

Planning is bringing the future into the present so that you can do something about it now - Winston Churchill



MY LEARNING PLAN

a written plan containing my past, present and mostly future.

By

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Supervised by

some nice people: MY FRIENDS

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Preface

AFTER going up and down in my life, I finally found the way to study and learn well. This document has everything I want to do and resource I want to check.

After spending one whole semester in the university¹, it is got clear to me, that meanwhile studying, learning **new** things, is hard! It's possible but it's hard. So summers are the times which I have to value a lot and to make the most outta 'em. Also *Learning Journey must not be fixed-planned* and human must start learning at anytime. So because of all this, this document will contain many resources and things I want to learn but not fixed-planned. These are the goals and they must be achieved continuously.

At the time of writing this, there are 5 days remaining of the year, a long and hard year both for Iran, my love, and myself. I learned and grew a lot during this year. I spend a whole semester in university. Studied a lot, learned how to study well and meet many new and nice people.

But after all, I have to create a path to my actual career! This is the most important thing which I have to take care of. After working, searching and talking to many people, I've finally made my decision and chosen: *Data Science*. I really like this field, it's very amazing but hard to learn :) Beside this, I wanna learn backend engineering as well, 'cause it is much faster (faster to get result, lol) and has a slightly smaller learning curve.

This plan will be started from the summer of 1402 (2023), but I will be working and adding things to this document from time to time; there may be some new chapters or reorganization of the chapter but not now :D

¹the 3rd semester

This will be a hot summer. It gets hot because of so many hours I want to study, both with video courses and with reading books. To learn data science I asked someone in our university who already is a data scientist, and he introduced me to the deep learning course of *Jeremy Howard*. This course is freely available on YouTube. Also this course needs a book nearby (written by Jeremy Howard) called *Deep Learning for Coders With Fastai and PyTorch*.

Besides learning data science, learning new things and refreshing my Python skills is something that I would never miss and enjoy a lot. The focus of this summer will be on the CPython implementation itself, so I've chosen some nice books on this field. I have gathered some more general books on Python too, but they would have a lesser priority.

Watching video courses and reading books are the main activities of the summer, but without spending or more precisely, *acquiring* time to rest, nobody can learn anything; listening to music and podcast and watching movies are the main non-active and biking is the main physical activity of my summer.

Some knowledge needs to be learned by video courses, and then be completed by reading books and researching in a long journey.

Me

1

Courses

Well, the major part of the summer is the courses, in this chapter I will introduce the courses I want to watch and some useful information about them.

Each course is tagged with these:

- Learning course
 - **Hard**
 - **Easy**
- Video duration
 - **Long**
 - **Short**
- Video Count: **Many**

Each course will have a subsection names as “Timing and Scheduling”. In this subsection I will talk about the difficulty of the course and how I will watch that course starting from summer and afterwards.

1.1 Deep learning

The career I chose: *Data Science*,
“The sexiest job of the 21st
century,” “The best job in
America,” “One of the newest
and coolest jobs in IT world”

Hard

Long

Well as the quote says, this is exciting, BUT it really needs knowledge and effort to gain, the starting point is here: this nice deep learning course at <https://course.fast.ai/>.

Practical Deep Learning

A free course designed for people with some coding experience, who want to learn how to apply deep learning and machine learning to practical problems.

This free course is designed for people (and bunnies!) with some coding experience who want to learn how to apply deep learning and machine learning to practical problems.

Practical Deep Learning for Coders 2022 part 1, recorded at the University of Queensland, covers topics such as how to:

- Build and train deep learning models for computer vision, natural language processing, tabular analysis, and collaborative filtering problems
- Create random forests and regression models
- Deploy models
- Use PyTorch, the world’s fastest growing deep learning software, plus popular libraries like fastai and Hugging Face

There are 9 lessons, and each lesson is around 90 minutes long. The course

is based on our 5-star rated book¹, which is freely available online².

You don't need any special hardware or software—we'll show you how to use free resources for both building and deploying models. You don't need any university math either—we'll teach you the calculus and linear algebra you need during the course.

