

# Once Upon An Algorithm How Stories Explain Computing

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## Ten Arguments for Deleting Your Social

**Media Accounts Right Now** Jaron Lanier

2018-05-29 AS SEEN IN THE NETFLIX

DOCUMENTARY THE SOCIAL DILEMMA A WIRED

"ALL-TIME FAVORITE BOOK" A FINANCIAL TIMES  
BEST BOOK "THE CONSCIENCE OF SILICON  
VALLEY"- GQ "Profound . . . Lanier shows the  
tactical value of appealing to the conscience of  
the individual. In the face of his earnest

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argument, I felt a piercing shame about my own presence on Facebook. I heeded his plea and deleted my account.” - Franklin Foer, The New York Times Book Review “Mixes prophetic wisdom with a simple practicality . . . Essential reading.” - The New York Times (Summer Reading Preview) You might have trouble imagining life without your social media accounts, but virtual reality pioneer Jaron Lanier insists that we’re better off without them. In Ten Arguments for Deleting Your Social Media Accounts Right Now, Lanier, who participates in no social media, offers powerful and personal reasons for all of us to leave these dangerous online platforms. Lanier’s reasons for freeing ourselves from social media’s poisonous grip include its tendency to bring out the worst in us, to make politics terrifying, to trick us with illusions of popularity and success, to twist our relationship with the truth, to disconnect us from other people even as we are more “connected” than ever, to rob us of our free will with

relentless targeted ads. How can we remain autonomous in a world where we are under continual surveillance and are constantly being prodded by algorithms run by some of the richest corporations in history that have no way of making money other than being paid to manipulate our behavior? How could the benefits of social media possibly outweigh the catastrophic losses to our personal dignity, happiness, and freedom? Lanier remains a tech optimist, so while demonstrating the evil that rules social media business models today, he also envisions a humanistic setting for social networking that can direct us toward a richer and fuller way of living and connecting with our world. Data Feminism Catherine D'Ignazio 2020-03-31 A new way of thinking about data science and data ethics that is informed by the ideas of intersectional feminism. Today, data science is a form of power. It has been used to expose injustice, improve health outcomes, and topple governments. But it has also been used to

discriminate, police, and surveil. This potential for good, on the one hand, and harm, on the other, makes it essential to ask: Data science by whom? Data science for whom? Data science with whose interests in mind? The narratives around big data and data science are overwhelmingly white, male, and techno-heroic. In *Data Feminism*, Catherine D'Ignazio and Lauren Klein present a new way of thinking about data science and data ethics—one that is informed by intersectional feminist thought. Illustrating data feminism in action, D'Ignazio and Klein show how challenges to the male/female binary can help challenge other hierarchical (and empirically wrong) classification systems. They explain how, for example, an understanding of emotion can expand our ideas about effective data visualization, and how the concept of invisible labor can expose the significant human efforts required by our automated systems. And they show why the data never, ever “speak for themselves.” *Data Feminism* offers strategies for

data scientists seeking to learn how feminism can help them work toward justice, and for feminists who want to focus their efforts on the growing field of data science. But *Data Feminism* is about much more than gender. It is about power, about who has it and who doesn't, and about how those differentials of power can be challenged and changed.

Hello World Hannah Fry 2018-09-06

\_\_\_\_\_ ‘One of the best books yet written on data and algorithms. . .deserves a place on the bestseller charts.’ (The Times) You are accused of a crime. Who would you rather determined your fate – a human or an algorithm? An algorithm is more consistent and less prone to error of judgement. Yet a human can look you in the eye before passing sentence. Welcome to the age of the algorithm, the story of a not-too-distant future where machines rule supreme, making important decisions – in healthcare, transport, finance, security, what we watch, where we go even who we send to prison. So how

much should we rely on them? What kind of future do we want? Hannah Fry takes us on a tour of the good, the bad and the downright ugly of the algorithms that surround us. In Hello World she lifts the lid on their inner workings, demonstrates their power, exposes their limitations, and examines whether they really are an improvement on the humans they are replacing. A BBC RADIO 4: BOOK OF THE WEEK SHORTLISTED FOR THE 2018 BAILLIE GIFFORD PRIZE AND 2018 ROYAL SOCIETY SCIENCE BOOK PRIZE

**The Algorithm Design Manual** Steven S Skiena 2009-04-05 This newly expanded and updated second edition of the best-selling classic continues to take the "mystery" out of designing algorithms, and analyzing their efficacy and efficiency. Expanding on the first edition, the book now serves as the primary textbook of choice for algorithm design courses while maintaining its status as the premier practical reference guide to algorithms for programmers,

researchers, and students. The reader-friendly Algorithm Design Manual provides straightforward access to combinatorial algorithms technology, stressing design over analysis. The first part, Techniques, provides accessible instruction on methods for designing and analyzing computer algorithms. The second part, Resources, is intended for browsing and reference, and comprises the catalog of algorithmic resources, implementations and an extensive bibliography. NEW to the second edition:

