

Learning Python Design Patterns

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Learning Python - Mark Lutz
2013-06-12

Get a comprehensive, in-depth introduction to the core Python language with this hands-on book. Based on author Mark Lutz's popular training course, this updated fifth edition will help you quickly write efficient, high-quality code with Python. It's an ideal way to begin, whether you're new to programming or a professional developer versed in other languages. Complete with quizzes, exercises, and helpful illustrations, this easy-to-follow, self-paced tutorial gets you started with both Python 2.7 and 3.3—the latest releases in the 3.X and 2.X lines—plus all other releases in common use today. You'll also learn some advanced language features that recently have become more common in Python code. Explore Python's major built-in object types such as numbers, lists, and dictionaries. Create and process objects with Python statements, and learn Python's general syntax model. Use functions to avoid code redundancy and package code for reuse. Organize statements, functions, and other tools into larger components with modules. Dive

into classes: Python's object-oriented programming tool for structuring code. Write large programs with Python's exception-handling model and development tools. Learn advanced Python tools, including decorators, descriptors, metaclasses, and Unicode processing.

Python Programming Patterns - Thomas W. Christopher 2002

The real-world guide to enterprise-class Python development.-- The right way to write Python: using modularization, toolkits, frameworks, abstract data types, and object-oriented techniques.-- Includes more than 20 proven object-oriented patterns for large-scale Python development.-- Detailed coverage of persistence, concurrent programming, metaprogramming, functional programming, and more. Python isn't just a tool for creating short Web scripts and simple prototypes: its advantages are equally compelling in large-scale development. In this book, Thomas Christopher shows developers the best ways to write large programs with Python, introducing powerful design patterns that deliver unprecedented levels of robustness, scalability, and reuse.

Python Programming Patterns teaches both the Python programming language and how to "program in the large" in Python, using object-oriented techniques. Thomas Christopher demonstrates how to write Python code that leverages "programming-in-the-large" software structuring techniques, including modularization, toolkits, frameworks, abstract data types, and especially object-orientation. He presents more than 20 powerful object-oriented design patterns for Python, including creational, structural, and behavior patterns. The book includes detailed coverage of key topics such as persistence, concurrent programming, and metaprogramming (Python's term for reflection or introspection). Christopher also presents useful fun

Mastering Python Design Patterns - Sakis Kasampalis 2015-01-28

This book is for Python programmers with an intermediate background and an interest in design patterns implemented in idiomatic Python. Programmers of other languages who are interested in Python can also benefit from this book, but it would be better if they first read some introductory materials that explain how things are done in Python.

Python Programming with Design Patterns - James Cooper 2021-12-10

Learn how to write Python code that's more robust, efficient, maintainable, and elegant--whether you're new to the language or you've been coding for years. Python Programming with Design Patterns combines a clear, modern introduction to modern Python with visual, example-driven explanations of 23 proven patterns for writing outstanding object-oriented code. Through these patterns and examples, best-selling patterns author James W. Cooper introduces modern techniques for creating Python objects that interact effectively to make powerful, flexible programs.

Cooper's wide-ranging coverage includes abstract classes, multiple inheritance, GUI programming and widgets, graphical classes, drawing and plotting, math libraries, database programming, Python decorators, images, threads, iterators, creating executable code from Python programs, and much more. He covers the use of six leading Python development environments, and provides complete downloadable code on Github for every example program. Throughout, Cooper's informal, visual presentation makes patterns easier than ever to understand and use--so you can confidently build large, complex programs that benefit from everything Python has to offer.

Crafting Interpreters - Robert Nystrom 2021-07-27

Despite using them every day, most software engineers know little about how programming languages are designed and implemented. For many, their only experience with that corner of computer science was a terrifying "compilers" class that they suffered through in undergrad and tried to blot from their memory as soon as they had scribbled their last NFA to DFA conversion on the final exam. That fearsome reputation belies a field that is rich with useful techniques and not so difficult as some of its practitioners might have you believe. A better understanding of how programming languages are built will make you a stronger software engineer and teach you concepts and data structures you'll use the rest of your coding days. You might even have fun. This book teaches you everything you need to know to implement a full-featured, efficient scripting language. You'll learn both high-level concepts around parsing and semantics and gritty details like bytecode representation and garbage collection. Your brain will light up

with new ideas, and your hands will get dirty and calloused. Starting from `main()`, you will build a language that features rich syntax, dynamic typing, garbage collection, lexical scope, first-class functions, closures, classes, and inheritance. All packed into a few thousand lines of clean, fast code that you thoroughly understand because you wrote each one yourself.

Design Patterns in Python - Sean Bradley 2021-02-27

This book is about the 23 common GoF (Gang of Four) Design Patterns implemented and in Python. A Design Pattern is a description or template that can be repeatedly applied to a commonly recurring problem in software design. You will find a familiarity with Design Patterns very useful when planning, discussing, developing, managing and documenting your applications from now on and into the future. You will learn these Design Patterns. Creational - Factory - Abstract Factory - Builder - Prototype - Singleton Structural - Decorator - Adapter - Facade - Bridge - Composite - Flyweight - Proxy Behavioral - Command - Chain of Responsibility - Observer Pattern - Interpreter - Iterator - Mediator - Memento - State - Strategy - Template - Visitor. If you want a break from your computer and read from a book for a while, then this book is for you. *** Book also provides you FREE Access to Online Instructional Videos. See video codes in the book *** Thanks, Sean Bradley

