


# Python Engineer Roadmap

 README to PDF passing

[Python](#) can be used in a lot of computer science fields. In this repository, we have collected resources for each field of computer science that are related to Python.

**Not sure which source to choose?** You can follow the resources marked with a  symbol, they are highly recommended by the community.

## Contribution

Before you head over, read the [Contribution Guide](#) first. You are new to contribution process? For more information about the steps and guides, check out the [First Contribution Guide](#).

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- Where to Go Next?

## Prerequisites

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- Algorithms and Data Structures

- **Book**

- ✓ [Grokking Algorithms by Aditya Bhargava](#)
- ✓ [Cracking the Coding Interview by Gayle Laakmann McDowell](#)
- [Data Structure and Algorithmic Thinking with Python: Data Structure and Algorithmic Puzzles by Narasimha Karumanchi](#)
- [Introduction to Algorithms \(CLRS\)](#)

- **Video**

- [Data Structures And Algorithms Course by Mosh Hamedani](#)

- **Platform**

- ✓ [LeetCode](#)
- [HackerRank](#)
- [CodeWars](#)
- [TheAlgorithms](#)
- [Codeforces](#)

- **Repo**

- ✓ [Coding University](#)

- **Cheat Sheet**

- [Data Structures Cheat Sheet](#)

- **System Design**

- **Book**

- ✓ [System Design Interview by Alex Xu](#)
  - [System Design Interview: Volume 2 by Alex Xu & Sahn Lam](#)

- **Course**

- [Educative - Grokking the System Design Interview](#)

- **Git**

- **Documentation**

- [Git Documentation](#)

- **Video**

- ✓ [Git Course by Mosh Hamedani](#)
  - [Git and GitHub tutorial for beginners by Amigoscode](#)
  - [Git and GitHub crash course by freeCodeCamp](#)
  - [Git For Professionals course by Trevor Miller](#)

- **Book**

- [Pro Git](#)
- [Git Notes for Professionals](#)

- **Website**

- [Git For Beginners by tutorialspoint](#)
- [Git For Intermediates and Professionals by W3schools](#)
- [Advanced Git Tips by atlassian](#)
- [Learn Git Branching](#)

- **Cheat Sheet**

- [Git cheat sheet](#)

- **Operating System**

- **Book**

- ✓ [LPIC-1: Linux Professional Institute Certification Study Guide: Exams 101 and 102 by Roderick W. Smith](#)

- **Video**

- [Lpic-1 Course by Jadi](#)

- **Platform**

- [Linux Journey](#)

- **Community**

- [Discord Linux group](#)
- [Linux For Everyone Community](#)

- **Cheat Sheet**

- [Linux commands cheat sheet](#)

- **Virtual Environment**

- **VENV**

- **Documentation**
  - [VENV Documentation](#)

- **VirtualEnvWrapper**

- **Documentation**
  - [VirtualEnvWrapper Documentation](#)

- **PipEnv**

- **Documentation**
  - [PipEnv Documentation](#)

- **Conda**

- **Documentation**
  - [Conda Documentation](#)

- **Python-Poetry**

- **Documentation**
  - [Python-Poetry Documentation](#)

- **Python**

- **Documentation**

- [Python Documentation](#)

- **Beginner**

- **Book**

- [✓ Python Crash Course by Eric Matthes](#)
- [Head First Python by Paul Barry](#)
- [Learn Python the Hard Way by Zed Shaw](#)
- [Essential Python Tools](#)

- **Video**

- [Python Beginner Tutorial by NeuralNine](#)
- [Python Programming Tutorials by Tech with Tim](#)

- **Platform**

- [W3schools](#)
- [Codecademy Python 2](#)
- [Codecademy Python 3](#)
- [Sololearn Python](#)

- **Intermediate**

- **Book**

- [✓ Python Cookbook by David Beazley & Brian Jones](#)
- [Beyond the Basic Stuff with Python Best Practices for Writing Clean Code by Sweigart, Al](#)
- [Fluent Python by Luciano Ramalho 2nd Edition](#)
- [Effective Python by Brett Slatkin](#)
- [Python Concurrency with asyncio](#)

- **Video**

- [Python Intermediate Tutorial by NeuralNine](#)
- [Intermediate Python Tutorials by Tech with Tim](#)
- **Platform**
  - [GeeksForGeeks](#)
  - [Programiz](#)
- **Advanced**
  - **Book**
    - ✓ [Architecture Patterns with Python by Harry Percival & Bob Gregory](#)
    - ✓ [Practices of the Python Pro by Dane Hillard](#)
    - ✓ [Python Tricks by Dan Bader](#)
    - [Python Testing with pytest by Brian Okken](#)
    - [Python Concurrency with asyncio by Matthew Fowler](#)
    - [Python for Programmers by Deitel Developer Series](#)
    - [Serious Python by Julien Danjou](#)
    - [Python Notes for Professionals](#)
  - **Video**
    - [Python3: Deep Dive \(4 Parts\)](#)
  - **Platform**
    - ✓ [RealPython](#)
    - [Python-Course](#)
- **Community**
  - [Python Discord group](#)
  - [Python Telegram group](#)
- **Cheat Sheet**
  - [Beginners Python cheat sheet](#)
  - [Python cheat sheet](#)