- Doubles the tutorial material and exercises over the first edition
- Provides full online support for lecturers, and a completely updated and improved website component with lecture slides, audio and video
- Contains a unique catalog identifying the 75 algorithmic problems that arise most often in practice, leading the reader down the right path to solve them
- Includes several NEW "war stories" relating experiences from real-world applications
- Provides up-to-date links leading to the very

best algorithm implementations available in C, C++, and Java

If... Then Taina Bucher 2018 We live in a world in which Google's search algorithms determine how we access information, Facebook's News Feed algorithms shape how we socialize, and Netflix collaborative filtering algorithms choose the media products we consume. As such, we live algorithmic lives. Life, however, is not blindly controlled or determined by algorithms. Nor are we simply victims of an ever-expanding artificial intelligence. Rather than looking at how technologies shape or are shaped by political institutions, this book is concerned with the ways in which informational infrastructure may be considered political in its capacity to shape social and cultural life. It looks specifically at the conditions of algorithmic life -- how algorithms work, both materially and discursively, to create the conditions for sociality and connectivity. The book argues that the most important aspect of algorithms is not what they are in terms of their

specific technical details but rather how they become part of social practices and how different people enlist them as powerful brokers of information, communication and society. If we truly want to engage with the promises of automation and predictive analytics entailed by the promises of "big data", we also need to understand the contours of algorithmic life that condition such practices. Setting out to explore both the specific uses of algorithms and the cultural forms they generate, this book offers a novel understanding of the power and politics of algorithmic life as grounded in case studies that explore the material-discursive dimensions of software.

**Algorithmic Puzzles** Anany Levitin 2011-10-14 Algorithmic puzzles are puzzles involving well-defined procedures for solving problems. This book will provide an enjoyable and accessible introduction to algorithmic puzzles that will develop the reader's algorithmic thinking. The first part of this book is a tutorial on algorithm

design strategies and analysis techniques. Algorithm design strategies — exhaustive search, backtracking, divide-and-conquer and a few others — are general approaches to designing step-by-step instructions for solving problems. Analysis techniques are methods for investigating such procedures to answer questions about the ultimate result of the procedure or how many steps are executed before the procedure stops. The discussion is an elementary level, with puzzle examples, and requires neither programming nor mathematics beyond a secondary school level. Thus, the tutorial provides a gentle and entertaining introduction to main ideas in high-level algorithmic problem solving. The second and main part of the book contains 150 puzzles, from centuries-old classics to newcomers often asked during job interviews at computing, engineering, and financial companies. The puzzles are divided into three groups by their difficulty levels. The first fifty puzzles in the Easier Puzzles section

require only middle school mathematics. The sixty puzzle of average difficulty and forty harder puzzles require just high school mathematics plus a few topics such as binary numbers and simple recurrences, which are reviewed in the tutorial. All the puzzles are provided with hints, detailed solutions, and brief comments. The comments deal with the puzzle origins and design or analysis techniques used in the solution. The book should be of interest to puzzle lovers, students and teachers of algorithm courses, and persons expecting to be given puzzles during job interviews.

The CS Detective Jeremy Kubica 2016-08-16  
Meet Frank Runtime. Disgraced ex-detective. Hard-boiled private eye. Search expert. When a robbery hits police headquarters, it's up to Frank Runtime and his extensive search skills to catch the culprits. In this detective story, you'll learn how to use algorithmic tools to solve the case. Runtime scours smugglers' boats with binary search, tails spies with a search tree, escapes a

prison with depth-first search, and picks locks with priority queues. Joined by know-it-all rookie Officer Notation and inept tag-along Socks, he follows a series of leads in a best-first search that unravels a deep conspiracy. Each chapter introduces a thrilling twist matched with a new algorithmic concept, ending with a technical recap. Perfect for computer science students and amateur sleuths alike, *The CS Detective* adds an entertaining twist to learning algorithms. Follow Frank's mission and learn:

- The algorithms behind best-first and depth-first search, iterative deepening, parallelizing, binary search, and more
- Basic computational concepts like strings, arrays, stacks, and queues
- How to adapt search algorithms to unusual data structures
- The most efficient algorithms to use in a given situation, and when to apply common-sense heuristic methods