Learn Python Visually - Tristan Bunn 2021-05-04

An accessible, visual, and creative approach to teaching core coding concepts using Python's Processing.py, an open-source graphical development environment. This beginners book introduces non-programmers to the fundamentals of computer coding within a visual,

arts-focused context. Tristan Bunn's remarkably effective teaching approach is designed to help you visualize core programming concepts while you make cool pictures, animations, and simulations using Python Mode for the open-source Processing development environment. Right from the first chapter, you'll produce and manipulate colorful drawings, shapes and patterns as Bunn walks you through a series of easy-to-follow graphical coding projects that grow increasingly complex. You'll go from drawing with code to animating a bouncing DVD screensaver and practicing data-visualization techniques. Along the way, you'll encounter creative-yet-practical skill-building challenges that relate to everything from video games, cars, and coffee, to fine art, amoebas, and Pink Floyd. As you grow more fluent in both Python and programming in general, topics shift toward the mastery of algorithmic thinking, as you explore periodic motion, Lissajous curves, and using classes to create objects. You'll learn about:

- Basic coding theories and concepts, like variables, data types, pixel coordinates, control flow and algorithms
- Writing code that produces drawings, patterns, animations, data visualizations, user interfaces, and simulations
- Using conditional statements, iteration, randomness, lists and dictionaries
- Defining functions, reducing repetition, and making your code more modular
- How to write classes, and create objects to structure code more efficiently

In addition to giving you a good grounding in general programming, the skills and knowledge you'll gain in this book are your entry point to coding for an ever-expanding horizon of creative technologies.

Learning Python Design Patterns - Second Edition - Chetan Giridhar

2016-02-15

Leverage the power of Python design patterns to solve real-world problems in software architecture and design

About This Book* Understand the structural, creational, and behavioral Python design patterns* Get to know the context and application of design patterns to solve real-world problems in software architecture, design, and application development* Get practical exposure through sample implementations in Python v3.5 for the design patterns featured

Who This Book Is For This book is for Software architects and Python application developers who are passionate about software design. It will be very useful to engineers with beginner level proficiency in Python and who love to work with Python 3.5

What You Will Learn* Enhance your skills to create better software architecture* Understand proven solutions to commonly occurring design issues* Explore the design principles that form the basis of software design, such as loose coupling, the Hollywood principle and the Open Close principle among others* Delve into the object-oriented programming concepts and find out how they are used in software applications* Develop an understanding of Creational Design Patterns and the different object creation methods that help you solve issues in software development* Use Structural Design Patterns and find out how objects and classes interact to build larger applications* Focus on the interaction between objects with the command and observer patterns* Improve the productivity and code base of your application using Python design patterns

In Detail With the increasing focus on optimized software architecture and design it is important that software architects think about optimizations in object creation, code structure,

and interaction between objects at the architecture or design level. This makes sure that the cost of software maintenance is low and code can be easily reused or is adaptable to change. The key to this is reusability and low maintenance in design patterns.

Building on the success of the previous edition, *Learning Python Design Patterns, Second Edition* will help you implement real-world scenarios with Python's latest release, Python v3.5. We start by introducing design patterns from the Python perspective. As you progress through the book, you will learn about Singleton patterns, Factory patterns, and Facade patterns in detail. After this, we'll look at how to control object access with proxy patterns. It also covers observer patterns, command patterns, and compound patterns. By the end of the book, you will have enhanced your professional abilities in software architecture, design, and development.

Style and approach This is an easy-to-follow guide to design patterns with hands-on examples of real-world scenarios and their implementation in Python v3.5. Each topic is explained and placed in context, and for the more inquisitive, there are more details on the concepts used.

Advanced Python Programming - Dr. Gabriele Lanaro 2019-02-28

Create distributed applications with clever design patterns to solve complex problems

Key Features

- Set up and run distributed algorithms on a cluster using Dask and PySpark
- Master skills to accurately implement concurrency in your code
- Gain practical experience of Python design patterns with real-world examples

Book Description This Learning Path shows you how to leverage the power of both native and third-party Python libraries for building robust and responsive applications. You will

learn about profilers and reactive programming, concurrency and parallelism, as well as tools for making your apps quick and efficient. You will discover how to write code for parallel architectures using TensorFlow and Theano, and use a cluster of computers for large-scale computations using technologies such as Dask and PySpark. With the knowledge of how Python design patterns work, you will be able to clone objects, secure interfaces, dynamically choose algorithms, and accomplish much more in high performance computing. By the end of this Learning Path, you will have the skills and confidence to build engaging models that quickly offer efficient solutions to your problems. This Learning Path includes content from the following Packt products: Python High Performance - Second Edition by Gabriele Lanaro Mastering Concurrency in Python by Quan Nguyen Mastering Python Design Patterns by Sakis Kasampalis What you will learn Use NumPy and pandas to import and manipulate datasets Achieve native performance with Cython and Numba Write asynchronous code using asyncio and RxPy Design highly scalable programs with application scaffolding Explore abstract methods to maintain data consistency Clone objects using the prototype pattern Use the adapter pattern to make incompatible interfaces compatible Employ the strategy pattern to dynamically choose an algorithm Who this book is for This Learning Path is specially designed for Python developers who want to build high-performance applications and learn about single core and multi-core programming, distributed concurrency, and Python design patterns. Some experience with Python programming language will help you get the most out of this Learning Path.

Easy Learning Design Patterns Python

(2 Edition) - Yang Hu 2020-04-06

Master the application design using the core design patterns and features of Python 3. the design pattern is an elected solution for solving software design problems. This book takes you through important design patterns and explains them with real-world examples. You will get to grips with low-level details and concepts that show you how to write Python code. This book will help you learn the core concepts of design patterns and the way they can be used to resolve software design problems. and take your skills to the next level with reactive and functional patterns that help you build resilient, scalable, and robust applications. The complexity of life, because they do not understand to simplify the complex, simple is the beginning of wisdom. From the essence of practice, this book to briefly explain the concept and vividly cultivate programming interest, you will learn it easy and fast.

