

Data Model Patterns Conventions Of Thought Hardback By David C Hay Published By Dorset House Publishing 1995

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Practical Time Series Analysis - Aileen Nielsen 2019-09-20

Time series data analysis is increasingly important due to the massive production of such data through the internet of things, the digitalization of healthcare, and the rise of smart cities. As continuous monitoring and data collection become more common, the need for competent time series analysis with both statistical and machine learning techniques will increase. Covering innovations in time series data analysis and use cases from the real world, this practical guide will help you solve the most common data engineering and analysis challenges in time series, using both traditional statistical and modern machine learning techniques. Author Aileen Nielsen offers an accessible, well-rounded introduction to time series in both R and Python that will have data scientists, software engineers, and researchers up and running quickly. You'll get the guidance you need to confidently: Find and wrangle time series data Undertake exploratory time series data analysis Store temporal data Simulate time series data Generate and select features for a time series Measure error Forecast and classify time series with machine or deep learning Evaluate accuracy and performance

Bayesian Data Analysis, Third Edition - Andrew Gelman 2013-11-01

Now in its third edition, this classic book is widely considered the leading text on Bayesian methods, lauded for its accessible, practical approach to analyzing data and solving research problems. Bayesian Data Analysis, Third Edition continues to take an applied approach to analysis using up-to-date Bayesian methods. The authors—all leaders in the statistics community—introduce basic concepts from a data-analytic perspective before presenting advanced methods. Throughout the text, numerous worked examples drawn from real applications and research emphasize the use of Bayesian inference in practice. New to the Third Edition Four new chapters on nonparametric modeling Coverage of weakly informative priors and boundary-avoiding priors Updated discussion of cross-validation and predictive information criteria Improved convergence monitoring and effective sample size calculations for iterative simulation Presentations of Hamiltonian Monte Carlo, variational Bayes, and expectation propagation New and revised software code The book can be used in three different ways. For undergraduate students, it introduces Bayesian inference starting from first principles. For graduate students, the text presents effective current approaches to Bayesian modeling and computation in statistics and related fields. For researchers, it provides an assortment of Bayesian methods in applied statistics. Additional materials, including data sets used in the examples, solutions to selected exercises, and software instructions, are available on the book's web page.

The Data Model Resource Book - Len Silverston 2009-01-09

This third volume of the best-selling "Data Model Resource Book" series revolutionizes the data modeling discipline by answering the question "How can you save significant time while improving the quality of any type of data modeling effort?" In contrast to the first two volumes, this new volume focuses on the fundamental,

underlying patterns that affect over 50 percent of most data modeling efforts. These patterns can be used to considerably reduce modeling time and cost, to jump-start data modeling efforts, as standards and guidelines to increase data model consistency and quality, and as an objective source against which an enterprise can evaluate data models.

Data Model Patterns - David C. Hay 2006-06-23

In recent years, companies and government agencies have come to realize that the data they use represent a significant corporate resource, whose cost calls for management every bit as rigorous as the management of human resources, money, and capital equipment. With this realization has come recognition of the importance to integrate the data that has traditionally only been available from disparate sources. An important component of this integration is the management of the "metadata" that describe, catalogue, and provide access to the various forms of underlying business data. The "metadata repository" is essential keeping track both of the various physical components of these systems, but also their semantics. What do we mean by "customer?" Where can we find information about our customers? After years of building enterprise models for the oil, pharmaceutical, banking, and other industries, Dave Hay has here not only developed a conceptual model of such a metadata repository, he has in fact created a true enterprise data model of the information technology industry itself. - The book is comprehensive, in that it is based on the Zachman Framework for information architecture--encompassing the Business Owner's, Architect's, and Designer's views, for all columns (data, activities, locations, people, timing, and motivation). - The book is comprehensible, in that it provides a step-by-step description of model and is organized so that different readers can benefit from different parts;. - The book takes advantage of the author's vast experience modeling various other industries; - The model provides a view of the world being addressed by all the techniques, methods and tools of the information processing industry (for example, object-oriented design, CASE, business process re-engineering, etc.). - Indeed it presents many concepts that are not currently being addressed by such tools--and should be. David C. Hay is founder of Essential Strategies, Inc., a consulting firm dedicated to helping clients define corporate information architecture, identify requirements, and plan strategies for the implementation of new systems, including data warehouses. A pioneer in the use of standard data models for standard business situations, he is the author of the book Data Model Patterns: Conventions of Thought. Taking advantage of thirty years' experience helping companies identify systems requirements, he is also the author of Requirements Analysis: From Business Views to Architecture. He is a member of DAMA International and the Oracle Development Tools User Group, and has spoken frequently at events sponsored by these groups and others. - The book is comprehensive, in that it is based on the Zachman Framework for information architecture--encompassing the Business Owner's, Architect's, and Designer's views, for all columns (data, activities, locations,

people, timing, and motivation). - The book is comprehensible, in that it provides a step-by-step description of model and is organized so that different readers can benefit from different parts; - The book takes advantage of the author's vast experience modeling various other industries; - The model provides a view of the world being addressed by all the techniques, methods and tools of the information processing industry (for example, object-oriented design, CASE, business process re-engineering, etc.). - Indeed it presents many concepts that are not currently being addressed by such tools--and should be.

Analysis Patterns - Martin Fowler 1996-10-09

This innovative book recognizes the need within the object-oriented community for a book that goes beyond the tools and techniques of the typical methodology book. In *Analysis Patterns: Reusable Object Models*, Martin Fowler focuses on the end result of object-oriented analysis and design—the models themselves. He shares with you his wealth of object modeling experience and his keen eye for identifying repeating problems and transforming them into reusable models. *Analysis Patterns* provides a catalogue of patterns that have emerged in a wide range of domains including trading, measurement, accounting and organizational relationships. Recognizing that conceptual patterns cannot exist in isolation, the author also presents a series of "support patterns" that discuss how to turn conceptual models into software that in turn fits into an architecture for a large information system. Included in each pattern is the reasoning behind their design, rules for when they should and should not be used, and tips for implementation. The examples presented in this book comprise a cookbook of useful models and insight into the skill of reuse that will improve analysis, modeling and implementation.