## Career Path

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- **Backend**

- **Django**
  - **Documentation**
    - [Django Documentation](#)

- [Django Tutorial - w3schools](#)

- **Book**

- [Django for Beginners by William S. Vincent](#)
- [Django for APIs by William S. Vincent](#)
- [Django for Professionals by William S. Vincent](#)
- [Two Scoops of Django 3.x by Daniel Roy Greenfeld, Audrey Roy Greenfeld](#)
- [Test-Driven Development with Python: Obey the Testing Goat: Using Django, Selenium, and JavaScript by Harry Percival](#)
- [Test-Driven Development with Django by Kevin Harvey](#)
- [Django3 by example by antonio mele](#)

- **Video**

- [Django Web Framework - Full Course for Beginners by Justin Mitchel](#)
- [Build REST APIs with Django REST Framework and Python By Shubham Sarda](#)
- [Django For Everybody - Full Course by Dr. Charles Severance](#)
- [Django ORM Mastery - Very Academy](#)
- [Learn Django Class Base View - Very Academy](#)
- [Django Course by Mosh Hamedani](#)
- [Try Django 3.2 - Python Web Development Tutorial Series by Justin Mitchel](#)

- **Awesome Django**

- [Awesome Django](#)

- **Community**

- [Django Discord group](#)
- [Django Telegram group](#)

- **Cheat Sheet**

- [Django Cheat Sheet](#)
- [Django Models Cheat Sheet](#)
- [Django Class Based Views Cheat Sheet](#)

- **FastAPI**

- **Video**

- [Python API Development - Comprehensive Course for Beginners by Sanjeev Thiyagarajan](#)
- [FastAPI course by testdriven.io & talkpython.fm](#)

- **Documentation**

- [FastAPI documentation](#)
- [FastAPI Utilities documentation](#)



- **Awesome FastAPI**

- [Awesome FastAPI](#)

- **Community**

- [FastApi Discord group](#)

- **Flask**

- **Book**

- [Flask Web Development: Developing Web Applications with Python](#)
    - [Flask Framework Cookbook](#)

- **Video**

- [Flask Tutorial by Tech With Tim](#)
    - [REST APIs with Flask and Python by Jose Salvatierra](#)

- **Documentation**

- [Flask Document](#)

- **Cheat Sheet**

- [Flask Cheat Sheet and Quick Reference](#)

- **Tornado**

- **Book**

- [Introduction to Tornado by Michael Dory](#)

- **Video**

- [Tornado, Coroutines and Concurrency by Bek Brace](#)
    - [Tornado in Depth by Oscar Vilaplana](#)
    - [More than just a pretty web framework, the Tornado IOLoop by Gavin M.Roy](#)

- **Documentation**

- [Tornado Document](#)

- **Web2Py**

- **Documentation**

- [Web2Py Document](#)

- **Book**

- [Complete Reference Manual by Massimo Di Pierro](#)

- [Killer Web Development by Marco Laspe](#)

- **Sanic**

- **Documentation**

- [Sanic Document](#)
    - [Sanic Guide](#)

- **Article**

- [Getting Started with Sanic for Python by Mukul Khanna](#)

- **Video**

- [Async Web Apps with Sanic by Dougal Matthews](#)

- **AIOHTTP**

- **Documentation**

- [AIOHTTP Document](#)

- **Bottle**

- **Documentation**

- [Bottle Document](#)

- **Dash**

- **Documentation**

- [Dash-Python Document](#)

- **Awesome Dash**

- [Awesome Dash](#)

- **Template**

- [Dash Clean Architecture Template](#)

- [List Of All Python Backend Web Frameworks](#)

- **Data Science**

- **Data Analysis**

- **Numpy**

- **Documentation**

- [Numpy Document](#)

- **Scipy**
  - **Documentation**
    - [Scipy Document](#)

- **Pandas**
  - **Documentation**
    - [Pandas Document](#)

- **Data Visualization**

- **Matplotlib**
  - **Documentation**
    - [Matplotlib Document](#)
- **Plotly**
  - **Documentation**
    - [Plotly Document](#)

- **Machine Learning**

- **Video**
  - [Machine Learning Course by Andrew Ng](#)

- **Deep Learning**

- **Video**
  - [Deep Learning Specialization by Andrew Ng](#)
  - [AladdinPersson](#)

- **Neural Networks**

- **Video**
  - [Neural Networks and Calculus](#)