Mastering Object-oriented Python -

Steven F. Lott 2014-04-22

This book follows a standard tutorial approach with approximately 750 code samples spread through the 19 chapters. This amounts to over 5,900 lines of code that illustrate each concept. This book is aimed at programmers who have already learned the basics of object-oriented Python and need to write more sophisticated, flexible code that integrates seamlessly with the rest of Python. This book assumes a computer science background, with experience of common Python design patterns.

Deep Learning Patterns and Practices

- Andrew Ferlitsch 2021-10-12

Discover best practices, reproducible architectures, and design patterns to help guide deep learning models from the lab into production. In Deep Learning Patterns and Practices you will learn: Internal functioning of

modern convolutional neural networks
Procedural reuse design pattern for
CNN architectures Models for mobile
and IoT devices Assembling large-
scale model deployments Optimizing
hyperparameter tuning Migrating a
model to a production environment The
big challenge of deep learning lies
in taking cutting-edge technologies
from R&D labs through to production.
Deep Learning Patterns and Practices
is here to help. This unique guide
lays out the latest deep learning
insights from author Andrew
Ferlitsch's work with Google Cloud
AI. In it, you'll find deep learning
models presented in a unique new way:
as extendable design patterns you can
easily plug-and-play into your
software projects. Each valuable
technique is presented in a way
that's easy to understand and filled
with accessible diagrams and code
samples. Purchase of the print book
includes a free eBook in PDF, Kindle,
and ePub formats from Manning
Publications. About the technology
Discover best practices, design
patterns, and reproducible
architectures that will guide your
deep learning projects from the lab
into production. This awesome book
collects and illuminates the most
relevant insights from a decade of
real world deep learning experience.
You'll build your skills and
confidence with each interesting
example. About the book Deep Learning
Patterns and Practices is a deep dive
into building successful deep
learning applications. You'll save
hours of trial-and-error by applying
proven patterns and practices to your
own projects. Tested code samples,
real-world examples, and a brilliant
narrative style make even complex
concepts simple and engaging. Along
the way, you'll get tips for
deploying, testing, and maintaining
your projects. What's inside Modern
convolutional neural networks Design

pattern for CNN architectures Models
for mobile and IoT devices Large-
scale model deployments Examples for
computer vision About the reader For
machine learning engineers familiar
with Python and deep learning. About
the author Andrew Ferlitsch is an
expert on computer vision, deep
learning, and operationalizing ML in
production at Google Cloud AI
Developer Relations. Table of
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PIPELINES 10 Hyperparameter tuning 11
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Training and deployment pipeline
*Head First Object-Oriented Analysis
and Design* - Brett McLaughlin
2006-11-27
Provides information on analyzing,
designing, and writing object-
oriented software.
Learning Python Design Patterns -
Gennadiy Zlobin 2013-11
This book takes a tutorial-based and
user-friendly approach to covering
Python design patterns. Its concise
presentation means that in a short
space of time, you will get a good
introduction to various design
patterns. If you are an intermediate
level Python user, this book is for
you. Prior knowledge of Python
programming is essential. Some
knowledge of UML is also required to
understand the UML diagrams which are
used to describe some design
patterns.
Python in Practice - Mark Summerfield
2013
Winner of the 2014 Jolt Award for

"Best Book" "Whether you are an experienced programmer or are starting your career, Python in Practice is full of valuable advice and example to help you improve your craft by thinking about problems from different perspectives, introducing tools, and detailing techniques to create more effective solutions."

–Doug Hellmann, Senior Developer, DreamHost If you're an experienced Python programmer, Python in Practice will help you improve the quality, reliability, speed, maintainability, and usability of all your Python programs. Mark Summerfield focuses on four key themes: design patterns for coding elegance, faster processing through concurrency and compiled Python (Cython), high-level networking, and graphics. He identifies well-proven design patterns that are useful in Python, illuminates them with expert-quality code, and explains why some object-oriented design patterns are irrelevant to Python. He also explodes several counterproductive myths about Python programming—showing, for example, how Python can take full advantage of multicore hardware. All examples, including three complete case studies, have been tested with Python 3.3 (and, where possible, Python 3.2 and 3.1) and crafted to maintain compatibility with future Python 3.x versions. All code has been tested on Linux, and most code has also been tested on OS X and Windows. All code may be downloaded at www.qtrac.eu/pipbook.html. Coverage includes Leveraging Python's most effective creational, structural, and behavioral design patterns Supporting concurrency with Python's multiprocessing, threading, and concurrent.futures modules Avoiding concurrency problems using thread-safe queues and futures rather than fragile locks Simplifying networking

with high-level modules, including xmlrpclib and RPyC Accelerating Python code with Cython, C-based Python modules, profiling, and other techniques Creating modern-looking GUI applications with Tkinter Leveraging today's powerful graphics hardware via the OpenGL API using pygame and PyOpenGL

Deep Learning for Coders with fastai and PyTorch - Jeremy Howard

2020-06-29

Deep learning is often viewed as the exclusive domain of math PhDs and big tech companies. But as this hands-on guide demonstrates, programmers comfortable with Python can achieve impressive results in deep learning with little math background, small amounts of data, and minimal code. How? With fastai, the first library to provide a consistent interface to the most frequently used deep learning applications. Authors Jeremy Howard and Sylvain Gugger, the creators of fastai, show you how to train a model on a wide range of tasks using fastai and PyTorch. You'll also dive progressively further into deep learning theory to gain a complete understanding of the algorithms behind the scenes. Train models in computer vision, natural language processing, tabular data, and collaborative filtering Learn the latest deep learning techniques that matter most in practice Improve accuracy, speed, and reliability by understanding how deep learning models work Discover how to turn your models into web applications Implement deep learning algorithms from scratch Consider the ethical implications of your work Gain insight from the foreword by PyTorch cofounder, Soumith Chintala 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: Master the Art of Design Patterns - Dusty Phillips 2016-09-30 Ensure your code is sleek, efficient and elegant by mastering powerful Python design patterns About This Book Learn all about abstract design patterns and how to implement them in Python 3 Understand the structural, creational, and behavioral Python design patterns Get to know the context and application of design patterns to solve real-world problems in software architecture, design, and application development Discover how to simplify Design Pattern implementation using the power of Python 3 Who This Book Is For If you have basic Python skills and wish to learn in depth how to correctly apply appropriate design patterns, this course is tailor made for you. What You Will Learn Discover what design patterns are and how to apply them to writing Python Implement objects in Python by creating classes and

