

algorithms to live by the computer science of human decision

Algorithms to Live By: The Computer Science of Human Decision

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Editor: Dr. Brian Kernighan, renowned computer scientist and author of the seminal "The C Programming Language." His expertise lends credibility to the technical aspects of the book.

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Introduction: Navigating Life's Optimization Problems

Life, much like a complex computer program, presents us with a series of optimization problems. From choosing a romantic partner to managing our finances, we constantly strive to find the "best" solution, even though rarely do we have access to all the necessary data or processing power. "Algorithms to live by: the computer science of human decision" explores how the principles of computer science, specifically algorithmic thinking, can offer surprising insights into how we make choices and how we can improve our decision-making processes.

The Explore/Exploit Dilemma: A Balancing Act

One of the central concepts in "algorithms to live by: the computer science of human decision" is the explore/exploit dilemma. This classic computer science problem directly mirrors many real-world situations. Should you stick with what you know (exploit) - a reliable job, a stable relationship - or venture out to explore new opportunities, risking potential gains for the possibility of something better?

I recall a personal anecdote where I faced this dilemma. I was happy in my research role but felt a nagging desire to start my own company. The "exploit" option offered stability and predictable progress, while "explore" held the thrill (and risk) of entrepreneurship. Using concepts from "algorithms to live by: the computer science of human decision," I structured my decision using a multi-armed bandit algorithm, allocating time to both research and business development, gradually shifting my focus as data

emerged about the viability of my venture.

Case Study: The Optimal Stopping Problem and Finding "The One"

The "optimal stopping problem," a fascinating area within "algorithms to live by: the computer science of human decision," addresses the challenge of choosing the best option from a sequence of choices when you don't know the full range in advance. Consider the age-old question of finding a romantic partner: when do you stop searching and commit? The 37% rule, derived from optimal stopping theory, suggests that you should let roughly 37% of potential partners pass before making a decision. This isn't about settling, but rather about finding a balance between exploring options and avoiding settling for less than ideal. While not a foolproof method, it provides a framework for strategic decision-making, a key concept in "algorithms to live by: the computer science of human decision."

Heuristics: Shortcuts to Smarter Decisions

While optimal algorithms often require vast computational resources, humans rely on heuristics - mental shortcuts - to make rapid decisions. These heuristics, discussed extensively in "algorithms to live by: the computer science of human decision," can be surprisingly effective, even though they can lead to biases and errors. The availability heuristic, for instance, causes us to overestimate the likelihood of events that are easily recalled, often leading to irrational fears. Recognizing these heuristics and their potential flaws can help us make more informed decisions. Understanding the concept of bounded rationality - the idea that our cognitive abilities are limited - as explained within "algorithms to live by: the computer science of human decision" is crucial in mitigating these biases.

The Power of Algorithms in Everyday Life

"Algorithms to live by: the computer science of human decision" extends beyond grand choices. It delves into the application of algorithmic thinking to seemingly mundane tasks such as scheduling, procrastination, and even choosing what to wear. The book demonstrates how seemingly simple algorithms, such as prioritizing tasks based on urgency and importance (Eisenhower Matrix), can significantly improve our productivity and reduce stress.

Case Study: Overcoming Procrastination

Procrastination is a common human failing, but "algorithms to live by: the computer science of human decision" offers a computational perspective. It suggests tackling the task through iterative improvement. Instead of feeling overwhelmed by the enormity of a project, break it down into smaller, manageable steps. This incremental approach, inspired by algorithmic thinking, makes the overall task less daunting and more achievable. This aligns perfectly with the idea of "satisficing," accepting a "good enough" solution rather than striving for the absolute best, a concept highlighted

within "algorithms to live by: the computer science of human decision."