Enterprise Model Patterns - David C. Hay 2011-01-01

Here you'll find one key to the development of a successful information system: Clearly capture and communicate both the abstract and concrete building blocks of data that describe your organization. In 1995, David Hay published *Data Model Patterns: Conventions of Thought* - the groundbreaking book on how to use standard data models to describe the standard business situations. *Enterprise Model Patterns: Describing the World* builds on the concepts presented there, adds 15 years of practical experience, and presents a more comprehensive view. You will learn how to apply both the abstract and concrete elements of your enterprise's architectural data model through four levels of abstraction: Level 0: An abstract template that underlies the Level 1 model that follows, plus two meta models: • Information Resources. In addition to books, articles, and e-mail notes, it also includes photographs, videos, and sound recordings. • Accounting. Accounting is remarkable because it is itself a modeling language. It takes a very different approach than data modelers in that instead of using entities and entity classes that represent things in the world, it is concerned with accounts that represent bits of value to the organization. Level 1: An enterprise model that is generic enough to apply to any company or government agency, but concrete enough to be readily understood by all. It describes: • People and Organization. Who is involved with the business? The people involved are not only the employees within the organization, but customers, agents, and others with whom the organization comes in contact. Organizations of interest include the enterprise itself and its own internal departments, as well as customers, competitors, government agencies, and the like. • Geographic Locations. Where is business conducted? A geographic location may be either a geographic area (defined as any bounded area on the Earth), a geographic point (used to identify a particular location), or, if you are an oil company for example, a geographic solid (such as an oil reserve). • Assets. What tangible items are used to carry out the business? These are any physical things that are manipulated, sometimes as products, but also as the means to producing products and services. • Activities. How is the business carried out? This model not only covers services offered, but also projects and any other kinds of activities. In addition, the model describes the events that cause activities to happen. • Time. All data is positioned in time, but some more than others. Level 2: A more detailed model describing specific functional areas: • Facilities • Human Resources • Communications and Marketing • Contracts • Manufacturing • The Laboratory Level 3:

Examples of the details a model can have to address what is truly unique in a particular industry. Here you see how to address the unique bits in areas as diverse as: • Criminal Justice. The model presented here is based on the "Global Justice XML Data Model" (GJXDM). • Microbiology • Banking. The model presented here is the result of working for four different banks and then adding some thought to come up with something different from what is currently in any of them. • Highways. The model here is derived from a project in a Canadian Provincial Highway Department, and addresses the question "what is a road?"

Game Programming Patterns - Robert Nystrom 2014-11-03

The biggest challenge facing many game programmers is completing their game. Most game projects fizzle out, overwhelmed by the complexity of their own code. *Game Programming Patterns* tackles that exact problem. Based on years of experience in shipped AAA titles, this book collects proven patterns to untangle and optimize your game, organized as independent recipes so you can pick just the patterns you need. You will learn how to write a robust game loop, how to organize your entities using components, and take advantage of the CPU's cache to improve your performance. You'll dive deep into how scripting engines encode behavior, how quadtrees and other spatial partitions optimize your engine, and how other classic design patterns can be used in games.

The Data Model Resource Book, Volume 1 - Len Silverston 2011-08-08

A quick and reliable way to build proven databases for core business functions Industry experts raved about *The Data Model Resource Book* when it was first published in March 1997 because it provided a simple, cost-effective way to design databases for core business functions. Len Silverston has now revised and updated the hugely successful 1st Edition, while adding a companion volume to take care of more specific requirements of different businesses. This updated volume provides a common set of data models for specific core functions shared by most businesses like human resources management, accounting, and project management. These models are standardized and are easily replicated by developers looking for ways to make corporate database development more efficient and cost effective. This guide is the perfect complement to *The Data Model Resource CD-ROM*, which is sold separately and provides the powerful design templates discussed in the book in a ready-to-use electronic format. A free demonstration CD-ROM is available with each copy of the print book to allow you to try before you buy the full CD-ROM.

Data Science from Scratch - Joel Grus 2015-04-14

Data science libraries, frameworks, modules, and toolkits are great for doing data science, but they're also a good way to dive into the discipline without actually understanding data science. In this book, you'll learn how many of the most fundamental data science tools and algorithms work by implementing them from scratch. If you have an aptitude for mathematics and some programming skills, author Joel Grus will help you get comfortable with the math and statistics at the core of data science, and with hacking skills you need to get started as a data scientist. Today's messy glut of data holds answers to questions no one's even thought to ask. This book provides you with the know-how to dig those answers out. Get a crash course in Python Learn the basics of linear algebra, statistics, and probability—and understand how and when they're used in data science Collect, explore, clean, munge, and manipulate data Dive into the fundamentals of machine learning Implement models such as k-nearest Neighbors, Naive Bayes, linear and logistic regression, decision trees, neural networks, and clustering Explore recommender systems, natural language processing, network analysis, MapReduce, and databases

Model Rules of Professional Conduct - American Bar Association. House of Delegates 2007

The Model Rules of Professional Conduct provides an up-to-date resource for information on legal ethics. Federal, state and local courts in all jurisdictions look to the Rules for guidance in solving lawyer malpractice cases, disciplinary actions, disqualification issues, sanctions questions and much more. In this volume, black-letter Rules of Professional Conduct are followed by numbered Comments that explain each Rule's purpose and provide

suggestions for its practical application. The Rules will help you identify proper conduct in a variety of given situations, review those instances where discretionary action is possible, and define the nature of the relationship between you and your clients, colleagues and the courts.