**A Human Algorithm** Flynn Coleman 2019-10-01  
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

[How To Be a Geek](#) Matthew Fuller 2017-05-15  
Computer software and its structures, devices and processes are woven into our everyday life. Their significance is not just technical: the algorithms, programming languages, abstractions and metadata that millions of people

rely on every day have far-reaching implications for the way we understand the underlying dynamics of contemporary societies. In this innovative new book, software studies theorist Matthew Fuller examines how the introduction and expansion of computational systems into areas ranging from urban planning and state surveillance to games and voting systems are transforming our understanding of politics, culture and aesthetics in the twenty-first century. Combining historical insight and a deep understanding of the technology powering modern software systems with a powerful critical perspective, this book opens up new ways of understanding the fundamental infrastructures of contemporary life, economies, entertainment and warfare. In so doing Fuller shows that everyone must learn 'how to be a geek', as the seemingly opaque processes and structures of modern computer and software technology have a significance that no-one can afford to ignore. This powerful and engaging book will be of interest to

everyone interested in a critical understanding of the political and cultural ramifications of digital media and computing in the modern world. [Grokking Algorithms](#) Aditya Bhargava 2016-05-12 Summary Grokking Algorithms is a fully illustrated, friendly guide that teaches you how to apply common algorithms to the practical problems you face every day as a programmer. You'll start with sorting and searching and, as you build up your skills in thinking algorithmically, you'll tackle more complex concerns such as data compression and artificial intelligence. Each carefully presented example includes helpful diagrams and fully annotated code samples in Python. Learning about algorithms doesn't have to be boring! Get a sneak peek at the fun, illustrated, and friendly examples you'll find in Grokking Algorithms on Manning Publications' YouTube channel. Continue your journey into the world of algorithms with Algorithms in Motion, a practical, hands-on video course available exclusively at Manning.com

([www.manning.com/livevideo/algorithms-in-motion](http://www.manning.com/livevideo/algorithms-in-motion)). Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology An algorithm is nothing more than a step-by-step procedure for solving a problem. The algorithms you'll use most often as a programmer have already been discovered, tested, and proven. If you want to understand them but refuse to slog through dense multipage proofs, this is the book for you. This fully illustrated and engaging guide makes it easy to learn how to use the most important algorithms effectively in your own programs. About the Book Grokking Algorithms is a friendly take on this core computer science topic. In it, you'll learn how to apply common algorithms to the practical programming problems you face every day. You'll start with tasks like sorting and searching. As you build up your skills, you'll tackle more complex problems like data compression and artificial intelligence. Each carefully presented example includes

helpful diagrams and fully annotated code samples in Python. By the end of this book, you will have mastered widely applicable algorithms as well as how and when to use them. What's Inside Covers search, sort, and graph algorithms Over 400 pictures with detailed walkthroughs Performance trade-offs between algorithms Python-based code samples About the Reader This easy-to-read, picture-heavy introduction is suitable for self-taught programmers, engineers, or anyone who wants to brush up on algorithms. About the Author Aditya Bhargava is a Software Engineer with a dual background in Computer Science and Fine Arts. He blogs on programming at [adit.io](http://adit.io). Table of Contents Introduction to algorithms Selection sort Recursion Quicksort Hash tables Breadth-first search Dijkstra's algorithm Greedy algorithms Dynamic programming K-nearest neighbors

**Once Upon a Sunset** Tif Marcelo 2020-03-03  
The author of *The Key to Happily Ever After*—“a true gem filled with heart, laughs, and a cast of

delightful characters” (Nina Bocci, USA TODAY bestselling author)—returns with a heartwarming and charming novel about a woman who travels to the Philippines to reconnect with her long-lost family...and manages to find herself along the way. Diana Gallagher-Cary is at a tipping point. As a Washington, DC, OB/GYN at a prestigious hospital, she uses her career to distract herself from her grief over her granny’s death and her breakup from her long-term boyfriend after her free-spirited mother moves in with her. But when she makes a medical decision that disparages the hospital, she is forced to go on a short sabbatical. Never one to wallow, Diana decides to use the break to put order in her life, when her mother, Margo, stumbles upon a box of letters from her grandfather, Antonio Cruz, to her grandmother from the 1940s. The two women always believed that Antonio died in World War II, but the letters reveal otherwise. When they learn that he lived through the war, and that they have surviving relatives in the Philippines, Diana

becomes determined to connect with the family that she never knew existed, though Margo refuses to face her history. But Diana pushes on, and heads on a once-in-a-lifetime trip that challenges her identity, family history, and her idea of romantic love that could change her life forever. Infused with Tif Marcelo's signature "sexy, adorable, and heartfelt" (Kate Meader, USA TODAY bestselling author) voice, *Once Upon a Sunset* is a moving and lyrical celebration of love, family, and second chances.

[Programming Pearls](#) Jon Bentley 2016-04-21

When programmers list their favorite books, Jon Bentley's collection of programming pearls is commonly included among the classics. Just as natural pearls grow from grains of sand that irritate oysters, programming pearls have grown from real problems that have irritated real programmers. With origins beyond solid engineering, in the realm of insight and creativity, Bentley's pearls offer unique and clever solutions to those nagging problems.