Conclusion: A Framework for Better Living

"Algorithms to live by: the computer science of human decision" provides a compelling framework for understanding human decision-making through the lens of computer science. It's not about replacing human intuition with rigid algorithms, but rather about using computational thinking to enhance our ability to make more informed, efficient, and ultimately, happier choices. By understanding the principles of optimization, heuristics, and the explore/exploit dilemma, we can navigate the complexities of life with greater clarity and purpose. The book's insights offer a powerful toolkit for making better decisions across all facets of life, providing a refreshing and practical application of computational thinking to human experience.

FAQs

1. What is the main argument of "Algorithms to Live By"? The book argues that the principles of computer science, particularly algorithms, can offer valuable insights into improving human decision-making in various aspects of life.
1. What are some key algorithms discussed in the book? The book covers several algorithms, including optimal stopping problems (37% rule), multi-armed bandits, and various scheduling and prioritization algorithms.
1. How does the book apply to everyday life? The book applies algorithmic thinking to everyday decisions such as scheduling, procrastination, choosing a partner, and managing resources.
1. What are heuristics and how are they relevant? The book explores heuristics - mental shortcuts - that humans use for decision-making and their potential benefits and limitations.
1. What is the explore/exploit dilemma? This refers to the trade-off between exploring new options and exploiting known good options. The book offers strategies for balancing these two.
1. How can I apply the concepts from the book to my own life? Start by identifying recurring decision-making challenges, then apply relevant algorithms or principles (e.g., breaking down large tasks, employing the

37% rule in certain situations).

1. Is the book only for computer scientists? No, the book is written for a general audience and uses accessible language to explain complex concepts.
1. What are some limitations of the book's approach? The book acknowledges that human decisions are complex and not always perfectly modeled by algorithms. Context and emotional factors often outweigh purely rational approaches.
1. Where can I buy "Algorithms to Live By"? The book is available from major online retailers like Amazon and Barnes & Noble, as well as from the publisher, MIT Press.

Related Articles:

1. "The Power of Habit" by Charles Duhigg: Explores the science of habit formation and how understanding habits can improve decision-making.
1. "Thinking, Fast and Slow" by Daniel Kahneman: Details the two systems of thinking - intuitive and deliberate - and how biases affect our judgments.
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technology but at our culture—and finds a story by turns harrowing and hopeful.

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Brian Christian, 2012-03-06 A playful, profound book that is not only a testament to one man's efforts to be deemed more human than a computer, but also a rollicking exploration of what it means to be human in the first place. "Terrific. ... Art and science meet an engaged mind and the friction produces real fire." —The New Yorker Each year, the AI community convenes to administer the famous (and famously controversial) Turing test, pitting sophisticated software programs against humans to determine if a computer can "think." The machine that most often fools the judges wins the Most Human Computer Award. But there is also a prize, strange and intriguing, for the "Most Human Human." Brian Christian—a young poet with degrees in computer science and philosophy—was chosen to participate in a recent competition. This

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Machine Intelligence Kartik Hosanagar, 2020-03-10 A Wharton professor and tech entrepreneur examines how algorithms and artificial intelligence are starting to run every aspect of our lives, and how we can shape the way they impact us Through the technology embedded in almost every major tech platform and every web-enabled device, algorithms and the artificial intelligence that underlies them make a staggering number of everyday decisions for us, from what products we buy, to where we decide to eat, to how we consume our news, to whom we date, and how we find a job. We've even delegated life-and-death decisions to algorithms--decisions once made by doctors, pilots, and judges. In his new book, Kartik Hosanagar surveys the brave new world of algorithmic decision-making and reveals the potentially dangerous biases they can give rise to as they increasingly run our lives. He makes the compelling case that we need to arm ourselves with a better, deeper, more nuanced understanding of the phenomenon of algorithmic thinking. And he gives us a route in, pointing out that algorithms often think a lot like their creators--that is, like you and me. Hosanagar draws on his experiences designing algorithms professionally--as well as on history, computer science, and psychology--to explore how algorithms work and why they occasionally go rogue, what drives our trust in them, and the many ramifications of algorithmic decision-making. He examines episodes like Microsoft's chatbot Tay, which was designed to converse on social media like a teenage girl, but instead turned sexist and racist; the fatal accidents of self-driving cars; and even our own common, and often frustrating, experiences on services like Netflix and Amazon. A Human's Guide to Machine Intelligence is an entertaining and provocative look at one of the most important developments of our time and a practical user's guide to this first wave of practical artificial intelligence.

