

Once Upon An Algorithm How Stories Explain Computing

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Problems on Algorithms Ian Parberry 1995-01-01 With approximately 600 problems and 35 worked examples, this supplement provides a collection of practical problems

on the design, analysis and verification of algorithms. The book focuses on the important areas of algorithm design and analysis: background material; algorithm design techniques; advanced data structures and

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NP-completeness; and miscellaneous problems. Algorithms are expressed in Pascal-like pseudocode supported by figures, diagrams, hints, solutions, and comments.

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.

Mathematics for Machine Learning

Marc Peter Deisenroth 2020-04-23 The fundamental mathematical tools needed to understand machine learning include linear algebra, analytic geometry, matrix decompositions, vector calculus, optimization, probability and statistics. These topics are traditionally taught in disparate courses, making it hard for data science or computer science students, or professionals, to efficiently learn the mathematics. This self-contained textbook bridges the gap between mathematical and machine learning texts, introducing the mathematical concepts with a minimum of prerequisites. It uses these concepts to derive four central machine learning methods: linear regression, principal component analysis, Gaussian

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mixture models and support vector machines. For students and others with a mathematical background, these derivations provide a starting point to machine learning texts. For those learning the mathematics for the first time, the methods help build intuition and practical experience with applying mathematical concepts. Every chapter includes worked examples and exercises to test understanding. Programming tutorials are offered on the book's web site.

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.

Responsible Data Science

Peter C. Bruce 2021-04-13

Explore the most serious prevalent ethical issues in data science with this insightful new resource The increasing popularity of data science has resulted in numerous well-publicized cases of bias, injustice, and discrimination. The widespread deployment of "Black box" algorithms that are difficult or impossible to understand and explain, even for their developers, is a primary source of these unanticipated harms, making modern techniques and methods for manipulating large data sets seem sinister, even dangerous. When put in the hands of authoritarian governments, these algorithms have enabled suppression of political dissent and persecution of minorities. To prevent these harms, data scientists everywhere must come to understand how the algorithms that they build and deploy may harm certain groups or be unfair.

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delivers a comprehensive, practical treatment of how to implement data science solutions in an even-handed and ethical manner that minimizes the risk of undue harm to vulnerable members of society. Both data science practitioners and managers of analytics teams will learn how to: Improve model transparency, even for black box models Diagnose bias and unfairness within models using multiple metrics Audit projects to ensure fairness and minimize the possibility of unintended harm Perfect for data science practitioners, Responsible Data Science will also earn a spot on the bookshelves of technically inclined managers, software developers, and statisticians.

The Making of a Fly P. A. Lawrence 1992-04-15

Understanding how a multicellular animal develops from a single cell (the fertilized egg) poses one of the greatest challenges in biology today. Development from egg to adult involves the sequential expression of virtually the

whole of an organism's genetic instructions both in the mother as she lays down developmental cues in the egg, and in the embryo itself. Most of our present information on the role of genes in development comes from the invertebrate fruit fly, *Drosophila*. The two authors of this text (amongst the foremost authorities in the world) follow the developmental process from fertilization through the primitive structural development of the body plan of the fly after cleavage into the differentiation of the variety of tissues, organs and body parts that together define the fly. The developmental processes are fully explained throughout the text in the modern language of molecular biology and genetics. This text represents the vital synthesis of the subject that many have been waiting for and it will enable many specific courses in developmental biology and molecular genetics to focus on it. It will appeal to 2nd and 3rd year students in these disciplines as well as in

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biochemistry, neurobiology and zoology. It will also have widespread appeal among researchers. Authored by one of the foremost authorities in the world. A unique synthesis of the developmental cycle of *Drosophila* - our major source of information on the role of genes in development.

Designed to provide the basis of new courses in developmental biology and molecular genetics at senior undergraduate level. A lucid explanation in the modern language of the science.

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

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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.

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.

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

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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

PROC SQL Kirk Paul Lafler
2019-03-20 PROC SQL: Beyond

the Basics Using SAS®, Third Edition, is a step-by-step, example-driven guide that helps readers master the language of PROC SQL. Packed with analysis and examples illustrating an assortment of PROC SQL options, statements, and clauses, this book not only covers all the basics, but it also offers extensive guidance on complex topics such as set operators and correlated subqueries. Programmers at all levels will appreciate Kirk Lafler's easy-to-follow examples, clear explanations, and handy tips to extend their knowledge of PROC SQL. This third edition explores new and powerful features in SAS® 9.4, including topics such as: IFC and IFN functions nearest neighbor processing the HAVING clause indexes It also features two completely new chapters on fuzzy matching and data-driven programming. Delving into the workings of PROC SQL with greater analysis and discussion, PROC SQL: Beyond the Basics Using SAS®, Third Edition, explores this powerful database

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language using discussion and numerous real-world examples. *A Human's Guide to 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

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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.