defining methods Separate related objects into a taxonomy of classes and describe the properties and behaviors of those objects via the class interface Understand when to use object-oriented features, and more importantly when not to use them Get to know proven solutions to common design issues Explore the design principles that form the basis of software design, such as loose coupling, the Hollywood principle, and the Open Close principle, among others Use Structural Design Patterns and find out how objects and classes interact to build larger applications Improve the productivity and code base of your application using Python design patterns Secure an interface using the Proxy pattern In Detail Python is an object-oriented scripting language that is used in everything from data science to web development. Known for its simplicity, Python increases productivity and minimizes development time. Through applying essential software engineering design patterns to Python, Python code becomes even more efficient and reusable from project to project. This learning path takes you through every traditional and advanced design pattern best applied to Python code, building your skills in writing exceptional Python. Divided into three distinct modules, you'll go from foundational to advanced concepts by following a series of practical tutorials. Start with the bedrock of Python programming – the object-oriented paradigm. Rethink the way you work with Python as you work through the Python data structures and object-oriented techniques essential to modern Python programming. Build your confidence as you learn Python syntax, and how to use OOP principles with Python tools such as Django and Kivy. In the second module, run through the most

common and most useful design patterns from a Python perspective. Progress through Singleton patterns, Factory patterns, Facade patterns and more all with detailed hands-on guidance. Enhance your professional abilities in software architecture, design, and development. In the final module, run through the more complex and less common design patterns, discovering how to apply them to Python coding with the help of real-world examples. Get to grips with the best practices of writing Python, as well as creating systems architecture and troubleshooting issues. This Learning Path combines some of the best that Packt has to offer in one complete, curated package. It includes content from the following Packt products: Python 3 Object-Oriented Programming - Second Edition by Dusty Phillips Learning Python Design Patterns - Second Edition by Chetan Giridhar Mastering Python Design Patterns by Sakis Kasampalis Style and approach Advance your Python code through three distinct modules that each build on preceding content. Get the complete coverage of Python design patterns you need to write elegant and efficient code that's reusable and powerful.

Architecture Patterns with Python - Harry Percival 2020-03-05

As Python continues to grow in popularity, projects are becoming larger and more complex. Many Python developers are now taking an interest in high-level software design patterns such as hexagonal/clean architecture, event-driven architecture, and the strategic patterns prescribed by domain-driven design (DDD). But translating those patterns into Python isn't always straightforward. With this hands-on guide, Harry Percival and Bob Gregory from MADE.com introduce proven architectural design patterns to help

Python developers manage application complexity—and get the most value out of their test suites. Each pattern is illustrated with concrete examples in beautiful, idiomatic Python, avoiding some of the verbosity of Java and C# syntax. Patterns include: Dependency inversion and its links to ports and adapters (hexagonal/clean architecture) Domain-driven design's distinction between entities, value objects, and aggregates Repository and Unit of Work patterns for persistent storage Events, commands, and the message bus Command-query responsibility segregation (CQRS) Event-driven architecture and reactive microservices

Python 3 Object-oriented Programming

- Dusty Phillips 2015-08-20

Unleash the power of Python 3 objects About This Book Stop writing scripts and start architecting programs Learn the latest Python syntax and libraries A practical, hands-on tutorial that teaches you all about abstract design patterns and how to implement them in Python 3 Who This Book Is For If you're new to object-oriented programming techniques, or if you have basic Python skills and wish to learn in depth how and when to correctly apply object-oriented programming in Python to design software, this is the book for you. What You Will Learn Implement objects in Python by creating classes and defining methods Separate related objects into a taxonomy of classes and describe the properties and behaviors of those objects via the class interface Extend class functionality using inheritance Understand when to use object-oriented features, and more importantly when not to use them Discover what design patterns are and why they are different in Python Uncover the simplicity of unit testing and why it's so important in Python Grasp common concurrency

techniques and pitfalls in Python 3 Exploit object-oriented programming in key Python technologies such as Kivy and Django. Object-oriented programming concurrently with asyncio In Detail Python 3 is more versatile and easier to use than ever. It runs on all major platforms in a huge array of use cases. Coding in Python minimizes development time and increases productivity in comparison to other languages. Clean, maintainable code is easy to both read and write using Python's clear, concise syntax. Object-oriented programming is a popular design paradigm in which data and behaviors are encapsulated in such a way that they can be manipulated together. Many modern programming languages utilize the powerful concepts behind object-oriented programming and Python is no exception. Starting with a detailed analysis of object-oriented analysis and design, you will use the Python programming language to clearly grasp key concepts from the object-oriented paradigm. This book fully explains classes, data encapsulation, inheritance, polymorphism, abstraction, and exceptions with an emphasis on when you can use each principle to develop well-designed software. You'll get an in-depth analysis of many common object-oriented design patterns that are more suitable to Python's unique style. This book will not just teach Python syntax, but will also build your confidence in how to program. You will also learn how to create maintainable applications by studying higher level design patterns. Following this, you'll learn the complexities of string and file manipulation, and how Python distinguishes between binary and textual data. Not one, but two very powerful automated testing systems will be introduced in the book. After

you discover the joy of unit testing and just how easy it can be, you'll study higher level libraries such as database connectors and GUI toolkits and learn how they uniquely apply object-oriented principles. You'll learn how these principles will allow you to make greater use of key members of the Python eco-system such as Django and Kivy. This new edition includes all the topics that made Python 3 Object-oriented Programming an instant Packt classic. It's also packed with updated content to reflect recent changes in the core Python library and covers modern third-party packages that were not available on the Python 3 platform when the book was first published. Style and approach Throughout the book you will learn key object-oriented programming techniques demonstrated by comprehensive case studies in the context of a larger project.