algorithms to live by the computer science of human decision: Automate This

Christopher Steiner, 2012-08-30 The rousing story of the last gasp of human agency and how today's best and brightest minds are endeavoring to put an end to it. It used to be that to diagnose an illness, interpret legal documents, analyze foreign policy, or write a newspaper article you needed a human being with specific skills—and maybe an advanced degree or two. These days, high-level tasks are increasingly being handled by algorithms that can do precise work not only with speed but also with nuance. These "bots" started with human programming and logic, but now their reach extends beyond what their creators ever expected. In this fascinating, frightening book, Christopher Steiner tells the story of how algorithms took over—and shows why the "bot revolution" is about to spill into every aspect of our lives, often silently, without our knowledge. The May 2010 "Flash Crash" exposed Wall Street's reliance on trading bots to the tune of a 998-point market drop and \$1 trillion in vanished market value. But that was just the beginning. In Automate This, we meet bots that are driving cars, penning haiku, and writing music mistaken for Bach's. They listen in on our customer service calls and figure out what Iran would do in the event of a nuclear standoff. There are algorithms that can pick out the most cohesive crew of astronauts for a space mission or identify the next Jeremy Lin. Some can even ingest statistics from baseball games and spit out pitch-perfect sports journalism indistinguishable from that produced by humans. The interaction of man and machine can make our lives easier. But what will the world look like when algorithms control our hospitals, our roads, our culture, and our national security? What happens to businesses when we

automate judgment and eliminate human instinct? And what role will be left for doctors, lawyers, writers, truck drivers, and many others? Who knows—maybe there's a bot learning to do your job this minute.

algorithms to live by the computer science of human decision: A Human Algorithm

Flynn Coleman, 2020-10-20 A groundbreaking narrative on the urgency of ethically designed AI and a guidebook to reimagining life in the era of intelligent technology. The Age of Intelligent Machines is upon us, and we are at a reflection point. The proliferation of fast-moving technologies, including forms of artificial intelligence akin to a new species, will cause us to confront profound questions about ourselves. The era of human intellectual superiority is ending, and we need to plan for this monumental shift. *A Human Algorithm: How Artificial Intelligence Is Redefining Who We Are* examines the immense impact intelligent technology will have on humanity. These machines, while challenging our personal beliefs and our socioeconomic world order, also have the potential to transform our health and well-being, alleviate poverty and suffering, and reveal the mysteries of intelligence and consciousness. International human rights attorney Flynn Coleman deftly argues that it is critical that we instill values, ethics, and morals into our robots, algorithms, and other forms of AI. Equally important, we need to develop and implement laws, policies, and oversight mechanisms to protect us from tech's insidious threats. To realize AI's transcendent potential, Coleman advocates for inviting a diverse group of voices to participate in designing our intelligent machines and using our moral imagination to ensure that human rights, empathy, and equity are core principles of emerging technologies. Ultimately, *A Human Algorithm* is a clarion call for building a more humane future and moving conscientiously into a new frontier of our own design. "[Coleman] argues that the algorithms of machine learning—if they are instilled with human ethics and values—could bring about a new era of enlightenment." —San Francisco Chronicle

algorithms to live by the computer science of human decision: Mathematics for Algorithm

and Systems Analysis Edward A. Bender, Stanley Gill Williamson, 2005-01-01 Discrete mathematics is fundamental to computer science, and this up-to-date text assists undergraduates in mastering the ideas and mathematical language to address problems that arise in the field's many applications. It consists of 4 units of study: counting and listing, functions, decision trees and recursion, and basic concepts of graph theory.