The Master Algorithm Pedro Domingos 2015-09-22 A thought-provoking and wide-ranging exploration of machine learning and the race to build computer intelligences as flexible as our own In the world's top research labs and universities, the race is on to invent the ultimate learning algorithm: one capable of discovering any knowledge from data, and doing anything we want, before we even ask. In *The Master Algorithm*, Pedro Domingos lifts the veil to give us a peek inside the learning machines that power Google, Amazon, and your smartphone. He assembles a blueprint for the future universal learner--the Master Algorithm--and discusses what it will mean for business, science, and society. If dataism is today's philosophy, this book is its bible.

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

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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.

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

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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.

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

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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.

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.

Hello World Hannah Fry
2019-03-28 '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

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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

Cloud Cuckoo Land (Large Print Edition) Anthony Doerr
2021-09-28 From the Pulitzer Prize-winning author of *All the Light We Cannot See*, perhaps the most bestselling and beloved literary fiction of our time, comes a triumph of imagination and compassion, a soaring novel about children on the cusp of adulthood in a broken world, who find resilience, hope, and story. The heroes of *Cloud Cuckoo Land* are trying to figure out the world around them: Anna and Omeir, on opposite sides of the formidable city walls during the 1453 siege of Constantinople; teenage idealist Seymour in an attack on a public library in present day Idaho; and Konstance, on an interstellar ship bound for an exoplanet, decades from now. Like Marie-Laure and Werner in *All the Light We Cannot See*, Anna, Omeir, Seymour, and Konstance are

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dreamers and outsiders who find resourcefulness and hope in the midst of peril. An ancient text—the story of Aethon, who longs to be turned into a bird so that he can fly to a utopian paradise in the sky—provides solace and mystery to these unforgettable characters. Doerr has created a tapestry of times and places that reflects our vast interconnectedness—with other species, with each other, with those who lived before us and those who will be here after we're gone. Dedicated to “the librarians then, now, and in the years to come,” *Cloud Cuckoo Land* is a hauntingly beautiful and redemptive novel about stewardship—of the book, of the Earth, of the human heart.

Algorithms to Live By Brian Christian 2016-04-19 A fascinating exploration of how insights from computer algorithms can be applied to our everyday lives, helping to solve common decision-making problems and illuminate the workings of the human mind All our lives are constrained by

limited space and time, limits that give rise to a particular set of problems. What should we do, or leave undone, in a day or a lifetime? How much messiness should we accept? What balance of new activities and familiar favorites is the most fulfilling? These may seem like uniquely human quandaries, but they are not: computers, too, face the same constraints, so computer scientists have been grappling with their version of such issues for decades. And the solutions they've found have much to teach us. In a dazzlingly interdisciplinary work, acclaimed author Brian Christian and cognitive scientist Tom Griffiths show how the algorithms used by computers can also untangle very human questions. They explain how to have better hunches and when to leave things to chance, how to deal with overwhelming choices and how best to connect with others. From finding a spouse to finding a parking spot, from organizing one's inbox to understanding the workings of

memory, Algorithms to Live By transforms the wisdom of computer science into strategies for human living.

Designing Embedded

Hardware John Catsoulis 2002 Intelligent readers who want to build their own embedded computer systems-- installed in everything from cell phones to cars to handheld organizers to refrigerators-- will find this book to be the most in-depth, practical, and up-to-date guide on the market. Designing Embedded Hardware carefully steers between the practical and philosophical aspects, so developers can both create their own devices and gadgets and customize and extend off-the-shelf systems. There are hundreds of books to choose from if you need to learn programming, but only a few are available if you want to learn to create hardware. Designing Embedded Hardware provides software and hardware engineers with no prior experience in embedded systems with the necessary conceptual and design building blocks to

understand the architectures of embedded systems. Written to provide the depth of coverage and real-world examples developers need, Designing Embedded Hardware also provides a road-map to the pitfalls and traps to avoid in designing embedded systems. Designing Embedded Hardware covers such essential topics as: The principles of developing computer hardware Core hardware designs Assembly language concepts Parallel I/O Analog-digital conversion Timers (internal and external) UART Serial Peripheral Interface Inter-Integrated Circuit Bus Controller Area Network (CAN) Data Converter Interface (DCI) Low-power operation This invaluable and eminently useful book gives you the practical tools and skills to develop, build, and program your own application-specific computers.

The Pattern On The Stone W.