Illustrated by programs designed as much for fun as for instruction, the book is filled with lucid and witty descriptions of practical programming techniques and fundamental design principles. It is not at all surprising that *Programming Pearls* has been so highly valued by programmers at every level of experience. In this revision, the first in 14 years, Bentley has substantially updated his essays to reflect current programming methods and environments. In addition, there are three new essays on testing, debugging, and timing set representations string problems. All the original programs have been rewritten, and an equal amount of new code has been generated. Implementations of all the programs, in C or C++, are now available on the Web. What remains the same in this new edition is Bentley's focus on the hard core of programming problems and his delivery of workable solutions to those problems. Whether you are new to Bentley's classic or are revisiting his work for some fresh insight, the book is sure

to make your own list of favorites.

**What Algorithms Want** Ed Finn 2017-03-10

The gap between theoretical ideas and messy reality, as seen in Neal Stephenson, 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.

**The Bestseller Code** Jodie Archer 2016-09-20

"When a story captures the imagination of millions, that's magic. Can you qualify magic?"

Archer and Jockers just may have done so."—Sylvia Day, New York Times bestselling author Ask most people about massive success in the world of fiction, and you'll typically hear that it's a game of hazy crystal balls. The sales figures of E. L. James or Dan Brown seem to be freakish—random occurrences in an unknowable market. But what if there were an algorithm that could reveal a secret DNA of bestsellers, regardless of their genre? What if it knew, just from analyzing the words alone, not just why genre writers like John Grisham and Danielle Steel belong on the lists, but also that authors such as Junot Diaz, Jodi Picoult, and Donna Tartt had telltale signs of success all over their pages? Thanks to Jodie Archer and Matthew Jockers, the algorithm exists, the code has been cracked, and the results bring fresh new insights into how fiction works and why we read. The Bestseller Code offers a new theory for why Fifty Shades of Grey sold so well. It sheds light on the current craze for dark heroines. It reveals which themes

tend to sell best. And all with fascinating supporting data taken from a five-year study of twenty thousand novels. Then there is the hunt for "the one"—the paradigmatic example of bestselling writing according to a computer's analysis of thousands of points of data. The result is surprising, a bit ironic, and delightfully unorthodox. This book explains groundbreaking text-mining research in accessible terms and offers a new perspective on the New York Times bestseller list. It's a big-idea book about the relationship between creativity and technology that will be provocative to anyone interested in how analytics have already transformed the worlds of finance, medicine, and sports. But at heart it is a celebration of books for readers and writers—a compelling investigation into how successful writing works, and a fresh take on our intellectual and emotional response to stories. *Computational Fairy Tales* Jeremy Kubica 2012 Have you ever thought that computer science should include more dragons and wizards?

Computational Fairy Tales introduces principles of computational thinking, illustrating high-level computer science concepts, the motivation behind them, and their application in a non-computer—fairy tale—domain. It's a quest that will take you from learning the basics of programming in a blacksmith's forge to fighting curses with recursion. Fifteen seers delivered the same prophecy, without so much as a single minstrel to lighten the mood: an unknown darkness threatens the kingdom. Suddenly, Princess Ann finds herself sent forth alone to save the kingdom. Leaving behind her home, family, and pet turtle Fido, Princess Ann must face goblin attacks, magical curses, arrogant scholars, an unpleasant oracle, and rude Boolean waiters. Along the way she must build a war chest of computational knowledge to survive the coming challenge.

**Automating Inequality** Virginia Eubanks  
2018-01-23 WINNER: The 2018 McGannon Center Book Prize and shortlisted for the Goddard

Riverside Stephan Russo Book Prize for Social Justice The New York Times Book Review: "Riveting." Naomi Klein: "This book is downright scary." Ethan Zuckerman, MIT: "Should be required reading." Dorothy Roberts, author of Killing the Black Body: "A must-read." Astra Taylor, author of The People's Platform: "The single most important book about technology you will read this year." Cory Doctorow: "Indispensable." A powerful investigative look at data-based discrimination—and how technology affects civil and human rights and economic equity The State of Indiana denies one million applications for healthcare, foodstamps and cash benefits in three years—because a new computer system interprets any mistake as “failure to cooperate.” In Los Angeles, an algorithm calculates the comparative vulnerability of tens of thousands of homeless people in order to prioritize them for an inadequate pool of housing resources. In Pittsburgh, a child welfare agency uses a statistical model to try to predict which

children might be future victims of abuse or neglect. Since the dawn of the digital age, decision-making in finance, employment, politics, health and human services has undergone revolutionary change. Today, automated systems—rather than humans—control which neighborhoods get policed, which families attain needed resources, and who is investigated for fraud. While we all live under this new regime of data, the most invasive and punitive systems are aimed at the poor. In *Automating Inequality*, Virginia Eubanks systematically investigates the impacts of data mining, policy algorithms, and predictive risk models on poor and working-class people in America. The book is full of heart-wrenching and eye-opening stories, from a woman in Indiana whose benefits are literally cut off as she lays dying to a family in Pennsylvania in daily fear of losing their daughter because they fit a certain statistical profile. The U.S. has always used its most cutting-edge science and technology to contain, investigate, discipline and

punish the destitute. Like the county poorhouse and scientific charity before them, digital tracking and automated decision-making hide poverty from the middle-class public and give the nation the ethical distance it needs to make inhumane choices: which families get food and which starve, who has housing and who remains homeless, and which families are broken up by the state. In the process, they weaken democracy and betray our most cherished national values. This deeply researched and passionate book could not be more timely.

