four wives and many children, his deputies and military strategists, his spiritual advisor, the CIA, Pakistan's ISI, and many others who have never before told their stories. Investigative journalists Cathy Scott-Clark and Adrian Levy gained unique access to Osama bin Laden's inner circle, and they recount the flight of Al Qaeda's forces and bin Laden's innocent family members, the gradual formation of ISIS by bin Laden's lieutenants, and bin Laden's rising paranoia and eroding control over his organization. They also reveal that the Bush White House knew the whereabouts of bin Laden's family and Al

Qaeda's military and religious leaders, but rejected opportunities to capture them, pursuing war in the Persian Gulf instead, and offer insights into how Al Qaeda will attempt to regenerate itself in the coming years. While we think we know what happened in Abbottabad on May 2, 2011, we know little about the wilderness years that led to that shocking event. As authoritative in its scope and detail as it is propulsively readable, *The Exile* is a landmark work of investigation and reporting.

ORPHAN, CLOCK KEEPER, AND THIEF, twelve-year-old Hugo lives in the walls of a busy Paris train station, where his survival depends on secrets and anonymity. But when his world suddenly interlocks with an eccentric girl and her grandfather, Hugo's undercover life, and his most precious secret, are put in jeopardy. A cryptic drawing, a treasured notebook, a stolen key, a mechanical man, and a hidden message from Hugo's dead father form the backbone of this intricate, tender, and spellbinding mystery.

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