Your teacher

I am Jeremy Howard, your guide on this journey. I lead the development of fastai, the software that you'll be using throughout this course. I have been using and teaching machine learning for around 30 years. I was the top-ranked competitor globally in machine learning competitions on Kaggle (the world's largest machine learning community) two years running. Following this success, I became the President and Chief Scientist of Kaggle. Since first using neural networks 25 years ago, I have led many companies and projects that have machine learning at their core, including founding the first company to focus on deep learning and medicine, Enlitic (chosen by MIT Tech Review as one of the “world's smartest companies”).

I am the co-founder, along with Dr. Rachel Thomas, of fast.ai, the organization behind this course. At fast.ai we care a lot about teaching. In this course, I start by showing how to use a complete, working, very usable, state-of-the-art deep learning network to solve real-world problems, using simple, expressive tools. And then we gradually dig deeper and deeper into understanding how those tools are made, and how the tools that make those tools are made, and so on... We always teach through examples. We ensure that there is a context and a purpose that you can understand intuitively, rather than starting with algebraic symbol manipulation.

¹<https://www.amazon.com/Deep-Learning-Coders-fastai-PyTorch/dp/1492045527>

²<https://course.fast.ai/Resources/book.html>

Each lesson of the course has a video and a dedicated page of the website, like Lesson 1³

Notes:

- Each video is pretty long, on average they last one hour and 30 minutes! The longer the video, the more knowledge they contain AND the more attention they need AND the more practice as well.
- Each lesson has a *How to complete lesson N* section (like this⁴), in which says: *As well as watching the video and working through the notebooks, you should also read the relevant chapter(s) of the fast.ai book, Practical Deep Learning for Coders. Each lesson will tell you what chapter you need to read, just below the video*

1.1.1 Timing and Scheduling

This is a huge and difficult course, I must confess. However the instructor says: “We will teach you DL in a top-down approach AND will teach the same thing in different ways so that you will grasp the thing much more better and easier.”

This is a 15-hour course. This is literally a long course specially when it has just 9 lessons. It depends a lot on the lesson, but the general timing and scheduling for this course will be as follows: Each lesson should be watched at one day. It means that one lesson should not be watched at two days. The dedicated chapters of the book should be read according the explanations of the course website. One session may take one day for the video and one day for the book and one may take two or three says for the book, all I wanna say is that it will not be a fixed schedule however it should be continuous. **It must not be interrupt or be cut.**

³<https://course.fast.ai/Lessons/lesson1.html>

⁴<https://course.fast.ai/Lessons/lesson1.html#how-to-complete-lesson-1>

1.2 FastAPI

“FastAPI framework, high performance, easy to learn, fast to code, ready for production”

fastapi.tiangolo.com

Easy

Short

Many

We all know FastAPI and there is no need for more introduction. The course I wanna watch is <https://youtu.be/0sOvCWFmrtA>

The course is a 19-hour long video which is downloaded and cut already. The important things are:

- The course is created one year ago and it is slightly outdated, so the documentation⁵ must be read along the course.
- Course will just show you how to use FastAPI and the real learning happens when doing projects.
- It's good to define nice projects whenever I came to an idea e.g. *The API to send pictures of <https://unsplash.com> to my friends :)*

1.2.1 Timing and Scheduling

This is a course which is pretty long: about 19 hours of content, but it has a noticeable difference with the DL course: it has nearly 150 lessons and the durations of the lessons is short. Also FastAPI is easy, it is so so so much easier than DL. Besides all of this I wanna learn FastAPI fast and through the course away and do small to medium size projects with it. With all this considerations the timing and scheduling of this course will be as follows: I will watch and learn by concept. For example in week or two or three days I would learn the CRUD⁶ operations of FastAPI.

⁵<https://fastapi.tiangolo.com>

⁶Create, Read, Update and Delete; It is said to point the basic operations of a web API and database

Doing projects with FastAPI is one of the critical and important things which I have to dedicate my time to do. Ideas for projects are much and will come to mind easily but doing them takes time and effort. After all **I should do projects.**

I am learning FastAPI because back-end has very nice opportunity to get a job as a junior developer, also in MLOps⁷ I have to know back-end and Ops stuff well (that's why I wanna learn docker as well.)