**Smart Citizens, Smarter State** Beth Simone Noveck 2015-11-02 Governments make too little use of the skills and experience of citizens. New tools—what Beth Simone Noveck calls technologies of expertise—are making it possible to match citizen expertise to the demand for it in government. She offers a vision of participatory democracy rooted not in voting or crowdsourcing but in people’s knowledge and know-how.

*Best Practices of Spell Design* Jeremy Kubica

2013-01-21 "The Best Practices of Spell Design introduces practical aspects of software development that are often learned through painful experience. Through Marcus and Shelly's quest, the story encourages readers to think about how to write readable, well-tested and maintainable programs."--P. [4] of cover.

Data Structures and Algorithms in Java Michael T. Goodrich 2014-01-28 The design and analysis of efficient data structures has long been recognized as a key component of the Computer Science curriculum. Goodrich, Tomassia and Goldwasser's approach to this classic topic is based on the object-oriented paradigm as the framework of choice for the design of data structures. For each ADT presented in the text, the authors provide an associated Java interface. Concrete data structures realizing the ADTs are provided as Java classes implementing the interfaces. The Java code implementing fundamental data structures in this book is organized in a single Java package,

net.datastructures. This package forms a coherent library of data structures and algorithms in Java specifically designed for educational purposes in a way that is complimentary with the Java Collections Framework.

### **Nine Algorithms That 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.

Rethinking Randomness Jeffrey Buzen  
2015-08-21 Mathematical models based on stochastic processes have proven surprisingly accurate in many situations where their underlying assumptions are unlikely to be correct. Rethinking Randomness introduces an alternative characterization of randomness and a new modeling framework that together explain the improbable success of these probabilistic models. The new approach, known as observational stochastics, is derived from "back of the envelope" methods employed routinely by engineers, experimental scientists and systems oriented practitioners working in many fields. By formalizing and extending these intuitive techniques, observational stochastics provides an entirely rigorous alternative to traditional

mathematical theory that leads to vastly simpler derivations of certain major results and a deeper understanding of their true significance. Students who encounter probabilistic models in their courses in the physical, social and system sciences should find this book particularly helpful in understanding how the material they are studying in class is actually applied in practice. And because all mathematical arguments are self-contained and relatively straightforward, technically oriented non-specialists who wish to explore the connection between probability theory and the physical world should find most of the material in this book readily accessible. Most chapters are structured around a series of examples, beginning with the simplest possible cases and then extending the analysis in multiple directions. Powerful generalized results are presented only after simpler cases have been introduced and explained thoroughly. Readers who choose to bypass the mathematically complex sections of this book can still use these

simpler examples to obtain a clear understanding of the basic principles involved. The most extensive series of examples appear in Chapter 7, which incorporates a "mini course" on queuing theory and its applications to Computer Science. The author's first hand accounts of early developments in this area lend Rethinking Randomness a unique flavor. Chapter 8 examines the implications of observational stochastics for the debate between Bayesians and frequentists regarding the true meaning of "probability." Once again, the discussion is centered on a series of simple and highly approachable examples, leading ultimately to an interpretation of probability that is aligned most closely with the view of the great French mathematician Poincare (1854-1912). This proportionalist interpretation of chance then provides the foundation for the intuitive discussions of the Law of Large Numbers and the Ergodic Theorem that appear in Chapter 9. Advanced students and researchers will recognize that observational stochastics has the

potential to be extended in many directions that are largely unexplored. These include the use of shaped simulation to improve the speed and accuracy of Monte Carlo simulations, the development of new error bounds for cases where assumptions of empirical independence are not satisfied exactly, and the investigation of mathematical properties of special formal structures known as t-loops. Extensions required to deal with transient and trans-distributional aspects of observable behavior may also be feasible, but represent a substantially more difficult undertaking for researchers who wish to take up the challenge."

*A Human's Guide to Machine Intelligence* Kartik Hosanagar 2019-03-12 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.