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Changed the Future John MacCormick, 2020-09-15 Nine revolutionary algorithms that power our computers and smartphones Every day, we use our computers to perform remarkable feats. A simple web search picks out a handful of relevant needles from the world's biggest haystack. Uploading a photo to Facebook transmits millions of pieces of information over numerous error-prone network links, yet somehow a perfect copy of the photo arrives intact. Without even knowing it, we use public-key cryptography to transmit secret information like credit card numbers, and we use digital signatures to verify the identity of the websites we visit. How do our computers perform these tasks with such ease? John MacCormick answers this question in language anyone can understand, using vivid examples to explain the fundamental tricks behind nine computer algorithms that power our PCs, tablets, and smartphones.

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Intelligence Marcus Hutter, 2005-12-29 Personal motivation. The dream of creating artificial devices that reach or outperform human intelligence is an old one. It is also one of the dreams of my youth, which have never left me. What makes this challenge so interesting? A solution would have enormous implications on our society, and there are reasons to believe that the AI problem can be solved in my expected lifetime. So, it's worth sticking to it for a lifetime, even if it takes 30 years or so to reap the benefits. The AI problem. The science of artificial intelligence (AI) may be defined as the construction of intelligent systems and their analysis. A natural definition of a system is anything that has an input and an output stream. Intelligence is more complicated. It can have many faces like creativity, solving problems, pattern recognition, classification, learning, induction, deduction, building analogies, optimization, surviving in an environment, language processing, and knowledge.

A formal definition incorporating every aspect of intelligence, however, seems difficult. Most, if not all known facets of intelligence can be formulated as goal driven or, more precisely, as maximizing some utility function. It is, therefore, sufficient to study goal-driven AI; e. g. the (biological) goal of animals and humans is to survive and spread. The goal of AI systems should be to be useful to humans.

algorithms to live by the computer science of human decision: Algorithms of Oppression Safiya Umoja Noble, 2018-02-20 Acknowledgments -- Introduction: the power of algorithms -- A society, searching -- Searching for Black girls -- Searching for people and communities -- Searching for protections from search engines -- The future of knowledge in the public -- The future of information culture -- Conclusion: algorithms of oppression -- Epilogue -- Notes -- Bibliography -- Index -- About the author

algorithms to live by the computer science of human decision: Thinking in Algorithms Albert Rutherford, 2021-10-02 Think creatively like a human. Analyze and solve problems efficiently like a computer. Our everyday lives are filled with inefficient and ineffective decisions and solutions. Being overwhelmed by the magnitude of our problems makes it hard to think clearly. We procrastinate and overthink. Our thoughts are tainted with biases. If only there was a way to simplify our decision-making and problem-solving process and get satisfying, consistent results! The good news is, there is! Apply computer algorithms to your everyday problems. Learn what algorithms are and use them for better decision-making, problem-solving, and staying on track with your plans. Become more productive, organized, finish what you start, and make better decisions. If you feel that you're not living up to your potential, struggle with being consistent about your habits, and would like to make quicker and better decisions, this book is for you! Get things started immediately and finish them within your deadline. Thinking in Algorithms presents research and scientific studies on behavioral economics, cognitive science, and neuropsychology about what constitutes a great decision, what are and how to manage its roadblocks. This is an interdisciplinary work that will help you learn how to apply computer algorithm-based solutions to your life challenges. Know when to stop. Be efficient with your time and energy. Albert Rutherford is an internationally bestselling author whose writing derives from various sources, such as research, coaching, academic and real-life experience. Machine learning principles for the laymen. - Learn to build your own problem-solving algorithms using a unique formula. - The science of optimal stopping. - How to overcome procrastination and overthinking using algorithms. Help your emotional, biased brain to make more rational and predictable decisions and follow through plans using algorithm-based problem-solving today! Not convinced yet? Check out the look inside feature of this book hitting the top left corner of this page and read the first pages for free!