Machine Learning Design Patterns - Valliappa Lakshmanan 2020-10-15

The design patterns in this book capture best practices and solutions to recurring problems in machine learning. The authors, three Google engineers, catalog proven methods to help data scientists tackle common problems throughout the ML process. These design patterns codify the experience of hundreds of experts into straightforward, approachable advice. In this book, you will find detailed explanations of 30 patterns for data and problem representation, operationalization, repeatability, reproducibility, flexibility, explainability, and fairness. Each pattern includes a description of the problem, a variety of potential solutions, and recommendations for choosing the best technique for your situation. You'll learn how to: Identify and mitigate common challenges when training, evaluating, and deploying ML models Represent data for different ML model types, including embeddings, feature crosses, and more Choose the right model type for specific problems Build a robust training loop that uses checkpoints, distribution strategy, and hyperparameter tuning Deploy scalable ML systems that you can retrain and update to reflect new data Interpret model predictions for stakeholders and ensure models are treating users fairly

Dataclysm - Christian Rudder 2014-09-09

A New York Times Bestseller An audacious, irreverent investigation of human behavior—and a first look at a revolution in the making Our personal data has been used to spy on us, hire and fire us, and sell us stuff we don't need. In *Dataclysm*, Christian Rudder uses it to show us who we truly are. For centuries, we've relied on polling or small-scale lab experiments to study human behavior. Today, a new approach is possible. As we live more of our lives online, researchers can finally observe us directly, in vast numbers, and without filters. Data scientists have become the new demographers. In this daring and original book, Rudder explains how Facebook "likes" can predict, with surprising accuracy, a person's sexual orientation and even intelligence; how attractive women receive exponentially more interview requests; and why you must have haters to be hot. He charts the rise and fall of America's most reviled word through Google Search and examines the new dynamics of collaborative rage on Twitter. He shows how people express themselves, both privately and publicly. What is the least Asian thing you can say? Do people bathe more in Vermont or New Jersey? What do black women think about Simon & Garfunkel? (Hint: they don't think about Simon & Garfunkel.) Rudder also traces human migration over time, showing how groups of people move from certain small towns to the same big cities across the globe. And he grapples with the challenge of maintaining privacy in a world where these explorations are possible. Visually arresting and full of wit and insight, *Dataclysm* is a new way of seeing ourselves—a brilliant alchemy, in which math is made human and numbers become the narrative of our time.

UML and Data Modeling - David C. Hay 2011-11-01

Here you will learn how to develop an attractive, easily readable, conceptual, business-oriented entity/relationship model, using a variation on the UML Class Model notation. This book has two audiences: • Data modelers (both analysts and database designers) who are convinced that UML has nothing to do with them; and • UML experts who don't realize that architectural data modeling really is different from object modeling (and that the differences are important). David Hay's objective is to finally bring these two groups together in peace. Here all modelers will receive guidance on how to produce a high quality (that is, readable) entity/relationship model to describe the data architecture of an organization. The notation involved happens to be the one for class models in the Unified Modeling Language, even though UML was originally developed to support object-oriented design. Designers have a different view of the world from those who develop business-oriented conceptual data models, which

means that to use UML for architectural modeling requires some adjustments. These adjustments are described in this book. David Hay is the author of *Enterprise Model Patterns: Describing the World*, a comprehensive model of a generic enterprise. The diagrams were at various levels of abstraction, and they were all rendered in the slightly modified version of UML Class Diagrams presented here. This book is a handbook to describe how to build models such as these. By way of background, an appendix provides a history of the two groups, revealing the sources of their different attitudes towards the system development process. If you are an old-school ER modeler and now find yourself having to come up to speed on UML to get that next job (or keep the current one), this is your guidebook to success. If you are a long time object oriented programmer who has to interact with data modelers, this book is for you too. David has done the hard work of mapping out how to do a logical entity relationship model using standard (and accepted) UML diagram components. This book shows you step-by-step, with ample examples, how to get from here to there with the least pain possible for all concerned. Kent Graziano Certified Data Vault Master and Oracle ACE Past-President of ODTUG & RMOUG Brilliantly organized: three books hidden in one cohesive work. Notwithstanding the tremendous value provided by cross-training data architects/modelers and object modelers/architects, making each better at what they do, Appendix B presents an absolutely awesome concise, yet detailed, history of modeling objects and data that clearly documents the differences in the approaches over the years and helps bring it all into perspective. This book is packed with useful information. Even the footnotes add clarity and offer interesting and often humorous editorial insight making it a fun read. Whatever viewpoint the reader is coming from this book has something to offer as long as the reader maintains an open mind. Roland Berg Senior Architect Diligent Consulting, Inc. San Antonio, Texas

Data Model Patterns - David Hay 2013-07-18

This is the digital version of the printed book (Copyright © 1996). Learning the basics of a modeling technique is not the same as learning how to use and apply it. To develop a data model of an organization is to gain insights into its nature that do not come easily. Indeed, analysts are often expected to understand subtleties of an organization's structure that may have evaded people who have worked there for years. Here's help for those analysts who have learned the basics of data modeling (or "entity/relationship modeling") but who need to obtain the insights required to prepare a good model of a real business. Structures common to many types of business are analyzed in areas such as accounting, material requirements planning, process manufacturing, contracts, laboratories, and documents. In each chapter, high-level data models are drawn from the following business areas: The Enterprise and Its World The Things of the Enterprise Procedures and Activities Contracts Accounting The Laboratory Material Requirements Planning Process Manufacturing Documents Lower-Level Conventions

Achieving Buzzword Compliance - David C. Hay 2018-06-15

Understand the language and vocabulary of Data Architecture. The Data Architecture field is rife with terms that have become "fashionable". Some of the terms began with very specific, specialized, meanings – but as their use spread, they lost the precision of their technical definitions and become, well, "buzzwords". A buzzword is "a word or expression from a particular subject area that has become fashionable because it has been used a lot". Compliance is "the obeying of an accepted principle or instruction that states the way things are or should be done." The assignment is to take buzzwords and follow rules to use them correctly. We cut through the hype to arrive at buzzword compliance – the state where you fully understand the words that in fact have real meaning in the data architecture industry. This book will rationalize the various ways all these terms are defined. Of necessity, the book must address all aspects of describing an enterprise and its data management technologies. This includes a wide range of subjects, from entity/relationship modeling, through the semantic web, to database issues like relational and "beyond relational" ("NoSQL") approaches. In each case, the definitions for the subject are meant to be detailed enough to make it possible to understand basic principles—while recognizing that a full understanding

will require consulting the sources where they are more completely described. The book's Glossary contains a catalogue of definitions and its Bibliography contains a comprehensive set of references.