- **Image Processing**

- **DevOps**

- **Community**
  - [DevOps, SRE, & Infrastructure](#)

- **Hacking**

- **Book**
  - [Black Hat Python, 2nd Edition: Python Programming for Hackers and Pentesters](#)

- **Algorithmic Trading**

- **Bot**

- **Web**

- **Selenium**

- [Selenium \(Main Home\)](#)
      - [Source](#)
      - [Documentation](#)
      - [Helium](#)
      - [Base](#)
      - [InstaPy](#)
      - [AutoCrawler](#)
      - [Wire](#)
      - [Cucucumber](#)
      - [Requestium](#)
      - [Undetected](#)

- **WebBot**

- [Source](#)

- **Telegram**

- **Telethon**

- [Source](#)
      - [Documentation](#)

- **Pyrogram**

- [Source](#)
      - [Documentation](#)

- **Python Telegram Bot**

- [Source](#)
      - [Documentation](#)

- **AIOGram**

- [Source](#)
      - [Documentation](#)

- **PyTelegramBotApi**
  - [Source](#)
  - [Documentation](#)
- **TeleBot**
  - [Source](#)
- **Discord**
  - **DiscordPy**
    - [Source](#)
    - [Documentation](#)
- **Instagram**
  - **Instagram-Scraper**
    - [Source](#)

## Advanced Topics

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△ The following topics don't have any order or priority of learning.

□ Choose topics that you are **interested in** or **suit your needs**.

### • Databases

- **General**
  - **Book**
    - ✓ [Designing Data-Intensive Applications: The Big Ideas Behind Reliable, Scalable, and Maintainable Systems](#)
    - [Seven Databases in Seven Weeks: A Guide to Modern Databases and the NoSQL Movement](#)
- **SQLite**
  - **Documentation**
    - [SQLite Documentation](#)
  - **Tutorials**
    - [SQLite Tutorial](#)
- **PostgreSQL**

- **Documentation**

- [PostgreSQL Documentation](#)

- **Community**

- [PostgreSQL Telegram group](#)

- **Cheat Sheet**

- [PostgreSQL Cheat Sheet By GoalKicker](#)
  - [PostgreSQL CHEAT SHEET](#)
  - [POSTGRESQL 8.3 PSQL CHEAT SHEET](#)

- **MySQL**

- **Documentation**

- [MySQL Documentation](#)

- **Tutorials**

- [MySQL Tutorial](#)

- **Cheat Sheet**

- [MySQL Cheat Sheet by GoalKicker](#)

- **Oracle**

- **Documentation**

- [Oracle Documentation](#)

- **Tutorials**

- [Oracle Tutorial](#)

- **Cheat Sheet**

- [Oracle Cheat Sheet by GoalKicker](#)

- **MongoDB**

- **Documentation**

- [MongoDB Documentation](#)

- **Tutorial**

- [Python MongoDB](#)

- **Cheat Sheet**

- [MongoDB Cheat Sheet by GoalKicker](#)

- **Redis**

- **Documentation**

- [Redis Documentation](#)

- **Article**

- [How to use redis with python by Brad Solomon](#)

- **Cheat Sheet**

- [Redis Cheat Sheet 1](#)
    - [Redis Cheat Sheet 2](#)

- **MemCached**

- **Documentation**

- [MemCached Wiki](#)

- **Apache Cassandra**

- **Documentation**

- [Apache Cassandra Documentation](#)

- **Clean Code**

- **Book**

- ✓ [Clean Code in Python by Mariano Anaya](#)
    - [Code Complete: A Practical Handbook of Software Construction, Second Edition by Steve McConnell](#)

- **Clean Architecture**

(In Progress)

- **Caching**

- **Article**

- [Caching in django with redis by Real Python](#)

- **Video**

- [Redis Course - In-Memory Database Tutorial](#)

- **Testing**

- **Python `unittest` package**

- **Documentation**
  - [Testing in Python](#)
  - [Getting Started With Testing in Python](#)

- **PyTest Testing Package**

- **Documentation**
  - [Official PyTest Documentation](#)

- **DRF Test Framework**

- **Documentation**
  - [Testing - Django REST framework](#)
- **Video**
  - [Pytest Django and Django Rest Framework](#)

- **Container Platforms**

- **Docker**

- **Documentation**
  - [Docker Documentation](#)
- **Book**
  - [Docker in Action, Second Edition](#)
  - [Docker Deep Dive: Zero to Docker in a single book](#)
- **Video**
  - [Docker Mastery With Django - very academy](#)
  - [Docker Course by Mosh Hamedani](#)
  - [Docker Swarm Step by Step](#)
- **Cheat Sheet**
  - [Docker Cheat Sheet](#)

- **Kubernetes**

- **Documentation**
  - [Kubernetes Documentation](#)
- **Video**
  - ["Just me and Opensource" YouTube channel](#)