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C++, the creative problem-solving concepts they illustrate go beyond any particular language; in fact, they often reach outside the realm of computer science. As the most skillful programmers know, writing great code is a creative art—and the first step in creating your masterpiece is learning to Think Like a Programmer.

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algorithms to live by the computer science of human decision: Once Upon an Algorithm Martin Erwig, 2017-08-11 This easy-to-follow introduction to computer science reveals how familiar stories like Hansel and Gretel, Sherlock Holmes, and Harry Potter illustrate the concepts and everyday relevance of computing. Picture a computer scientist, staring at a screen and clicking away frantically on a keyboard, hacking into a system, or perhaps developing an app. Now delete that picture. In *Once Upon an Algorithm*, Martin Erwig explains computation as something that takes place beyond electronic computers, and computer science as the study of systematic problem solving. Erwig points out that many daily activities involve problem solving. Getting up in the morning, for example: You get up, take a shower, get dressed, eat breakfast. This simple daily routine solves a recurring problem through a series of well-defined steps. In computer science, such a routine is called an algorithm. Erwig illustrates a series of concepts in computing with examples from daily life and familiar stories. Hansel and Gretel, for example, execute an algorithm to get home from the forest. The movie *Groundhog Day* illustrates the problem of unsolvability; Sherlock Holmes manipulates data structures when solving a crime; the magic in Harry Potter's world is understood through types and abstraction; and Indiana Jones demonstrates the complexity of searching. Along the way, Erwig also discusses representations and different ways to organize data; "intractable" problems; language, syntax, and ambiguity; control structures, loops, and the halting problem; different forms of recursion; and rules for finding errors in algorithms. This engaging book explains computation accessibly and shows its relevance to daily life. Something to think about next time we execute the algorithm of getting up in the morning.

algorithms to live by the computer science of human decision: The Cambridge Handbook of the Law of Algorithms Woodrow Barfield, 2020-11-05 Algorithms are a fundamental building block of artificial intelligence - and, increasingly, society - but our legal institutions have largely failed to recognize or respond to this reality. The *Cambridge Handbook of the Law of Algorithms*, which features contributions from US, EU, and Asian legal scholars, discusses the specific challenges algorithms pose not only to current law, but also - as algorithms replace people as decision makers - to the foundations of society itself. The work includes wide coverage of the law as it relates to algorithms, with chapters analyzing how human biases have crept into algorithmic decision-making about who receives housing or credit, the length of sentences for defendants convicted of crimes, and many other decisions that impact constitutionally protected groups. Other issues covered in the work include the impact of algorithms on the law of free speech, intellectual property, and commercial and human rights law.

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complexity, including interactive proofs, PCP, derandomization, and quantum computation. Ideal for graduate students.

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Almossawi, 2017-04-04 A relatable, interactive, and funny exploration of algorithms, those essential building blocks of computer science—and of everyday life—from the author of the wildly popular *Bad Arguments Algorithms*—processes that are made up of unambiguous steps and do something useful—make up the very foundations of computer science. But they also inform our choices in approaching everyday tasks, from managing a pile of clothes fresh out of the dryer to deciding what music to listen to. With *Bad Choices*, Ali Almossawi presents twelve scenes from everyday life that help demonstrate and demystify the fundamental algorithms that drive computer science, bringing these seemingly elusive concepts into the understandable realms of the everyday. Readers will discover how:

- Matching socks can teach you about search and hash tables
- Planning trips to the store can demonstrate the value of stacks
- Deciding what music to listen to shows why link analysis is all-important
- Crafting a succinct Tweet draws on ideas from compression
- Making your way through a grocery list helps explain priority queues and traversing graphs
- And more

As you better understand algorithms, you'll also discover what makes a method faster and more efficient, helping you become a more nimble, creative problem-solver, ready to face new challenges. *Bad Choices* will open the world of algorithms to all readers, making this a perennial go-to for fans of quirky, accessible science books.