⁷A career which is a mixture of Machine Learning + Development + Operations. It's all about data science but in a more DevOps manner.

1.3 From Deep Learning Foundations to Stable Diffusion

“The beautiful world of AI, image and text manipulation and generation”

Me

Hard

Long

The course website: <https://course.fast.ai/Lessons/part2.html>

Three years ago we pioneered Deep Learning from the Foundations, an in depth course that started right from the foundations—implementing and GPU-optimising matrix multiplications and initialisations—and covered from scratch implementations of all the key applications of the fastai library.

This year, we’re going “from the foundations” again, but this time we’re going further. **Much** further! This time, we’re going all the way through to implementing the astounding Stable Diffusion⁸ algorithm. That’s the killer app⁹ that made the internet freak out¹⁰, and caused the media to say¹¹ “you may never believe what you see online again”.

Stable diffusion, and diffusion methods in general, are a great learning goal for many reasons. For one thing, of course, you can create amazing stuff with these algorithms! To really take the technique to the next level, and create things that no-one has seen before, you need to really deeply understand what’s happening under the hood. With this understanding, you can craft your own loss functions, initialization methods, multi-model mixups, and more, to create totally new applications that have never been seen before.

⁸<https://stability.ai/blog/stable-diffusion-public-release>

⁹<https://www.pcworld.com/article/916785/creating-ai-art-local-pc-stable-diffusion.html>

¹⁰<https://devops.com/stable-diffusion-public-richixbw/>

¹¹<https://arstechnica.com/information-technology/2022/09/with-stable-diffusion-you-may-never-believe-what-you-see-online-again/>

Just as important: it’s a great learning goal because nearly every key technique in modern deep learning comes together in these methods. Contrastive learning, transformer models, auto-encoders, CLIP embeddings, latent variables, u-nets, resnets, and much more are involved in creating a single image.

This is all cutting-edge stuff, so to ensure we bring the latest techniques to you, we’re teaming up with the folks that brought stable diffusion to the world: stability.ai. stability.ai are, in many ways, kindred spirits to fast.ai. They are, like us, a self-funded research lab. And like us, their focus is smashing down any gates that make cutting edge AI less accessible. So it makes sense for us to team up on this audacious goal of teaching stable diffusion from the foundations.

The course will be available for free online from early 2023. But if you want to join the course right as it’s made, along with hundreds of the world’s leading deep learning practitioners, then you can register to join the virtual live course¹² through our official academic partner, the University of Queensland (UQ). UQ will have registrations open in the next few days, so keep an eye on the link above.

During the live course, we’ll be learning to read and implement the latest papers, with lots of opportunity to practice and get feedback. Many past participants in fast.ai’s live courses have described it as a “life changing” experience... and it’s our sincere hope that this course will be our best ever.

To get the most out of this course, you should be a reasonably confident deep learning practitioner. If you’ve finished fast.ai’s Practical Deep Learning course¹³ then you’ll be ready! If you haven’t done that course, but are comfortable with building an SGD training loop from scratch in Python, being competitive in Kaggle competitions, using modern NLP and computer vision algorithms for practical problems, and working with PyTorch and fast.ai, then you will be ready to start the course. (If you’re not sure, then I strongly recommend getting starting with Practical Deep Learning now—if

¹²<https://itee.uq.edu.au/event/2022/practical-deep-learning-coders-uq-fastai-part-2>

¹³<https://course.fast.ai/>

you push, you'll be done before the new course starts!)

If you're an alumnus of Deep Learning for Coders, you'll know that course sets you up to be an effective deep learning practitioner. This new course will take you to the next level, creating novel applications that bring multiple techniques together, and understanding and implementing research papers. Alumni of previous versions of fast.ai's "part 2" courses have even gone on to publish deep learning papers in top conferences and journals, and have joined highly regarded research labs and startups.

1.3.1 Timing and Scheduling

I wrote the information of the course to just remember it. It won't be watched soon.

I find television very educating. Every time somebody turns on the set, I go into the other room and read a book.

Groucho Marx

There is more treasure in books than in all the pirate's loot on Treasure Island.