How to Create a Mind - Ray Kurzweil 2013-08-27

The bold futurist and bestselling author of *The Singularity is Nearer* explores the limitless potential of reverse-engineering the human brain. Ray Kurzweil is arguably today's most influential—and often controversial—futurist. In *How to Create a Mind*, Kurzweil presents a provocative exploration of the most important project in human-machine civilization—reverse engineering the brain to understand precisely how it works and using that knowledge to create even more intelligent machines. Kurzweil discusses how the brain functions, how the mind emerges from the brain, and the implications of vastly increasing the powers of our intelligence in addressing the world's problems. He thoughtfully examines emotional and moral intelligence and the origins of consciousness and envisions the radical possibilities of our merging with the intelligent technology we are creating. Certain to be one of the most widely discussed and debated science books of the year, *How to Create a Mind* is sure to take its place alongside Kurzweil's previous classics which include *Fantastic Voyage: Live Long Enough to Live Forever* and *The Age of Spiritual Machines*.

Data Model Patterns - David C. Hay 2013

Hands-On Big Data Modeling - James Lee 2018-11-30

Solve all big data problems by learning how to create efficient data models. Key Features: Create effective models that get the most out of big data. Apply your knowledge to datasets from Twitter and weather data to learn big data. Tackle different data modeling challenges with expert techniques presented in this book. Book Description: Modeling and managing data is a central focus of all big data projects. In fact, a database is considered to be effective only if you have a logical and sophisticated data model. This book will help you develop practical skills in modeling your own big data projects and improve the performance of analytical queries for your specific business requirements. To start with, you'll get a quick introduction to big data and understand the different data modeling and data management platforms for big data. Then you'll work with structured and semi-structured data with the help of real-life examples. Once you've got to grips with the basics, you'll use the SQL Developer Data Modeler to create your own data models containing different file types such as CSV, XML, and JSON. You'll also learn to create graph data models and explore data modeling with streaming data using real-world datasets. By the end of this book, you'll be able to design and develop efficient data models for varying data sizes easily and efficiently. What you will learn: Get insights into big data and discover various data models. Explore conceptual, logical, and big data models. Understand how to model data containing different file types. Run through data modeling with examples of Twitter, Bitcoin, IMDB and weather data modeling. Create data models such as Graph Data and Vector Space. Model structured and unstructured data using Python and R. Who this book is for: This book is great for programmers, geologists, biologists, and every professional who deals with spatial data. If you want to learn how to handle GIS, GPS, and remote sensing data, then this book is for you. Basic knowledge of R and QGIS would be helpful.

Foundations of Data Science - Avrim Blum 2020-01-23

This book provides an introduction to the mathematical and algorithmic foundations of data science, including machine learning, high-dimensional geometry, and analysis of large networks. Topics include the counterintuitive nature of data in high dimensions, important linear algebraic techniques such as singular value decomposition, the theory of random walks and Markov chains, the fundamentals of and important algorithms for machine learning, algorithms and analysis for clustering, probabilistic models for large networks, representation learning including topic modelling and non-negative matrix factorization, wavelets and compressed sensing. Important probabilistic

techniques are developed including the law of large numbers, tail inequalities, analysis of random projections, generalization guarantees in machine learning, and moment methods for analysis of phase transitions in large random graphs. Additionally, important structural and complexity measures are discussed such as matrix norms and VC-dimension. This book is suitable for both undergraduate and graduate courses in the design and analysis of algorithms for data.

Introducing MLOps - Mark Treveil 2020-11-30

More than half of the analytics and machine learning (ML) models created by organizations today never make it into production. Some of the challenges and barriers to operationalization are technical, but others are organizational. Either way, the bottom line is that models not in production can't provide business impact. This book introduces the key concepts of MLOps to help data scientists and application engineers not only operationalize ML models to drive real business change but also maintain and improve those models over time. Through lessons based on numerous MLOps applications around the world, nine experts in machine learning provide insights into the five steps of the model life cycle--Build, Preproduction, Deployment, Monitoring, and Governance--uncovering how robust MLOps processes can be infused throughout. This book helps you: Fulfill data science value by reducing friction throughout ML pipelines and workflows. Refine ML models through retraining, periodic tuning, and complete remodeling to ensure long-term accuracy. Design the MLOps life cycle to minimize organizational risks with models that are unbiased, fair, and explainable. Operationalize ML models for pipeline deployment and for external business systems that are more complex and less standardized.

Data Mesh - Zhamak Dehghani 2022-03-08

We're at an inflection point in data, where our data management solutions no longer match the complexity of organizations, the proliferation of data sources, and the scope of our aspirations to get value from data with AI and analytics. In this practical book, author Zhamak Dehghani introduces data mesh, a decentralized sociotechnical paradigm drawn from modern distributed architecture that provides a new approach to sourcing, sharing, accessing, and managing analytical data at scale. Dehghani guides practitioners, architects, technical leaders, and decision makers on their journey from traditional big data architecture to a distributed and multidimensional approach to analytical data management. Data mesh treats data as a product, considers domains as a primary concern, applies platform thinking to create self-serve data infrastructure, and introduces a federated computational model of data governance. Get a complete introduction to data mesh principles and its constituents. Design a data mesh architecture. Guide a data mesh strategy and execution. Navigate organizational design to a decentralized data ownership model. Move beyond traditional data warehouses and lakes to a distributed data mesh.

The Book of R - Tilman M. Davies 2016-07-16

The Book of R is a comprehensive, beginner-friendly guide to R, the world's most popular programming language for statistical analysis. Even if you have no programming experience and little more than a grounding in the basics of mathematics, you'll find everything you need to begin using R effectively for statistical analysis. You'll start with the basics, like how to handle data and write simple programs, before moving on to more advanced topics, like producing statistical summaries of your data and performing statistical tests and modeling. You'll even learn how to create impressive data visualizations with R's basic graphics tools and contributed packages, like ggplot2 and ggvis, as well as interactive 3D visualizations using the rgl package. Dozens of hands-on exercises (with downloadable solutions) take you from theory to practice, as you learn: –The fundamentals of programming in R, including how to write data frames, create functions, and use variables, statements, and loops –Statistical concepts like exploratory data analysis, probabilities, hypothesis tests, and regression modeling, and how to execute them in R –How to access R's thousands of functions, libraries, and data sets –How to draw valid and useful conclusions from your data –How to create publication-quality graphics of your results. Combining detailed explanations with

real-world examples and exercises, this book will provide you with a solid understanding of both statistics and the depth of R's functionality. Make *The Book of R* your doorway into the growing world of data analysis.