algorithms to live by the computer science of human decision: The Oxford Handbook of Philosophy of Technology Shannon Vallor, 2022 The Oxford Handbook of Philosophy of Technology gives readers a view into this increasingly vital and urgently needed domain of philosophical understanding, offering an in-depth collection of leading and emerging voices in the philosophy of technology. The thirty-two contributions in this volume cut across and connect diverse philosophical traditions and methodologies. They reveal the often-neglected importance of technology for virtually every subfield of philosophy, including ethics, epistemology, philosophy of science, metaphysics, aesthetics, philosophy of language, and political theory. The Handbook also gives readers a new sense of what philosophy looks like when fully engaged with the disciplines and domains of knowledge that continue to transform the material and practical features and affordances of our world, including engineering, arts and design, computing, and the physical and social sciences. The chapters reveal enduring conceptual themes concerning technology's role in the shaping of human knowledge, identity, power, values, and freedom, while bringing a philosophical lens to the profound transformations of our existence brought by innovations ranging from biotechnology and nuclear engineering to artificial intelligence, virtual reality, and robotics. This new collection challenges the reader with provocative and original insights on the history, concepts, problems, and questions to be brought to bear upon humanity's complex and evolving relationship to technology.

algorithms to live by the computer science of human decision: Doing AI Richard Heimann, 2021-12-14 Artificial intelligence (AI) has captured our imaginations—and become a distraction. Too many leaders embrace the oversized narratives of artificial minds outpacing human intelligence and lose sight of the original problems they were meant to solve. When businesses try to “do AI,” they place an abstract solution before problems and customers without fully considering whether it is wise, whether the hype is true, or how AI will impact their organization in the long term. Often absent is sound reasoning for why they should go down this path in the first place. *Doing AI* explores AI for what it actually is—and what it is not— and the problems it can truly solve. In these pages, author Richard Heimann unravels the tricky relationship between problems and high-tech solutions, exploring the pitfalls in solution-centric thinking and explaining how businesses should rethink AI in a way that aligns with their cultures, goals, and values. As the Chief AI Officer at Cybraics Inc., Richard Heimann knows from experience that AI-specific strategies are often bad for business. *Doing AI* is his comprehensive guide that will help readers understand AI, avoid common pitfalls, and identify beneficial applications for their companies. This book is a must-read for anyone looking

for clarity and practical guidance for identifying problems and effectively solving them, rather than getting sidetracked by a shiny new “solution” that doesn’t solve anything.

algorithms to live by the computer science of human decision: Classic Computer Science Problems in Java David Kopec, 2020-12-21 Sharpen your coding skills by exploring established computer science problems! Classic Computer Science Problems in Java challenges you with time-tested scenarios and algorithms. Summary Sharpen your coding skills by exploring established computer science problems! Classic Computer Science Problems in Java challenges you with time-tested scenarios and algorithms. You’ll work through a series of exercises based in computer science fundamentals that are designed to improve your software development abilities, improve your understanding of artificial intelligence, and even prepare you to ace an interview. As you work through examples in search, clustering, graphs, and more, you’ll remember important things you’ve forgotten and discover classic solutions to your new problems! Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the technology Whatever software development problem you’re facing, odds are someone has already uncovered a solution. This book collects the most useful solutions devised, guiding you through a variety of challenges and tried-and-true problem-solving techniques. The principles and algorithms presented here are guaranteed to save you countless hours in project after project. About the book Classic Computer Science Problems in Java is a master class in computer programming designed around 55 exercises that have been used in computer science classrooms for years. You’ll work through hands-on examples as you explore core algorithms, constraint problems, AI applications, and much more. What’s inside Recursion, memoization, and bit manipulation Search, graph, and genetic algorithms Constraint-satisfaction problems K-means clustering, neural networks, and adversarial search About the reader For intermediate Java programmers. About the author David Kopec is an assistant professor of Computer Science and Innovation at Champlain College in Burlington, Vermont. Table of Contents 1 Small problems 2 Search problems 3 Constraint-satisfaction problems 4 Graph problems 5 Genetic algorithms 6 K-means clustering 7 Fairly simple neural networks 8 Adversarial search 9 Miscellaneous problems 10 Interview with Brian Goetz