Walt Disney

2 Books

You may argue me about what I want to say, however I found it true: “If you want to learn *something*, the real source is the books about it.” This is absolutely true. No video course and no article and nothing else may contain the most valuable information about something. All the video courses and simple article ARE come from the books.

In this chapter I may introduce many invaluable books (most technical books but it may contain other books as well.)

Each section of this chapter has the name of the book which is a link to the post of that book in the store: [Skybooks.ir](https://skybooks.ir), where I buy the books from. Then there maybe some tags under the name of the books, the whole tags are categorized in three categories:

1. Reading priority

- `must-be-read`
- `better-to-read`
- `later-to-read`

2. Buying considerations:

(a) Number of pages

- near-one-thousand-pages
- near-seven-hundred-pages
- near-five-hundred-pages
- near-two-hundred-pages

(b) Price:

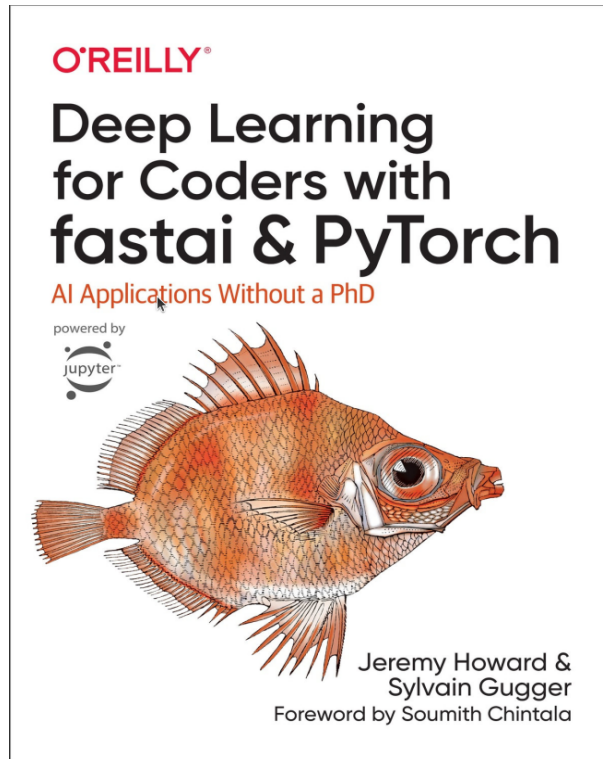
- number T
- number T
- number T
- number T
- number T

3. Book read: read

4. Printed or not: printed

The last section of this chapter will discuss how and when the books will be read by me :D

2.1 Deep Learning for Coders With Fastai and PyTorch

must-be-read**near-seven-hundred-pages****297 T**

Book link: <https://skybooks.ir/products/Deep-Learning-for-Coders-with-fastai-and-PyTorch>

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 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.

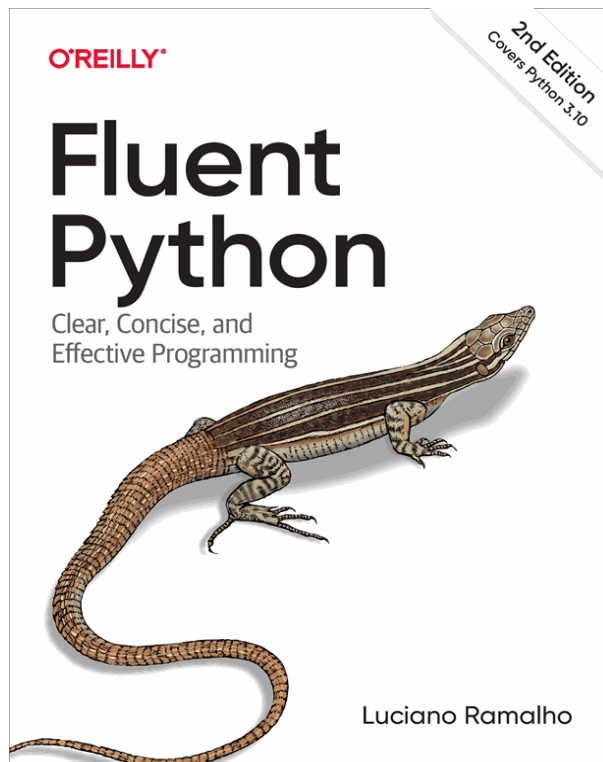
As a 622-page and comprehensive book, it needs attention and time. The book may get printed, just to be read easily.