**Python and Algorithmic Thinking for the Complete Beginner (2nd Edition)** Aristides S Bouras 2019-06-16 Thoroughly revised for the latest version of Python, this book explains basic concepts in a clear and explicit way that takes very seriously one thing for granted--that the reader knows nothing about computer programming. Addressed to anyone who has no prior programming knowledge or experience, but

a desire to learn programming with Python, it teaches the first thing that every novice programmer needs to learn, which is Algorithmic Thinking. Algorithmic Thinking involves more than just learning code. It is a problem-solving process that involves learning how to code. This edition contains all the popular features of the previous edition and adds a significant number of exercises, as well as extensive revisions and updates. Apart from Python's lists, it now also covers dictionaries, while a brand new section provides an effective introduction to the next field that a programmer needs to work with, which is Object Oriented Programming (OOP). This book has a class course structure with questions and exercises at the end of each chapter so you can test what you have learned right away and improve your comprehension. With 250 solved and 450 unsolved exercises, 475 true/false, about 150 multiple choice, and 200 review questions and crosswords (the solutions and the answers to which can be found on the

Internet), this book is ideal for novices or average programmers, for self-study high school students first-year college or university students teachers professors anyone who wants to start learning or teaching computer programming using the proper conventions and techniques

**Sensemaking** Christian Madsbjerg 2017-03-21 A Financial Times "Business Book of the Month" Based on his work at some of the world's largest companies, including Ford, Adidas, and Chanel, Christian Madsbjerg's Sensemaking is a provocative stand against the tyranny of big data and scientism, and an urgent, overdue defense of human intelligence. Humans have become subservient to algorithms. Every day brings a new Moneyball fix--a math whiz who will crack open an industry with clean fact-based analysis rather than human intuition and experience. As a result, we have stopped thinking. Machines do it for us. Christian Madsbjerg argues that our fixation with data often masks stunning deficiencies, and the risks for humankind are

enormous. Blind devotion to number crunching imperils our businesses, our educations, our governments, and our life savings. Too many companies have lost touch with the humanity of their customers, while marginalizing workers with liberal arts-based skills. Contrary to popular thinking, Madsbjerg shows how many of today's biggest success stories stem not from "quant" thinking but from deep, nuanced engagement with culture, language, and history. He calls his method sensemaking. In this landmark book, Madsbjerg lays out five principles for how business leaders, entrepreneurs, and individuals can use it to solve their thorniest problems. He profiles companies using sensemaking to connect with new customers, and takes readers inside the work process of sensemaking "connoisseurs" like investor George Soros, architect Bjarke Ingels, and others. Both practical and philosophical, Sensemaking is a powerful rejoinder to corporate groupthink and an indispensable resource for leaders and innovators who want to stand out

from the pack.

### **Introduction to Information Retrieval**

Christopher D. Manning 2008-07-07 Class-tested and coherent, this textbook teaches classical and web information retrieval, including web search and the related areas of text classification and text clustering from basic concepts. It gives an up-to-date treatment of all aspects of the design and implementation of systems for gathering, indexing, and searching documents; methods for evaluating systems; and an introduction to the use of machine learning methods on text collections. All the important ideas are explained using examples and figures, making it perfect for introductory courses in information retrieval for advanced undergraduates and graduate students in computer science. Based on feedback from extensive classroom experience, the book has been carefully structured in order to make teaching more natural and effective. Slides and additional exercises (with solutions for lecturers) are also available through the book's supporting

website to help course instructors prepare their lectures.

Real-World Algorithms Panos Louridas

2017-03-17 An introduction to algorithms for readers with no background in advanced mathematics or computer science, emphasizing examples and real-world problems. Algorithms are what we do in order not to have to do something. Algorithms consist of instructions to carry out tasks—usually dull, repetitive ones. Starting from simple building blocks, computer algorithms enable machines to recognize and produce speech, translate texts, categorize and summarize documents, describe images, and predict the weather. A task that would take hours can be completed in virtually no time by using a few lines of code in a modern scripting program. This book offers an introduction to algorithms through the real-world problems they solve. The algorithms are presented in pseudocode and can readily be implemented in a computer language. The book presents algorithms simply and

accessibly, without overwhelming readers or insulting their intelligence. Readers should be comfortable with mathematical fundamentals and have a basic understanding of how computers work; all other necessary concepts are explained in the text. After presenting background in pseudocode conventions, basic terminology, and data structures, chapters cover compression, cryptography, graphs, searching and sorting, hashing, classification, strings, and chance. Each chapter describes real problems and then presents algorithms to solve them. Examples illustrate the wide range of applications, including shortest paths as a solution to paragraph line breaks, strongest paths in elections systems, hashes for song recognition, voting power Monte Carlo methods, and entropy for machine learning. Real-World Algorithms can be used by students in disciplines from economics to applied sciences. Computer science majors can read it before using a more technical text.

## **Algorithms to Live By: The Computer Science of Human Decisions** Brian Christian

2016-04-19 A fascinating exploration of how computer algorithms can be applied to our everyday lives.