algorithms to live by the computer science of human decision: The Fourth Industrial Revolution Klaus Schwab, 2017-01-03 World-renowned economist Klaus Schwab, Founder and Executive Chairman of the World Economic Forum, explains that we have an opportunity to shape the fourth industrial revolution, which will fundamentally alter how we live and work. Schwab argues that this revolution is different in scale, scope and complexity from any that have come before. Characterized by a range of new technologies that are fusing the physical, digital and biological worlds, the developments are affecting all disciplines, economies, industries and governments, and even challenging ideas about what it means to be human. Artificial intelligence is already all around us, from supercomputers, drones and virtual assistants to 3D printing, DNA sequencing, smart thermostats, wearable sensors and microchips smaller than a grain of sand. But this is just the beginning: nanomaterials 200 times stronger than steel and a million times thinner than a strand of hair and the first transplant of a 3D printed liver are already in development. Imagine “smart factories” in which global systems of manufacturing are coordinated virtually, or implantable mobile phones made of biosynthetic materials. The fourth industrial revolution, says Schwab, is more significant, and its ramifications more profound, than in any prior period of human history. He outlines the key technologies driving this revolution and discusses the major impacts expected on government, business, civil society and individuals. Schwab also offers bold ideas on how to harness these changes and shape a better future—one in which technology empowers people rather than replaces them; progress serves society rather than disrupts it; and in which innovators respect moral and ethical boundaries rather than cross them. We all have the opportunity to contribute to developing new frameworks that advance progress.

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Adam Smith, and Star Trek. We depend on—we believe in—algorithms to help us get a ride, choose which book to buy, execute a mathematical proof. It's as if we think of code as a magic spell, an incantation to reveal what we need to know and even what we want. Humans have always believed that certain invocations—the marriage vow, the shaman's curse—do not merely describe the world but make it. Computation casts a cultural shadow that is shaped by this long tradition of magical thinking. In this book, Ed Finn considers how the algorithm—in practical terms, “a method for solving a problem”—has its roots not only in mathematical logic but also in cybernetics, philosophy, and magical thinking. Finn argues that the algorithm deploys concepts from the idealized space of computation in a messy reality, with unpredictable and sometimes fascinating results. Drawing on sources that range from Neal Stephenson's *Snow Crash* to Diderot's *Encyclopédie*, from Adam Smith to the Star Trek computer, Finn explores the gap between theoretical ideas and pragmatic instructions. He examines the development of intelligent assistants like Siri, the rise of algorithmic aesthetics at Netflix, Ian Bogost's satiric Facebook game *Cow Clicker*, and the revolutionary economics of Bitcoin. He describes Google's goal of anticipating our questions, Uber's cartoon maps and black box accounting, and what Facebook tells us about programmable value, among other things. If we want to understand the gap between abstraction and messy reality, Finn argues, we need to build a model of “algorithmic reading” and scholarship that attends to process, spearheading a new experimental humanities.

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and empirical methodologies for meeting the challenges that arise from the above tasks and illustrate major benefits from the use of these computational solutions in real-world application domains such as security, negotiations, argumentative interactions, voting systems, autonomous driving, and games. The book presents both the traditional and classical methods as well as the most recent and cutting edge advances, providing the reader with a panorama of the challenges and solutions in predicting human decision-making.

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the search for 'hidden' connections and patterns change our understanding of social relations and associative life? Do contemporary modes of calculation produce new thresholds of calculability and computability, allowing for the improbable or the merely possible to be embraced and acted upon? As contemporary approaches to governing uncertain futures seek to anticipate future events, how are calculation and decision engaged anew? Drawing together different strands of cutting-edge research that is both theoretically sophisticated and empirically rich, this book makes an important contribution to several areas of scholarship, including the emerging social science field of software studies, and will be a vital resource for students and scholars alike.

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