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

Data Science and Machine Learning -

Dirk P. Kroese 2019-11-20

"This textbook is a well-rounded, rigorous, and informative work presenting the mathematics behind modern machine learning techniques. It hits all the right notes: the choice of topics is up-to-date and perfect for a course on data science for mathematics students at the advanced undergraduate or early graduate level. This book fills a sorely-needed gap in the existing literature by not sacrificing depth for breadth, presenting proofs of major theorems and subsequent derivations, as well as providing a copious amount of Python code. I only wish a book like this had been around when I first began my journey!" - Nicholas Hoell, University of Toronto "This is a well-written book that provides a deeper dive into data-scientific methods than many introductory texts. The writing is clear, and the text logically builds up regularization, classification, and decision trees. Compared to its probable competitors, it carves out a unique niche. -Adam Loy, Carleton College The purpose of Data Science and Machine Learning: Mathematical and Statistical Methods is to provide an accessible, yet comprehensive textbook intended for students interested in gaining a better understanding of the mathematics and statistics that underpin the rich variety of ideas and machine learning

algorithms in data science. Key Features: Focuses on mathematical understanding. Presentation is self-contained, accessible, and comprehensive. Extensive list of exercises and worked-out examples. Many concrete algorithms with Python code. Full color throughout. Further Resources can be found on the authors website:

<https://github.com/DSML-book/Lectures>
Mastering Python Design Patterns - Kamon Ayeva 2018-08-31

Exploit various design patterns to master the art of solving problems using Python Key Features Master the application design using the core design patterns and latest features of Python 3.7 Learn tricks to solve common design and architectural challenges Choose the right plan to improve your programs and increase their productivity Book Description Python is an object-oriented scripting language that is used in a wide range of categories. In software engineering, a design pattern is an elected solution for solving software design problems. Although they have been around for a while, design patterns remain one of the top topics in software engineering, and are a ready source for software developers to solve the problems they face on a regular basis. This book takes you through a variety of design patterns and explains them with real-world examples. You will get to grips with low-level details and concepts that show you how to write Python code, without focusing on common solutions as enabled in Java and C++. You'll also find sections on corrections, best practices, system architecture, and its designing aspects. This book will help you learn the core concepts of design patterns and the way they can be used to resolve software design problems. You'll focus on most of the Gang of Four (GoF) design patterns, which are used to solve

everyday problems, and take your skills to the next level with reactive and functional patterns that help you build resilient, scalable, and robust applications. By the end of the book, you'll be able to efficiently address commonly faced problems and develop applications, and also be comfortable working on scalable and maintainable projects of any size. What you will learn Explore Factory Method and Abstract Factory for object creation Clone objects using the Prototype pattern Make incompatible interfaces compatible using the Adapter pattern Secure an interface using the Proxy pattern Choose an algorithm dynamically using the Strategy pattern Keep the logic decoupled from the UI using the MVC pattern Leverage the Observer pattern to understand reactive programming Explore patterns for cloud-native, microservices, and serverless architectures Who this book is for This book is for intermediate Python developers. Prior knowledge of design patterns is not required to enjoy this book.

Head First Design Patterns - Eric Freeman 2004-10-25

Using research in neurobiology, cognitive science and learning theory, this text loads patterns into your brain in a way that lets you put them to work immediately, makes you better at solving software design problems, and improves your ability to speak the language of patterns with others on your team.

Practical Python Design Patterns - Wessel Badenhorst 2017-10-17

Become a better, more productive programmer through a series of projects that will help you deeply understand and master each of the design patterns covered. In this book you will learn to write elegant "Pythonic" code to solve common programming problems. You will also experience design thinking, by

identifying design patterns that would be helpful given a specific problem or situation. Python is eating the world. In recent years it has become so much more than a mere object-oriented, scripting language. Design patterns help you think of and solve problems in chunks. They help you to stand on the shoulders of the giants who have come before, instead of having to reinvent the wheel. What You Will Learn Craft cleaner code Increase your effectiveness as a programmer Write more Pythonic code Solve bigger problems Discover optimal solutions to common problems, done in a way that is uniquely Pythonic Who This Book Is For Programmers who are comfortable with Python. It is also guide for people who have mastered other programming languages and who want to make the transition to Python.

The Rust Programming Language (Covers Rust 2018) - Steve Klabnik 2019-09-03 The official book on the Rust programming language, written by the Rust development team at the Mozilla Foundation, fully updated for Rust 2018. The Rust Programming Language is the official book on Rust: an open source systems programming language that helps you write faster, more reliable software. Rust offers control over low-level details (such as memory usage) in combination with high-level ergonomics, eliminating the hassle traditionally associated with low-level languages. The authors of The Rust Programming Language, members of the Rust Core Team, share their knowledge and experience to show you how to take full advantage of Rust's features--from installation to creating robust and scalable programs. You'll begin with basics like creating functions, choosing data types, and binding variables and then move on to more advanced concepts, such as: • Ownership and borrowing, lifetimes, and traits •

Using Rust's memory safety guarantees to build fast, safe programs • Testing, error handling, and effective refactoring • Generics, smart pointers, multithreading, trait objects, and advanced pattern matching • Using Cargo, Rust's built-in package manager, to build, test, and document your code and manage dependencies • How best to use Rust's advanced compiler with compiler-led programming techniques You'll find plenty of code examples throughout the book, as well as three chapters dedicated to building complete projects to test your learning: a number guessing game, a Rust implementation of a command line tool, and a multithreaded server. New to this edition: An extended section on Rust macros, an expanded chapter on modules, and appendixes on Rust development tools and editions.