## Building a StoryBrand Donald Miller 2017-10-10

More than half-a-million business leaders have discovered the power of the StoryBrand Framework, created by New York Times best-selling author and marketing expert Donald Miller. And they are making millions. If you use the wrong words to talk about your product, nobody will buy it. Marketers and business owners struggle to effectively connect with their customers, costing them and their companies millions in lost revenue. In a world filled with constant, on-demand distractions, it has become near-impossible for business owners to effectively cut through the noise to reach their customers, something Donald Miller knows first-hand. In this book, he shares the proven system he has created to help you engage and truly

influence customers. The StoryBrand process is a proven solution to the struggle business leaders face when talking about their companies. Without a clear, distinct message, customers will not understand what you can do for them and are unwilling to engage, causing you to lose potential sales, opportunities for customer engagement, and much more. In Building a StoryBrand, Donald Miller teaches marketers and business owners to use the seven universal elements of powerful stories to dramatically improve how they connect with customers and grow their businesses. His proven process has helped thousands of companies engage with their existing customers, giving them the ultimate competitive advantage. Building a StoryBrand does this by teaching you: The seven universal story points all humans respond to; The real reason customers make purchases; How to simplify a brand message so people understand it; and How to create the most effective messaging for websites, brochures, and social media. Whether you are

the marketing director of a multibillion-dollar company, the owner of a small business, a politician running for office, or the lead singer of a rock band, Building a StoryBrand will forever transform the way you talk about who you are, what you do, and the unique value you bring to your customers.

[The Ethical Algorithm](#) Michael Kearns 2019-10-04  
Over the course of a generation, algorithms have gone from mathematical abstractions to powerful mediators of daily life. Algorithms have made our lives more efficient, more entertaining, and, sometimes, better informed. At the same time, complex algorithms are increasingly violating the basic rights of individual citizens. Allegedly anonymized datasets routinely leak our most sensitive personal information; statistical models for everything from mortgages to college admissions reflect racial and gender bias. Meanwhile, users manipulate algorithms to "game" search engines, spam filters, online reviewing services, and navigation apps.

Understanding and improving the science behind the algorithms that run our lives is rapidly becoming one of the most pressing issues of this century. Traditional fixes, such as laws, regulations and watchdog groups, have proven woefully inadequate. Reporting from the cutting edge of scientific research, *The Ethical Algorithm* offers a new approach: a set of principled solutions based on the emerging and exciting science of socially aware algorithm design. Michael Kearns and Aaron Roth explain how we can better embed human principles into machine code - without halting the advance of data-driven scientific exploration. Weaving together innovative research with stories of citizens, scientists, and activists on the front lines, *The Ethical Algorithm* offers a compelling vision for a future, one in which we can better protect humans from the unintended impacts of algorithms while continuing to inspire wondrous advances in technology.

**Once Upon a Time . . . A Treasury of Classic**

## **Fairy Tale Illustrations** Jeff A. Menges

2013-02-19 This collection gathers breathtaking art from early editions of "Sleeping Beauty," "Cinderella," and other classics. 180 elegant images — most in color — include works by Rackham, Dore, Dulac, Nielsen, and others.

## Weapons of Math Destruction Cathy O'Neil

2016-09-06 NEW YORK TIMES BESTSELLER • A former Wall Street quant sounds the alarm on Big Data and the mathematical models that threaten to rip apart our social fabric—with a new afterword “A manual for the twenty-first-century citizen . . . relevant and urgent.”—Financial Times NATIONAL BOOK AWARD LONGLIST • NAMED ONE OF THE BEST BOOKS OF THE YEAR BY The New York Times Book Review • The Boston Globe • Wired • Fortune • Kirkus Reviews • The Guardian • Nature • On Point We live in the age of the algorithm. Increasingly, the decisions that affect our lives—where we go to school, whether we can get a job or a loan, how much we pay for health insurance—are being made not by

humans, but by machines. In theory, this should lead to greater fairness: Everyone is judged according to the same rules. But as mathematician and data scientist Cathy O'Neil reveals, the mathematical models being used today are unregulated and uncontestable, even when they're wrong. Most troubling, they reinforce discrimination—propping up the lucky, punishing the downtrodden, and undermining our democracy in the process. Welcome to the dark side of Big Data.