2.2 Fluent Python

better-to-read

near-one-thousand-pages

505 T



Book link: <https://skybooks.ir/products/Fluent-Python>

Python's simplicity lets you become productive quickly, but often this means you aren't using everything it has to offer. With the updated edition of this hands-on guide, you'll learn how to write effective, modern Python 3 code by leveraging its best ideas. Don't waste time bending Python to fit patterns you learned in other languages. Discover and apply idiomatic Python 3 features beyond your past experience. Author Luciano Ramalho guides you through Python's core language features and libraries and teaches you how to make your code shorter, faster, and more readable.

Featuring major updates throughout the book, *Fluent Python*, second edition, covers:

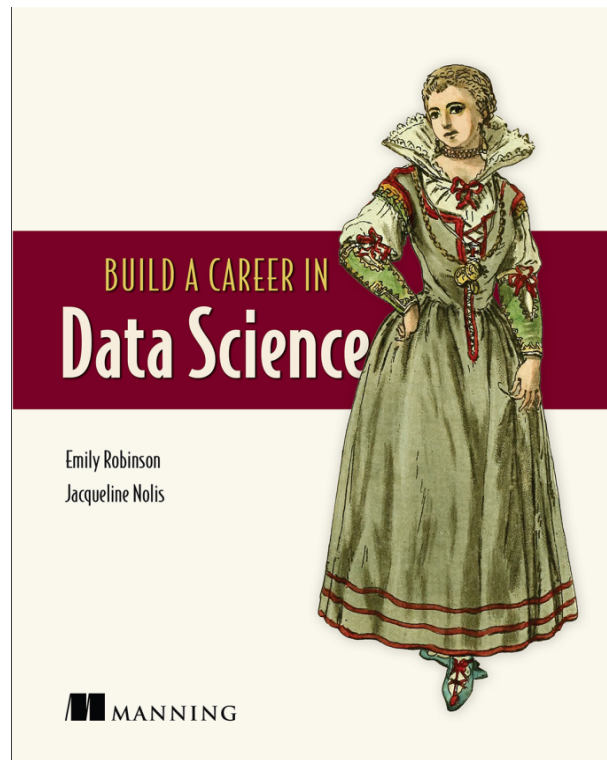
1. Special methods: The key to the consistent behavior of Python objects
2. Data structures: Sequences, dicts, sets, Unicode, and data classes
3. Functions as objects: First-class functions, related design patterns, and type hints in function declarations
4. Object-oriented idioms: Composition, inheritance, mixins, interfaces, operator overloading, static typing and protocols
5. Control flow: Context managers, generators, coroutines, `async/await`, and thread/process pools
6. Metaprogramming: Properties, attribute descriptors, class decorators, and new class metaprogramming hooks that are simpler than metaclasses

2.3 Build a Career in Data Science

later-to-read

near-five-hundred-pages

194 T



Book link: <https://skybooks.ir/products/Build-a-Career-in-Data-Science>

What are the keys to a data scientist's long-term success? Blending your technical know-how with the right "soft skills" turns out to be a central ingredient of a rewarding career.

Build a Career in Data Science is your guide to landing your first data science job and developing into a valued senior employee. By following clear and simple instructions, you'll learn to craft an amazing resumé and ace your interviews.

In this demanding, rapidly changing field, it can be challenging to keep projects on track, adapt to company needs, and manage tricky stakeholders. You'll love the insights on how to handle expectations, deal with failures, and plan your career path in the stories from seasoned data scientists included in the book.

What's Inside: • Creating a portfolio of data science projects • Assessing and negotiating an offer • Leaving gracefully and moving up the ladder • Interviews with professional data scientists For readers who want to begin or advance a data science career.