The Practical Guide to Business Process Reengineering Using IDEF0 - Clarence Feldmann 2013-07-15

This is the digital version of the printed book (Copyright © 1998). This book answers the call for a concise, comprehensive introduction to IDEF0 and its application in business process reengineering (BPR) efforts. Here is all the essential information about the IDEF0 method, the function analysis portion of the Integration Definition (IDEF) Methods—its definition, basic rules of usage (including the standard language syntax and semantics as contained in the Federal Standard), and lessons learned from many years of application in the real world. The book features examples based on actual models of commercial clients and government agencies. By studying IDEF0 models, readers learn how the method might be applied to the various aspects of enterprise analysis or systems analysis and what goals and benefits are reasonable to expect from its application. IDEF0 is at the heart of the DoD's version of BPR. In the private sector, industrial organizations that may have initially discovered IDEF through one or more government contracts have adopted it as a method for use with their own corporate BPR efforts. Use this book to apply the techniques of this increasingly popular member of the IDEF family of methods!

Three Major Elements of the Method:

1. The concepts are at the foundation of IDEF0, and they preserve the logical sense and intention of the model. These concepts answer why one approach is used over another in the application of IDEF0, and they provide the experienced analyst with the rationale for when it may be necessary to bend the rules.
2. The language of IDEF0 is the analyst's means of describing the activities of an enterprise to other analysts, readers, enterprise management and staff, and others. The language is written in graphical box-and-arrow notation on diagram forms that are structured to form IDEF0 models.
3. The pragmatics of IDEF0 provide the engineering procedures and the do's and don'ts for the use of IDEF0. In many cases, the pragmatics are so closely tied to the concepts and language that they are inseparable, and analysts who have attempted to use IDEF0 without employing the pragmatics have typically been unsuccessful. The most common misuses of IDEF0 are illustrated to show the kinds of problems that can occur if the pragmatics are not followed.

Data Model Patterns: A Metadata Map - David C. Hay 2010-07-20

Data Model Patterns: A Metadata Map not only presents a conceptual model of a metadata repository but also demonstrates a true enterprise data model of the information technology industry itself. It provides a step-by-step description of the model and is organized so that different readers can benefit from different parts. It offers a view of the world being addressed by all the techniques, methods, and tools of the information processing industry (for example, object-oriented design, CASE, business process re-engineering, etc.) and presents several concepts that need to be addressed by such tools. This book is pertinent, with companies and government agencies realizing that the data they use represent a significant corporate resource recognize the need to integrate data that has traditionally only been available from disparate sources. An important component of this integration is management of the "metadata" that describe, catalogue, and provide access to the various forms of underlying business data. The "metadata repository" is essential to keep track of the various physical components of these systems and their semantics. The book is ideal for data management professionals, data modeling and design professionals, and data warehouse and database repository designers. A comprehensive work based on the Zachman Framework for information architecture—encompassing the Business Owner's, Architect's, and Designer's views, for all columns (data, activities, locations, people, timing, and motivation) Provides a step-by-step description of model and is organized so that different readers can benefit from different parts Provides a view of the world being addressed by all the techniques, methods and tools of the information processing industry (for example, object-oriented design, CASE, business process re-engineering, etc.) Presents many concepts that are not currently being addressed by such tools — and should be

Fluent Python - Luciano Ramalho 2015-07-30

Python's simplicity lets you become productive quickly, but this often means you aren't using everything it has to offer. With this hands-on guide, you'll learn how to write effective, idiomatic Python code by leveraging its best—and possibly most neglected—features. Author Luciano Ramalho takes you through Python's core language features and libraries, and shows you how to make your code shorter, faster, and more readable at the same time. Many experienced programmers try to bend Python to fit patterns they learned from other languages, and never discover Python features outside of their experience. With this book, those Python programmers will thoroughly learn how to become proficient in Python 3. This book covers:

- Python data model: understand how special methods are the key to the consistent behavior of objects
- Data structures: take full advantage of built-in types, and understand the text vs bytes duality in the Unicode age
- Functions as objects: view Python functions as first-class objects, and understand how this affects popular design patterns
- Object-oriented idioms: build classes by learning about references, mutability, interfaces, operator overloading, and multiple inheritance
- Control flow: leverage context managers, generators, coroutines, and concurrency with the `concurrent.futures` and `asyncio` packages
- Metaprogramming: understand how properties, attribute descriptors, class decorators, and metaclasses work

Patterns of Power - Jeff Anderson 2017

Jeff Anderson and literacy coach Whitney La Rocca take you into primary and intermediate classrooms where students are curious about language, engage with the world around them, and notice and experiment with the conventions all writers use. Instead of chanting grammar rules or completing countless convention worksheets, we invite young writers to explore conventions as special effects devices that activate meaning. Our students study authentic texts and come to recognize these "patterns of power"—the essential grammar conventions that readers and writers require to make meaning. The first part of the book introduces a vibrant approach to grammar instruction and sets up what you need to immerse yourself in the *Patterns of Power* process, inviting students to experiment and play with language. The second part of the book offers over seventy practical, ready-to-use lessons, including:

- Extensive support materials
- Over 100 mentor sentences, curated for grades 1-5
- Student work samples
- Tips and power notes to facilitate your own knowledge and learning
- Examples for application

In *Patterns of Power* Jeff and Whitney suggest that taking just five minutes from your reading workshop and five minutes from your writing workshop to focus on how the conventions connect reading and writing will miraculously affect your students' understanding of how language works for readers and writers.