Daniel Hillis 2014-12-09 Most people are baffled by how computers work and assume that they will never understand

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them. What they don't realize—and what Daniel Hillis's short book brilliantly demonstrates—is that computers' seemingly complex operations can be broken down into a few simple parts that perform the same simple procedures over and over again. Computer wizard Hillis offers an easy-to-follow explanation of how data is processed that makes the operations of a computer seem as straightforward as those of a bicycle. Avoiding technobabble or discussions of advanced hardware, the lucid explanations and colorful anecdotes in *The Pattern on the Stone* go straight to the heart of what computers really do. Hillis proceeds from an outline of basic logic to clear descriptions of programming languages, algorithms, and memory. He then takes readers in simple steps up to the most exciting developments in computing today—quantum computing, parallel computing, neural networks, and self-organizing systems. Written clearly and succinctly by one of

the world's leading computer scientists, *The Pattern on the Stone* is an indispensable guide to understanding the workings of that most ubiquitous and important of machines: the computer.

[Race After Technology](#) Ruha

Benjamin 2019-07-09 From everyday apps to complex algorithms, Ruha Benjamin cuts through tech-industry hype to understand how emerging technologies can reinforce White supremacy and deepen social inequity.

Benjamin argues that automation, far from being a sinister story of racist programmers scheming on the dark web, has the potential to hide, speed up, and deepen discrimination while appearing neutral and even benevolent when compared to the racism of a previous era. Presenting the concept of the “New Jim Code,” she shows how a range of discriminatory designs encode inequity by explicitly amplifying racial hierarchies; by ignoring but thereby replicating social divisions; or by aiming to fix racial bias but

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ultimately doing quite the opposite. Moreover, she makes a compelling case for race itself as a kind of technology, designed to stratify and sanctify social injustice in the architecture of everyday life. This illuminating guide provides conceptual tools for decoding tech promises with sociologically informed skepticism. In doing so, it challenges us to question not only the technologies we are sold but also the ones we ourselves manufacture. Visit the book's free Discussion Guide here.

Critical Affect Ashley Barnwell 2020-05-28 Critical Affect explores the emotional complexity of critique and maps out its enduring value for the turn to affect and ontology. Through a series of vivid close readings, Ashley Barnwell shows how suspicion and methods of decoding remain vital to both civic and academic spaces, where concerns about precarity, transparency, and security are commonplace and the question of how we verify the truth is one of the most

polarising of our age. Weaving together both the critical and affective dimensions of 'paranoid reading', Critical Affect opens crucial questions about the ethics of practicing theory and offers a new route into the critical study of affect.^a

Weapons of Math

Destruction Cathy O'Neil

2016 Longlisted for the National Book Award New York Times Bestseller A former Wall Street quant sounds an alarm on the mathematical models that pervade modern life -- and threaten to rip apart our social fabric We live in the age of the algorithm. Increasingly, the decisions that affect our lives-- where we go to school, whether we get a car loan, how much we pay for health insurance--are being made not by humans, but by mathematical models. In theory, this should lead to greater fairness: Everyone is judged according to the same rules, and bias is eliminated. But as Cathy O'Neil reveals in this urgent and necessary book, the opposite is true. The

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models being used today are opaque, unregulated, and uncontested, even when they're wrong. Most troubling, they reinforce discrimination: If a poor student can't get a loan because a lending model deems him too risky (by virtue of his zip code), he's then cut off from the kind of education that could pull him out of poverty, and a vicious spiral ensues. Models are propping up the lucky and punishing the downtrodden, creating a "toxic cocktail for democracy." Welcome to the dark side of Big Data. Tracing the arc of a person's life, O'Neil exposes the black box models that shape our future, both as individuals and as a society. These "weapons of math destruction" score teachers and students, sort resumes, grant (or deny) loans, evaluate workers, target voters, set parole, and monitor our health. O'Neil calls on modelers to take more responsibility for their algorithms and on policy makers to regulate their use. But in the end, it's up to us to become more savvy about the

models that govern our lives. This important book empowers us to ask the tough questions, uncover the truth, and demand change. -- Longlist for National Book Award (Non-Fiction) -- Goodreads, semi-finalist for the 2016 Goodreads Choice Awards (Science and Technology) -- Kirkus, Best Books of 2016 -- New York Times, 100 Notable Books of 2016 (Non-Fiction) -- The Guardian, Best Books of 2016 -- WBUR's "On Point," Best Books of 2016: Staff Picks -- Boston Globe, Best Books of 2016, Non-Fiction

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.

Sensemaking Christian Madsbjerg 2017-03-21 A Financial Times "Business Book of the Month" Based on his

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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.

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.

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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.

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

Best Practices of Spell Design
Jeremy Kubica 2013-01-21 "The

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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.

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

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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.