- **Book**

- [Kubernetes: Up and Running, 2nd Edition](#)
- [Kubernetes in Action, Second Edition](#)

- **Community**

- [Kubernetes Discord group](#)

- **Programming Paradigms**

- **Object-Oriented Programming**

- **Tutorial**

- [Python Classes and Objects by W3Schools \(Beginners\)](#)
    - [Python Object Oriented Programming by programiz.com \(Beginners\)](#)

- **Article**

- [Python OOPs Concepts 3 by GeeksForGeeks \(Beginners\)](#)
    - [Object-Oriented Programming \(OOP\) in Python 3 by David Amos \(Intermediate\)](#)

- **Book**

- [Python Object-Oriented Programming](#)

- **Functional Programming**

- **Article**

- [Functional Programming in Python](#)

- **Architectural Patterns**

- **Microservice**

- **Book**

- [Microservice Architecture](#)
    - [Building Microservices, 2nd Edition](#)

- **Enterprise Applications**

- **Book**

- [Patterns of Enterprise Application Architecture](#)
    - [Enterprise Integration Patterns: Designing, Building, and Deploying Messaging Solutions](#)

- **Design Principles**

- **SOLID**

- **Article**

- [SOLID Principles In Python by Philip Norton](#)
- [Uncle Bob's SOLID principles made easy ☐ - in Python!](#)

- **KISS**

- **DRY**

- **Design Patterns**

- **Book**

- [Head First Design Patterns: Building Extensible and Maintainable Object-Oriented Software](#)
- [Django Design Patterns and Best Practices \(by Arun Ravindran\)](#)
- [Dive Into Design Patterns by Alexander Shvets](#)

- **Video**

- [Design Patterns Course by Mosh Hamedani](#)

- **Message Brokers**

- **RabbitMQ**

- **Documentation**

- [RabbitMQ Documentation](#)

- **Article**

- [RabbitMQ Hello World](#)
- [RabbitMQ Work Queues](#)
- [RabbitMQ Publish/Subscribe](#)
- [RabbitMQ Routing](#)
- [RabbitMQ Topics](#)
- [RabbitMQ Remote procedure call \(RPC\)](#)

- **Cheat Sheet**

- [RabbitMQ Cheat Sheet 1](#)
- [RabbitMQ Cheat Sheet 2](#)

- **Apache Kafka**

- **Documentation**

- [Apache Kafka Documentation](#)

- **Cheat Sheet**

- [Apache Kafka Cheat Sheet 1](#)
- [Apache Kafka Cheat Sheet 2](#)

## • WSGI Servers

- **Gunicorn**
  - **Documentation**
    - [Gunicorn Documentation](#)
- **uWSGI**
  - **Documentation**
    - [uWSGI Documentation](#)

## • ASGI Servers

- **Uvicorn**
  - **Documentation**
    - [Uvicorn Documentation](#)
- **Starlette**
  - **Documentation**
    - [Starlette Documentation](#)

## • Web Servers

- **Nginx**
  - **Documentation**
    - [NGINX Documentation](#)
  - **Book**
    - [NGINX Cookbook](#)
  - **Cheat Sheet**
    - [NGINX CHEAT SHEET](#)
- **Apache**
  - **Documentation**
    - [Apache Documentation](#)
  - **Book**

- [Apache Cookbook: Solutions and Examples for Apache Administrators](#)
- **Cheat Sheet**
  - [Apache Cheat Sheet](#)

- **API**

- **Design**
  - **Guidelines and Best Practices**
    - [Zalando RESTful API and Event Guidelines](#)
    - [Microsoft REST API Guidelines](#)
- **Security**
  - **Checklist**
    - [API Security Checklist](#)

- **Availability and Reliability**

(In Progress)

- **Distributed Systems**

(In Progress)

- **Reactive Systems**

(In Progress)

- **Refactoring**

- **Video**
  - [Dive Into REFACTORING](#)

- **Security**

- **Book**
  - [The Web Application Hacker's Handbook](#)
  - [Application\\_Security\\_Program\\_Handbook](#) - a guide for software engineers
  - [Designing secure software](#) - a guide for developers
  - [Hacking APIs Breaking Web Application Programming Interfaces](#)
  - [Web Application Security Exploitation and Countermeasures for Modern Web Applications](#)
  - [Web Security for Developers: Real Threats, Practical Defense](#)
  - [Mastering Modern Web Penetration Testing](#)
- **WebSite**

- [OWASP Top 10](#)
- [OWASP Top 10 for Web with live training](#)
- [SANS SWAT Checklist](#)

- **Monitoring**

(In Progress)

- **Soft Skill**

- **Book**

- [The Clean Coder: A Code of Conduct for Professional Programmers](#)

- **Public Cloud**

(In Progress)

## Where to Go Next?

(In Progress)