Redis Essentials - Maxwell Dayvson Da Silva 2015-09-08

Harness the power of Redis to integrate and manage your projects efficiently About This Book Learn how to use Redis's data types efficiently to manage large data sets Scale Redis to multiple servers with Twemproxy, Redis Sentinel, and Redis Cluster A fast-paced guide, full of real-world examples to help you get the best out of the features offered by Redis Who This Book Is For If you are a competent developer with experience of working with data structure servers and want to boost your project's performance by learning about features of Redis, then this book is for you. What You Will Learn Build analytics applications using Bitmaps and Hyperloglogs Enhance scalability with Twemproxy, Redis Sentinel, and Redis Cluster Build a Time Series implementation in Node.js and Redis Create your own Redis commands by extending Redis with Lua Get to know security techniques to protect your data (SSL encryption, firewall rules, basic authorization) Persist data to disk and learn the trade-offs of AOF and RDB Understand how to use Node.js, PHP, Python, and Ruby clients for Redis Avoid common pitfalls when designing your next solution In Detail Redis is the most popular in-memory key-value data store. It's very lightweight and its data types give it an edge over the other competitors. If you need an in-memory database or a high-performance cache system that is simple to use and highly scalable, Redis is what you need. *Redis Essentials* is a fast-paced guide that teaches the fundamentals on data types, explains how to manage data through commands,

and shares experiences from big players in the industry. We start off by explaining the basics of Redis followed by the various data types such as Strings, hashes, lists, and more. Next, Common pitfalls for various scenarios are described, followed by solutions to ensure you do not fall into common traps. After this, major differences between client implementations in PHP, Python, and Ruby are presented. Next, you will learn how to extend Redis with Lua, get to know security techniques such as basic authorization, firewall rules, and SSL encryption, and discover how to use Twemproxy, Redis Sentinel, and Redis Cluster to scale infrastructures horizontally. At the end of this book, you will be able to utilize all the essential features of Redis to optimize your project's performance. Style and approach A practical guide that offers the foundation upon which you can begin to understand the capabilities of Redis using a step-by-step approach. This book is full of real-world problems and in-depth knowledge of the concepts and features of Redis, with plenty of examples.

Where Good Ideas Come From - Steven Johnson 2010-10-05

A fascinating deep dive on innovation from the New York Times bestselling author of *How We Got To Now* and *Unexpected Life*. The printing press, the pencil, the flush toilet, the battery--these are all great ideas. But where do they come from? What kind of environment breeds them? What sparks the flash of brilliance? How do we generate the breakthrough technologies that push forward our lives, our society, our culture? Steven Johnson's answers are revelatory as he identifies the seven key patterns behind genuine innovation, and traces them across time and disciplines. From Darwin and Freud to the halls of Google and Apple, Johnson investigates the innovation hubs throughout modern time and pulls out the approaches and commonalities that seem to appear at moments of originality.

Thinking in New Boxes - Luc De Brabandere 2013-09-10

When BIC, manufacturer of disposable ballpoint pens, wanted to grow, it looked for an idea beyond introducing new sizes and ink colors. Someone suggested lighters. LIGHTERS? With an idea that seemed crazy at first, that bright executive, instead of seeing BIC as a pen company—a business in the PEN “box”—figured out that there was growth to be found in the DISPOSABLE “box.” And he was right. Now there are disposable BIC lighters, razors, even phones. The company opened its door to a host of opportunities. IT INVENTED A NEW BOX. Your business can, too. And simply thinking “out of the box” is not the answer. True ingenuity needs structure, hard analysis, and bold brainstorming. It needs to start THINKING IN NEW BOXES—a revolutionary process for sustainable creativity from two strategic innovation experts from The Boston Consulting Group (BCG). To make sense of the world, we all rely on assumptions, on models—on what Luc de Brabandere and Alan Iny call “boxes.” If we are unaware of our boxes, they can blind us to risks and opportunities. This innovative book challenges everything you thought you knew about business creativity by breaking creativity down into five steps: • Doubt everything. Challenge your current perspectives. • Probe the possible. Explore options around you. • Diverge. Generate many new and exciting ideas, even if they seem absurd. • Converge. Evaluate and select the ideas that will drive breakthrough results. • Reevaluate. Relentlessly. No idea is a good idea forever. And did we mention Reevaluate? Relentlessly. Creativity is paramount if you are to thrive in a time of accelerating change. Replete with practical and potent creativity tools, and featuring fascinating case studies from BIC to Ford to Trader Joe's, *Thinking in New Boxes* will help you and your company overcome missed opportunities and stay ahead of the curve. This book isn't a simpleminded checklist. This is *Thinking in New Boxes*. And it will be fun. (We promise.) Praise for *Thinking in New Boxes* “Excellent . . . While focusing on business creativity, the principles in this book apply anywhere change is needed and will be of interest to anyone seeking to reinvent herself.”—Blogcritics “*Thinking in New Boxes* is a five-step guide that leverages the authors' deep understanding of human nature to enable readers to overcome their limitations and both imagine and create their own futures. This book is a must-read for people living and working in today's competitive environment.”—Ray O. Johnson, Ph.D., chief technology officer,

Lockheed Martin “*Thinking In New Boxes* discusses what I believe to be one of the fundamental shifts all companies/brands need to be thinking about: how to think creatively, in order to innovate and differentiate our brands. We need to thrive and lead in a world of accelerating change and this book challenges us to even greater creativity in our thinking. One of the best business books I've read in a long time.”—Jennifer Fox, CEO, Fairmont Hotels & Resorts “As impressive as teaching new tricks to old dogs, *Thinking in New Boxes* is both inspirational and practical—a comprehensive, step-by-step guide to sharpening one's wits in order to harness creativity in the workplace.”—Peter Gelb, general manager, Metropolitan Opera

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 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.

Enterprise Model Patterns - David C. Hay 2010

In 1995, David Hay published “*Data Model Patterns: Conventions of Thought*” -- the groundbreaking book on how to use standard data models to describe the standard business situations. This book builds on the concepts presented there, adds 15 years of practical experience, and presents a more comprehensive view. You will learn how to apply both the abstract and concrete elements of your enterprise's architectural data model through four levels of abstraction: Level 0: An abstract template that underlies the Level 1 model that follows, plus two meta models; Level 1: An enterprise model that is generic enough to apply to any company or government agency, but concrete enough to be readily understood by all; Level 2: A more detailed model describing specific functional areas; Level 3: Examples of the details a model can have to address what is truly unique in a particular industry.