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.

Easy Learning Design Patterns Python 3 - yang hu 2019-05-23

Design pattern is a approach to solve some specific problems which each software developer comes across during his work. Design patterns capture higher-level constructs that commonly appear in programs. This book takes a user-friendly approach to covering Python 3 design patterns. Its concise presentation means that in a short space of time, you will get a good introduction to various design patterns.

1. Strategy Pattern Principle
2. Strategy Pattern Case
3. Composition Pattern Principle
4. Composition Pattern Case
5. Singleton Pattern Principle
6. Template Pattern Principle
7. Template Pattern Case
8. Factory Pattern Principle
9. Factory Pattern Case
10. Builder Pattern Principle
11. Builder Pattern Case
12. Adapter Pattern Principle
13. Adapter Pattern Case
14. Facade Pattern Principle
15. Facade Pattern Case
16. Decorator Pattern Principle
17. Prototype Pattern Shallow Clone
18. Prototype Pattern Deep Clone
19. Bridge Pattern Principle
20. Bridge Pattern Case
21. FlyWeight Pattern Case
22. Chain Pattern Principle
23. Chain Pattern Case
24. Command Pattern Case
25. Iterator Pattern Case
26. Mediator Pattern Case
27. Memento Pattern Case
28. Observer Pattern Principle
29. Visitor Pattern Principle
30. State Pattern Case
31. Proxy Pattern Principle

Artificial Intelligence with Python - Prateek Joshi 2017-01-27

Build real-world Artificial Intelligence applications with Python to intelligently interact with the world around you About This Book Step

into the amazing world of intelligent apps using this comprehensive guide Enter the world of Artificial Intelligence, explore it, and create your own applications Work through simple yet insightful examples that will get you up and running with Artificial Intelligence in no time Who This Book Is For This book is for Python developers who want to build real-world Artificial Intelligence applications. This book is friendly to Python beginners, but being familiar with Python would be useful to play around with the code. It will also be useful for experienced Python programmers who are looking to use Artificial Intelligence techniques in their existing technology stacks. What You Will Learn Realize different classification and regression techniques Understand the concept of clustering and how to use it to automatically segment data See how to build an intelligent recommender system Understand logic programming and how to use it Build automatic speech recognition systems Understand the basics of heuristic search and genetic programming Develop games using Artificial Intelligence Learn how reinforcement learning works Discover how to build intelligent applications centered on images, text, and time series data See how to use deep learning algorithms and build applications based on it In Detail Artificial Intelligence is becoming increasingly relevant in the modern world where everything is driven by technology and data. It is used extensively across many fields such as search engines, image recognition, robotics, finance, and so on. We will explore various real-world scenarios in this book and you'll learn about various algorithms that can be used to build Artificial Intelligence applications. During the course of this book, you will find out how to make informed decisions

about what algorithms to use in a given context. Starting from the basics of Artificial Intelligence, you will learn how to develop various building blocks using different data mining techniques. You will see how to implement different algorithms to get the best possible results, and will understand how to apply them to real-world scenarios. If you want to add an intelligence layer to any application that's based on images, text, stock market, or some other form of data, this exciting book on Artificial Intelligence will definitely be your guide! Style and approach This highly practical book will show you how to implement Artificial Intelligence. The book provides multiple examples enabling you to create smart applications to meet the needs of your organization. In every chapter, we explain an algorithm, implement it, and then build a smart application.

Automate the Boring Stuff with Python, 2nd Edition - Al Sweigart
2019-11-12

The second edition of this best-selling Python book (over 500,000 copies sold!) uses Python 3 to teach even the technically uninclined how to write programs that do in minutes what would take hours to do by hand. There is no prior programming experience required and the book is loved by liberal arts majors and geeks alike. If you've ever spent hours renaming files or updating hundreds of spreadsheet cells, you know how tedious tasks like these can be. But what if you could have your computer do them for you? In this fully revised second edition of the best-selling classic Automate the Boring Stuff with Python, you'll learn how to use Python to write programs that do in minutes what would take you hours to do by hand--no prior programming experience required. You'll learn the basics of

Python and explore Python's rich library of modules for performing specific tasks, like scraping data off websites, reading PDF and Word documents, and automating clicking and typing tasks. The second edition of this international fan favorite includes a brand-new chapter on input validation, as well as tutorials on automating Gmail and Google Sheets, plus tips on automatically updating CSV files. You'll learn how to create programs that effortlessly perform useful feats of automation to:

- Search for text in a file or across multiple files
- Create, update, move, and rename files and folders
- Search the Web and download online content
- Update and format data in Excel spreadsheets of any size
- Split, merge, watermark, and encrypt PDFs
- Send email responses and text notifications
- Fill out online forms

Step-by-step instructions walk you through each program, and updated practice projects at the end of each chapter challenge you to improve those programs and use your newfound skills to automate similar tasks. Don't spend your time doing work a well-trained monkey could do. Even if you've never written a line of code, you can make your computer do the grunt work. Learn how in Automate the Boring Stuff with Python, 2nd Edition.

Learning Patterns - Lydia Hallie
2021-10-31

In this book, you will learn design patterns, performance and rendering patterns for building high-quality web applications using modern JavaScript and React. Patterns are time-tested templates for writing code. They can be really powerful, whether you're a seasoned developer or beginner, bringing a valuable level of resilience and flexibility to your codebase. Whether it's better user-experience, developer-experience or just smarter architecture, the

patterns in "Learning Patterns" can be a valuable consideration for any modern web application.

Design Patterns - Erich Gamma 1995
Software -- Software Engineering.