**The Age of Surveillance Capitalism** Shoshana Zuboff 2019-01-31 THE TOP 10 SUNDAY TIMES BESTSELLER Shortlisted for the FT Business Book of the Year Award 2019 'Easily the most important book to be published this century. I find it hard to take any young activist seriously who hasn't at least familiarised themselves with Zuboff's central ideas.' - Zadie Smith, The Guardian The challenges to humanity posed by the digital future, the first detailed examination of the unprecedented form of power called

"surveillance capitalism," and the quest by powerful corporations to predict and control us. The heady optimism of the Internet's early days is gone. Technologies that were meant to liberate us have deepened inequality and stoked divisions. Tech companies gather our information online and sell it to the highest bidder, whether government or retailer. Profits now depend not only on predicting our behaviour but modifying it too. How will this fusion of capitalism and the digital shape our values and define our future? Shoshana Zuboff shows that we are at a crossroads. We still have the power to decide what kind of world we want to live in, and what we decide now will shape the rest of the century. Our choices: allow technology to enrich the few and impoverish the many, or harness it and distribute its benefits. *The Age of Surveillance Capitalism* is a deeply-reasoned examination of the threat of unprecedented power free from democratic oversight. As it explores this new capitalism's impact on society, politics, business,

and technology, it exposes the struggles that will decide both the next chapter of capitalism and the meaning of information civilization. Most critically, it shows how we can protect ourselves and our communities and ensure we are the masters of the digital rather than its slaves. *Algorithm Design* Jon Kleinberg 2012-02-28 This is the eBook of the printed book and may not include any media, website access codes, or print supplements that may come packaged with the bound book. *Algorithm Design* introduces algorithms by looking at the real-world problems that motivate them. The book teaches students a range of design and analysis techniques for problems that arise in computing applications. The text encourages an understanding of the algorithm design process and an appreciation of the role of algorithms in the broader field of computer science. August 6, 2009 Author, Jon Kleinberg, was recently cited in the New York Times for his statistical analysis research in the Internet age.

**Once Upon an Algorithm** Martin Erwig  
2022-08-09 How Hansel and Gretel, Sherlock Holmes, the movie Groundhog Day, Harry Potter, and other familiar stories illustrate the concepts 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.

**Computer Science Distilled** Wladston Ferreira Filho 2017-01-17 A foolproof walkthrough of must-know computer science concepts. A fast guide for those who don't need the academic formality, it goes straight to what differentiates

pros from amateurs. First introducing discrete mathematics, then exposing the most common algorithm and data structure design elements, and finally the working principles of computers and programming languages, the book is indicated to all programmers.

**Interpretable Machine Learning** Christoph Molnar 2019

Effective C Robert C. Seacord 2020-08-11 A detailed introduction to the C programming language for experienced programmers. The world runs on code written in the C programming language, yet most schools begin the curriculum with Python or Java. Effective C bridges this gap and brings C into the modern era--covering the modern C17 Standard as well as potential C2x features. With the aid of this instant classic, you'll soon be writing professional, portable, and secure C programs to power robust systems and solve real-world problems. Robert C. Seacord introduces C and the C Standard Library while addressing best practices, common errors, and

open debates in the C community. Developed together with other C Standards committee experts, Effective C will teach you how to debug, test, and analyze C programs. You'll benefit from Seacord's concise explanations of C language constructs and behaviors, and from his 40 years of coding experience. You'll learn:

- How to identify and handle undefined behavior in a C program
- The range and representations of integers and floating-point values
- How dynamic memory allocation works and how to use nonstandard functions
- How to use character encodings and types
- How to perform I/O with terminals and filesystems using C Standard streams and POSIX file descriptors
- How to understand the C compiler's translation phases and the role of the preprocessor
- How to test, debug, and analyze C programs

Effective C will teach you how to write professional, secure, and portable C code that will stand the test of time and help strengthen the foundation of the computing world.

Artificial Unintelligence Meredith Broussard  
2019-01-29 A guide to understanding the inner workings and outer limits of technology and why we should never assume that computers always get it right. In Artificial Unintelligence, Meredith Broussard argues that our collective enthusiasm for applying computer technology to every aspect of life has resulted in a tremendous amount of poorly designed systems. We are so eager to do everything digitally—hiring, driving, paying bills, even choosing romantic partners—that we have stopped demanding that our technology actually work. Broussard, a software developer and journalist, reminds us that there are fundamental limits to what we can (and should) do with technology. With this book, she offers a guide to understanding the inner workings and outer limits of technology—and issues a warning that we should never assume that computers always get things right. Making a case against technochauvinism—the belief that technology is always the solution—Broussard

argues that it's just not true that social problems would inevitably retreat before a digitally enabled Utopia. To prove her point, she undertakes a series of adventures in computer programming. She goes for an alarming ride in a driverless car, concluding “the cyborg future is not coming any time soon”; uses artificial intelligence to investigate why students can't pass standardized tests; deploys machine learning to predict which passengers survived the Titanic disaster; and attempts to repair the U.S. campaign finance system by building AI software. If we understand the limits of what we can do with technology, Broussard tells us, we can make better choices about what we should do with it to make the world better for everyone. Bad Choices Ali Almosawi 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 Almosawi 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.

**Mathematics for Machine Learning** Marc Peter Deisenroth 2020-03-31 Distills key concepts from linear algebra, geometry, matrices, calculus, optimization, probability and statistics that are used in machine learning.