Model-Driven Design Using Business Patterns - Pavel Hruby 2006-08-02

This book shows how to apply pattern ideas in business applications. It presents more than 20 structural and behavioral business patterns that use the REA (resources, events, agents) pattern as a common backbone. The developer working on business frameworks can use the patterns to derive the right abstractions and to design and ensure that the meta-rules are followed by the developers of the actual applications. The application developer can use these patterns to design a business application, to ensure that it does not violate the domain rules, and to adapt the application to changing requirements without the need to change the overall architecture.

Expert Data Modeling with Power BI - Soheil Bakhshi 2021-06-11

Manage and work with business data effectively by learning data modeling techniques and leveraging the latest features of Power BI Key Features Understand data modeling techniques to get the best out of data using Power BI Define the relationships between data to extract valuable insights Solve a wide variety of business challenges by building optimal data models Book Description Microsoft Power BI is one of the most popular business intelligence tools available on the market for desktop and the cloud. This book will be your guide to understanding the ins and outs of data modeling and how to create data models using Power BI confidently. You'll learn how to connect data from multiple sources, understand data, define and manage relationships between data, and shape data models. In

this book, you'll explore how to use data modeling and navigation techniques to define relationships and create a data model before defining new metrics and performing custom calculations using modeling features. As you advance through the chapters, the book will demonstrate how to create full-fledged data models, enabling you to create efficient data models and simpler DAX code with new data modeling features. With the help of examples, you'll discover how you can solve business challenges by building optimal data models and changing your existing data models to meet evolving business requirements. Finally, you'll learn how to use some new and advanced modeling features to enhance your data models to carry out a wide variety of complex tasks. By the end of this Power BI book, you'll have gained the skills you need to structure data coming from multiple sources in different ways to create optimized data models that support reporting and data analytics. What you will learn Implement virtual tables and time intelligence functionalities in DAX to build a powerful model Identify Dimension and Fact tables and implement them in Power Query Editor Deal with advanced data preparation scenarios while building Star Schema Explore best practices for data preparation and data modeling Discover different hierarchies and their common pitfalls Understand complex data models and how to decrease the level of model complexity with different data modeling approaches Who this book is for This MS Power BI book is for BI users, data analysts, and analysis developers who want to become well-versed with data modeling techniques to make the most of Power BI. Basic knowledge of Power BI and Star Schema will help you to understand the concepts covered in this book.

Software Architecture: The Hard Parts - Neal Ford 2021-09-23

There are no easy decisions in software architecture. Instead, there are many hard parts--difficult problems or issues with no best practices--that force you to choose among various compromises. With this book, you'll learn how to think critically about the trade-offs involved with distributed architectures. Architecture veterans and practicing consultants Neal Ford, Mark Richards, Pramod Sadalage, and Zhamak Dehghani discuss strategies for choosing an appropriate architecture. By interweaving a story about a fictional group of technology professionals--the Sysops Squad--they examine everything from how to determine service granularity, manage workflows and orchestration, manage and decouple contracts, and manage distributed transactions to how to optimize operational characteristics, such as scalability, elasticity, and performance. By focusing on commonly asked questions, this book provides techniques to help you discover and weigh the trade-offs as you confront the issues you face as an architect. Analyze trade-offs and effectively document your decisions Make better decisions regarding service granularity Understand the complexities of breaking apart monolithic applications Manage and decouple contracts between services Handle data in a highly distributed architecture Learn patterns to manage workflow and transactions when breaking apart applications

Econometric Analysis of Cross Section and Panel Data, second edition - Jeffrey M. Wooldridge 2010-10-01

The second edition of a comprehensive state-of-the-art graduate level text on microeconomic methods, substantially revised and updated. The second edition of this acclaimed graduate text provides a unified treatment of two methods used in contemporary econometric research, cross section and data panel methods. By focusing on assumptions that can be given behavioral content, the book maintains an appropriate level of rigor while emphasizing intuitive thinking. The analysis covers both linear and nonlinear models, including models with dynamics and/or individual heterogeneity. In addition to general estimation frameworks (particular methods of moments and maximum likelihood), specific linear and nonlinear methods are covered in detail, including probit and logit models and their multivariate, Tobit models, models for count data, censored and missing data schemes, causal (or treatment) effects, and duration analysis. *Econometric Analysis of Cross Section and Panel Data* was the first graduate econometrics text to focus on microeconomic data structures, allowing assumptions to be separated into population and sampling assumptions. This second edition has been substantially updated and revised.

Improvements include a broader class of models for missing data problems; more detailed treatment of cluster

problems, an important topic for empirical researchers; expanded discussion of "generalized instrumental variables" (GIV) estimation; new coverage (based on the author's own recent research) of inverse probability weighting; a more complete framework for estimating treatment effects with panel data, and a firmly established link between econometric approaches to nonlinear panel data and the "generalized estimating equation" literature popular in statistics and other fields. New attention is given to explaining when particular econometric methods can be applied; the goal is not only to tell readers what does work, but why certain "obvious" procedures do not. The numerous included exercises, both theoretical and computer-based, allow the reader to extend methods covered in the text and discover new insights.