Powerful Python - Aaron Maxwell
2017-05-07

There are many books for those new to Python, new to programming, or both. Powerful Python is different. Written for experienced developers like you, its carefully crafted chapters teach intermediate and advanced strategies, patterns, and tools for modern Python. Focused on Python 3, with full support for 2.7. DRM-free digital upgrade:

powerfulpython.com/book-upgrade

"Feels like Neo learning Jiu jitsu in the Matrix." - John Beauford

(@johnbeauford) "I just wanted to let you know what an excellent book this is... I keep going back to your book to learn Python." - Fahad Qazi,

London, UK "Thanks. Keep up the good work. Your chapter on decorators is the best I have seen on that topic."

- Leon Tietz, Minnesota, USA

"Powerful Python is already helping me get huge optimization gains." -

Timothy Dobbins (@TmthyDobbins) "What have I found good and valuable about the book so far? Everything honestly.

The clear explanations, solid code examples have really helped me

advance as a Python coder... Thank you! It has really helped me grasp

some advanced concepts that I felt were beyond my abilities." - Nick S.,

Colorado, USA For data scientists, back-end engineers, web developers, sysadmins, devops, QA testers and more. What's included: An unrelenting

selective spotlight on what's most valuable and impactful to working,

full-time, professional Python developers Well-researched, detailed,

realistic code on almost every page, powerfully illustrating key points.

Very little "toy code" How to use decorators to add rich features to

functions and classes; untangle distinct, frustratingly intertwined concerns in your code; and build powerful, extensible software frameworks How to use Python in ways that incentivize other developers to use and re-use your code, again and again... amplifying the impact of the code you write, and boosting your reputation among your peers

Powerfully and easily weave iterators and generators throughout your applications, making them massively scalable, highly performant, and far more readable and maintainable How to fully leverage Python's exception and error model... giving you a detailed understanding even experienced

Pythonistas often lack, and putting some of the most powerfully Pythonic exception-handling patterns in your toolbox

How "magic methods" imbue natural, readable, expressive syntax into your classes and objects... and how to "break the rules" to craft

stunningly intuitive, compellingly reusable library interfaces Valuable and powerful design patterns, and how

Python's special language features give you uniquely powerful implementations not possible in other

languages Deep and detailed instruction on how to write

practical, realistic unit tests... using test-driven development to

easily get into a state of flow... where you find yourself implementing

feature after feature, keeping your focus with ease for long periods of time

How to rapidly set up effective logging for scripts, sprawling Python applications, and everything in

between An enthusiastic and unapologetic focus on Python 3, and what makes it great... with full

explanation and support for getting the same results with Python 2.7 More

at PowerfulPython.com.

Design Patterns in Swift 5: Learn how to Implement the Gang of Four Design Patterns Using Swift 5. Improve Your

Coding Skills. - Karoly Nyisztor
2019-03-26

Software developers need to solve various problems. Many times, these problems are the same or similar to the ones they've already encountered in other projects. Wouldn't it be great to apply the solution you've found instead of reinventing the wheel over and over again? That's precisely the reason why software design patterns exist. A design pattern is a standardized way to address a recurring problem. Relying on a proven strategy will not only save you time, but you can rest assured that it's indeed the right choice. Design patterns are the result of a long evolution process. It all started with a book published in 1994 - yes, it's that old! - called "Design Patterns - Elements of Reusable Object-Oriented Software." That's a quite tedious title, so we usually refer to it as "the book by the gang of four." The gang consists of four renowned software engineers: Erich Gamma, Ralph Johnson, Richard Helm, and John Vlissides. They identified the most significant common issues that occurred in multiple projects and developed best practices to solve them. The best part: these solutions are (programming) language-agnostic. You can use the design patterns with any object-oriented programming language. Many modern programming languages and frameworks have integrated the GoF patterns. You don't have to write additional code to support say the Iterator or the Observer. Swift is no exception. Actually, it provides many advanced language features and constructs -- such as type extensions, lazy initialization, and predefined protocols -- that let us adopt and integrate the design patterns into our projects easily. This book covers all these topics and provides best practices you can apply in your

upcoming projects.

Learning Python Design Patterns -
Chetan Giridhar 2016-02-15

Leverage the power of Python design patterns to solve real-world problems in software architecture and design About This Book Understand the structural, creational, and behavioral Python design patterns Get to know the context and application of design patterns to solve real-world problems in software architecture, design, and application development Get practical exposure through sample implementations in Python v3.5 for the design patterns featured Who This Book Is For This book is for Software architects and Python application developers who are passionate about software design. It will be very useful to engineers with beginner level proficiency in Python and who love to work with Python 3.5 What You Will Learn Enhance your skills to create better software architecture Understand proven solutions to commonly occurring design issues Explore the design principles that form the basis of software design, such as loose coupling, the Hollywood principle and the Open Close principle among others Delve into the object-oriented programming concepts and find out how they are used in software applications Develop an understanding of Creational Design Patterns and the different object creation methods that help you solve issues in software development Use Structural Design Patterns and find out how objects and classes interact to build larger applications Focus on the interaction between objects with the command and observer patterns Improve the productivity and code base of your application using Python design patterns In Detail With the increasing focus on optimized software architecture and design it is important that software architects

think about optimizations in object creation, code structure, and interaction between objects at the architecture or design level. This makes sure that the cost of software maintenance is low and code can be easily reused or is adaptable to change. The key to this is reusability and low maintenance in design patterns. Building on the success of the previous edition, *Learning Python Design Patterns, Second Edition* will help you implement real-world scenarios with Python's latest release, Python v3.5. We start by introducing design patterns from the Python perspective. As you progress through the book, you will learn about Singleton patterns, Factory patterns, and Facade patterns in detail. After this, we'll look at how to control object access with proxy patterns. It also covers observer patterns, command patterns, and compound patterns. By the end of the book, you will have enhanced your professional abilities in software architecture, design, and development. Style and approach This is an easy-to-follow guide to design patterns with hands-on examples of real-world scenarios and their implementation in Python v3.5. Each topic is explained and placed in context, and for the more inquisitive, there are more details on the concepts used.