Invisible Women Caroline Criado Perez 2019-03-12 Data is fundamental to the modern world. From economic development, to healthcare, to education and public policy, we rely on numbers to allocate resources and make crucial decisions. But because so much data fails to take into account gender, because it treats men as the default and women as atypical, bias and discrimination are baked into our systems. And women pay tremendous costs for this bias, in time, money, and often with their lives. Celebrated feminist advocate Caroline Criado Perez

investigates shocking root cause of gender inequality and research in *Invisible Women*†, diving into women's lives at home, the workplace, the public square, the doctor's office, and more. Built on hundreds of studies in the US, the UK, and around the world, and written with energy, wit, and sparkling intelligence, this is a groundbreaking, unforgettable exposé that will change the way you look at the world.

Ten Arguments for Deleting Your Social Media Accounts Right Now Jaron Lanier

2018-05-29 "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"--

The Ethical Algorithm

Michael Kearns 2019-10-04 Over the course of a

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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.

Algorithmic Thinking Daniel Zingaro 2020-12-15 A hands-on, problem-based introduction to building algorithms and data structures to solve problems with a computer. *Algorithmic Thinking* will teach you how to solve challenging programming problems and design your own algorithms. Daniel Zingaro, a master teacher, draws his

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examples from world-class programming competitions like USACO and IOI. You'll learn how to classify problems, choose data structures, and identify appropriate algorithms. You'll also learn how your choice of data structure, whether a hash table, heap, or tree, can affect runtime and speed up your algorithms; and how to adopt powerful strategies like recursion, dynamic programming, and binary search to solve challenging problems. Line-by-line breakdowns of the code will teach you how to use algorithms and data structures like:

- The breadth-first search algorithm to find the optimal way to play a board game or find the best way to translate a book
- Dijkstra's algorithm to determine how many mice can exit a maze or the number of fastest routes between two locations
- The union-find data structure to answer questions about connections in a social network or determine who are friends or enemies
- The heap data structure to determine the

amount of money given away in a promotion

- The hash-table data structure to determine whether snowflakes are unique or identify compound words in a dictionary

NOTE: Each problem in this book is available on a programming-judge website. You'll find the site's URL and problem ID in the description. What's better than a free correctness check?

Algorithmic Life Louise Amoore
2015-12-22 This book critically explores forms and techniques of calculation that emerge with digital computation, and their implications. The contributors demonstrate that digital calculative devices matter beyond their specific functions as they progressively shape, transform and govern all areas of our life. In particular, it addresses such questions as: How does the drive to make sense of, and productively use, large amounts of diverse data, inform the development of new calculative devices, logics and techniques? How do these devices, logics and techniques affect our capacity to decide and to act? How do mundane

elements of our physical and virtual existence become data to be analysed and rearranged in complex ensembles of people and things? In what ways are conventional notions of public and private, individual and population, certainty and probability, rule and exception transformed and what are the consequences? How does 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.

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

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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.

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

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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.

Programming Collective Intelligence Toby Segaran
2007-08-16 Want to tap the power behind search rankings, product recommendations, social bookmarking, and online matchmaking? This fascinating book demonstrates how you can build Web 2.0 applications to mine the enormous amount

of data created by people on the Internet. With the sophisticated algorithms in this book, you can write smart programs to access interesting datasets from other web sites, collect data from users of your own applications, and analyze and understand the data once you've found it. Programming Collective Intelligence takes you into the world of machine learning and statistics, and explains how to draw conclusions about user experience, marketing, personal tastes, and human behavior in general -- all from information that you and others collect every day. Each algorithm is described clearly and concisely with code that can immediately be used on your web site, blog, Wiki, or specialized application. This book explains: Collaborative filtering techniques that enable online retailers to recommend products or media Methods of clustering to detect groups of similar items in a large dataset Search engine features -- crawlers, indexers, query engines, and the PageRank

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algorithm Optimization
algorithms that search millions
of possible solutions to a
problem and choose the best
one Bayesian filtering, used in
spam filters for classifying
documents based on word
types and other features Using
decision trees not only to make
predictions, but to model the
way decisions are made
Predicting numerical values
rather than classifications to
build price models Support
vector machines to match
people in online dating sites
Non-negative matrix
factorization to find the
independent features in a
dataset Evolving intelligence
for problem solving -- how a
computer develops its skill by
improving its own code the
more it plays a game Each
chapter includes exercises for
extending the algorithms to
make them more powerful. Go
beyond simple database-
backed applications and put
the wealth of Internet data to
work for you. "Bravo! I cannot
think of a better way for a
developer to first learn these
algorithms and methods, nor

can I think of a better way for
me (an old AI dog) to
reinvigorate my knowledge of
the details." -- Dan Russell,
Google "Toby's book does a
great job of breaking down the
complex subject matter of
machine-learning algorithms
into practical, easy-to-
understand examples that can
be directly applied to analysis
of social interaction across the
Web today. If I had this book
two years ago, it would have
saved precious time going
down some fruitless paths." --
Tim Wolters, CTO, Collective
Intellect

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

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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). 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

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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. 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