The Biml Book - Andy Leonard 2017-10-30

Learn Business Intelligence Markup Language (Biml) for automating much of the repetitive, manual labor involved in data integration. We teach you how to build frameworks and use advanced Biml features to get more out of SQL Server Integration Services (SSIS), Transact-SQL (T-SQL), and SQL Server Analysis Services (SSAS) than you ever thought possible. The first part of the book starts with the basics—getting your development environment configured, Biml syntax, and scripting essentials. Whether a beginner or a seasoned Biml expert, the next part of the book guides you through the process of using Biml to build a framework that captures both your design patterns and execution management. Design patterns are reusable code blocks that standardize the approach you use to perform certain types of data integration, logging, and other key data functions. Design patterns solve common problems encountered when developing data integration solutions. Because you do not have to build the code from scratch each time, design patterns improve your efficiency as a Biml developer. In addition to leveraging design patterns in your framework, you will learn how to build a robust metadata store and how to package your framework into Biml bundles for deployment within your enterprise. In the last part of the book, we teach you more advanced Biml features and capabilities, such as SSAS development, T-SQL recipes, documentation autogeneration, and Biml troubleshooting. The Biml Book: Provides practical and applicable examples Teaches you how to use Biml to reduce development time while improving quality Takes you through solutions to common data integration and BI challenges What You'll Learn Master the basics of Business Intelligence Markup Language (Biml) Study patterns for automating SSIS package generation Build a Biml Framework Import and transform database schemas Automate generation of scripts and projects Who This Book Is For BI developers wishing to quickly locate previously tested solutions, Microsoft BI specialists, those seeking more information about solution automation and code generation, and practitioners of Data Integration Lifecycle Management (DILM) in the DevOps enterprise

Doing Data Science - Cathy O'Neil 2013-10-09

Now that people are aware that data can make the difference in an election or a business model, data science as an occupation is gaining ground. But how can you get started working in a wide-ranging, interdisciplinary field that's so clouded in hype? This insightful book, based on Columbia University's Introduction to Data Science class, tells you what you need to know. In many of these chapter-long lectures, data scientists from companies such as Google, Microsoft, and eBay share new algorithms, methods, and models by presenting case studies and the code they use. If you're familiar with linear algebra, probability, and statistics, and have programming experience, this book is an ideal introduction to data science. Topics include: Statistical inference, exploratory data analysis, and the data science process Algorithms Spam filters, Naive Bayes, and data wrangling Logistic regression Financial modeling Recommendation engines and causality Data visualization Social networks and data journalism Data engineering, MapReduce, Pregel, and Hadoop Doing Data Science is collaboration between course instructor Rachel Schutt, Senior VP of Data Science at News Corp, and data science consultant Cathy O'Neil, a senior data scientist at Johnson Research Labs, who attended and blogged about the course.

The Data Warehouse Toolkit - Ralph Kimball 2011-08-08

This old edition was published in 2002. The current and final edition of this book is *The Data Warehouse Toolkit: The Definitive Guide to Dimensional Modeling*, 3rd Edition which was published in 2013 under ISBN: 9781118530801. The authors begin with fundamental design recommendations and gradually progress step-by-step through increasingly complex scenarios. Clear-cut guidelines for designing dimensional models are illustrated using real-world data warehouse case studies drawn from a variety of business application areas and industries, including: Retail sales and e-commerce Inventory management Procurement Order management Customer relationship management (CRM) Human resources management Accounting Financial services Telecommunications and utilities Education Transportation Health care and insurance By the end of the book, you will have mastered the full range of powerful techniques for designing dimensional databases that are easy to understand and provide fast query response. You will also learn how to create an architected framework that integrates the distributed data warehouse using standardized dimensions and facts.

Design Patterns Explained - Alan Shalloway 2004-10-12

"One of the great things about the book is the way the authors explain concepts very simply using analogies rather than programming examples—this has been very inspiring for a product I'm working on: an audio-only introduction to OOP and software development." —Bruce Eckel "...I would expect that readers with a basic understanding of object-oriented programming and design would find this book useful, before approaching design patterns completely. *Design Patterns Explained* complements the existing design patterns texts and may perform a very useful role, fitting between introductory texts such as *UML Distilled* and the more advanced patterns books." —James Noble Leverage the quality and productivity benefits of patterns—without the complexity! *Design Patterns Explained*, Second Edition is the field's simplest, clearest, most practical introduction to patterns. Using dozens of updated Java examples, it shows programmers and architects exactly how to use patterns to design, develop, and deliver software far more effectively. You'll start with a complete overview of the fundamental principles of patterns, and the role of object-oriented analysis and design in contemporary software development. Then, using easy-to-understand sample code, Alan Shalloway and James Trott illuminate dozens of today's most useful patterns:

their underlying concepts, advantages, tradeoffs, implementation techniques, and pitfalls to avoid. Many patterns are accompanied by UML diagrams. Building on their best-selling First Edition, Shalloway and Trott have thoroughly updated this book to reflect new software design trends, patterns, and implementation techniques. Reflecting extensive reader feedback, they have deepened and clarified coverage throughout, and reorganized content for even greater ease of understanding. New and revamped coverage in this edition includes Better ways to start "thinking in patterns" How design patterns can facilitate agile development using eXtreme Programming and other methods How to use commonality and variability analysis to design application architectures The key role of testing into a patterns-driven development process How to use factories to instantiate and manage objects more effectively The Object-Pool Pattern—a new pattern not identified by the "Gang of Four" New study/practice questions at the end of every chapter Gentle yet thorough, this book assumes no patterns experience whatsoever. It's the ideal "first book" on patterns, and a perfect complement to Gamma's classic *Design Patterns*. If you're a programmer or architect who wants the clearest possible understanding of design patterns—or if you've struggled to make them work for you—read this book.

Python for Data Analysis - Wes McKinney 2017-09-25

Get complete instructions for manipulating, processing, cleaning, and crunching datasets in Python. Updated for Python 3.6, the second edition of this hands-on guide is packed with practical case studies that show you how to solve a broad set of data analysis problems effectively. You'll learn the latest versions of pandas, NumPy, IPython, and Jupyter in the process. Written by Wes McKinney, the creator of the Python pandas project, this book is a practical, modern introduction to data science tools in Python. It's ideal for analysts new to Python and for Python programmers new to data science and scientific computing. Data files and related material are available on GitHub. Use the IPython shell and Jupyter notebook for exploratory computing Learn basic and advanced features in NumPy (Numerical Python) Get started with data analysis tools in the pandas library Use flexible tools to load, clean, transform, merge, and reshape data Create informative visualizations with matplotlib Apply the pandas groupby facility to slice, dice, and summarize datasets Analyze and manipulate regular and irregular time series data Learn how to solve real-world data analysis problems with thorough, detailed examples