Domain-driven Design - Eric Evans
2004

"Domain-Driven Design" incorporates numerous examples in Java-case studies taken from actual projects that illustrate the application of domain-driven design to real-world software development.

Advanced Python Programming - Quan Nguyen
2022-03-25

Write fast, robust, and highly reusable applications using Python's internal optimization, state-of-the-art performance-benchmarking tools,

and cutting-edge libraries Key FeaturesBenchmark, profile, and accelerate Python programs using optimization toolsScale applications to multiple processors with concurrent programmingMake applications robust and reusable using effective design patternsBook Description Python's powerful capabilities for implementing robust and efficient programs make it one of the most sought-after programming languages. In this book, you'll explore the tools that allow you to improve performance and take your Python programs to the next level. This book starts by examining the built-in as well as external libraries that streamline tasks in the development cycle, such as benchmarking, profiling, and optimizing. You'll then get to grips with using specialized tools such as dedicated libraries and compilers to increase your performance at number-crunching tasks, including training machine learning models. The book covers concurrency, a major solution to making programs more efficient and scalable, and various concurrent programming techniques such as multithreading, multiprocessing, and asynchronous programming. You'll also understand the common problems that cause undesirable behavior in concurrent programs. Finally, you'll work with a wide range of design patterns, including creational, structural, and behavioral patterns that enable you to tackle complex design and architecture challenges, making your programs more robust and maintainable. By the end of the book, you'll be exposed to a wide range of advanced functionalities in Python and be equipped with the practical knowledge needed to apply them to your use cases. What you will learnWrite efficient numerical code with NumPy, pandas, and XarrayUse Cython and Numba to achieve native

performanceFind bottlenecks in your Python code using profilersOptimize your machine learning models with JAXImplement multithreaded, multiprocessing, and asynchronous programsSolve common problems in concurrent programming, such as deadlocksTackle architecture challenges with design patternsWho this book is for This book is for intermediate to experienced Python programmers who are looking to scale up their applications in a systematic and robust manner. Programmers from a range of backgrounds will find this book useful, including software engineers, scientific programmers, and software architects.

Django Design Patterns and Best Practices - Arun Ravindran 2018-05-31 Build maintainable websites with elegant Django design patterns and modern best practices Key Features Explore aspects of Django from Models and Views to testing and deployment Understand the nuances of web development such as browser attack and data design Walk through various asynchronous tools such as Celery and Channels Book Description Building secure and maintainable web applications requires comprehensive knowledge. The second edition of this book not only sheds light on Django, but also encapsulates years of experience in the form of design patterns and best practices. Rather than sticking to GoF design patterns, the book looks at higher-level patterns. Using the latest version of Django and Python, you'll learn about Channels and asyncio while building a solid conceptual background. The book compares design choices to help you make everyday decisions faster in a rapidly changing environment. You'll first learn about various architectural patterns, many of which are used to build Django. You'll start with building a fun superhero project by gathering the

requirements, creating mockups, and setting up the project. Through project-guided examples, you'll explore the Model, View, templates, workflows, and code reusability techniques. In addition to this, you'll learn practical Python coding techniques in Django that'll enable you to tackle problems related to complex topics such as legacy coding, data modeling, and code reusability. You'll discover API design principles and best practices, and understand the need for asynchronous workflows. During this journey, you'll study popular Python code testing techniques in Django, various web security threats and their countermeasures, and the monitoring and performance of your application. What you will learn Make use of common design patterns to help you write better code Implement best practices and idioms in this rapidly evolving framework Deal with legacy code and debugging Use asynchronous tools such as Celery, Channels, and asyncio Use patterns while designing API interfaces with the Django REST Framework Reduce the maintenance burden with well-tested, cleaner code Host, deploy, and secure your Django projects Who this book is for This book is for you whether you're new to Django or just want to learn its best practices. You do not have to be an expert in Django or Python. No prior knowledge of patterns is expected for reading this book but it would be helpful.

Practical Python Design Patterns - Wessel Badenhorst 2017-09-16 Become a better, more productive programmer through a series of projects that will help you deeply understand and master each of the design patterns covered. In this book you will learn to write elegant "Pythonic" code to solve common programming problems. You will also experience design thinking, by

identifying design patterns that would be helpful given a specific problem or situation. Python is eating the world. In recent years it has become so much more than a mere object-oriented, scripting language. Design patterns help you think of and solve problems in chunks. They help you to stand on the shoulders of the giants who have come before, instead of having to reinvent the wheel. What You'll Learn ● Craft cleaner code● Increase your effectiveness as a programmer● Write more "Pythonic" code● Solve bigger problems● Discover optimal solutions to common problems, done in a way that is uniquely "Pythonic." Who This Book Is For Programmers who are comfortable with Python. It is also guide for people who have mastered other programming languages and who want to make the transition to Python.

Easy Learning Design Patterns Python (3 Edition) - yang hu 2021-04-28

Master the application design using the core design patterns and features

of Python 3. the design pattern is an elected solution for solving software design problems. This book takes you through important design patterns and explains them with real-world examples. You will get to grips with low-level details and concepts that show you how to write Python code. This book will help you learn the core concepts of design patterns and the way they can be used to resolve software design problems. and take your skills to the next level with reactive and functional patterns that help you build resilient, scalable, and robust applications. All patterns are compiled from real systems and are based on real-world examples. Each pattern also includes code that demonstrates how it may be implemented in object-oriented programming languages like Python 3. The book is divided into 2 parts: 1. The first part vividly explains the concept of each design pattern through life 2. The second part applies design patterns to real project examples