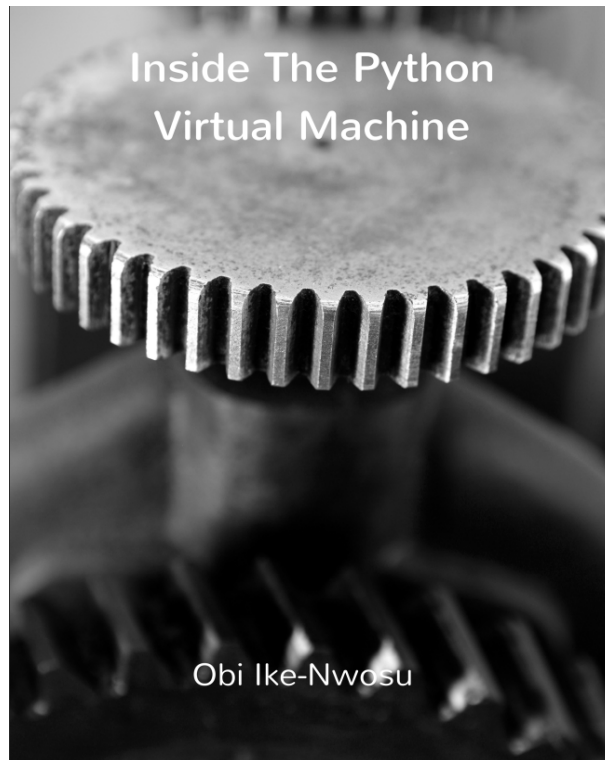
Emily Robinson is a data scientist at Warby Parker. Jacqueline Nolis is a data science consultant and mentor.

2.4 Inside the Python Virtual Machine

must-be-read

near-two-hundred-pages

88 T

printed

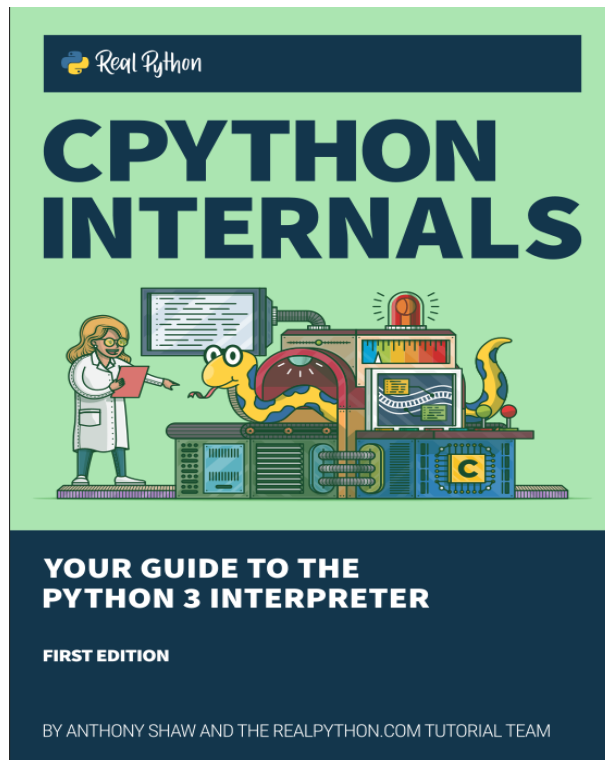
Book link: <https://skybooks.ir/products/Inside-The-Python-Virtual-Machine>

Inside the Python Virtual Machine provides a guided tour under the covers of the Python interpreter for the curious pythonista. It attempts to show the user what happens from the moment the user executes a piece of Python code to the point when the interpreter returns the result of executing the piece of code.

This book will provide the readers with an understanding of the various processes that go into compiling and executing a python program removing most of the mystery surrounding how the python interpreter executes source code.

The book starts out with a description of the compilation phase with emphasis on the less generic parts of the compilation phase. It then proceeds to discuss python objects and their implementation in CPython. This is followed by a discussion of various objects types that are central to the interpreter such as frame objects and code objects. The process of evaluating code objects by the interpreter loop is also discussed as well as how to extend the Python programming language with your own constructs.

2.5 CPython Internals

must-be-read**near-five-hundred-pages****209 T****printed**

Book link: <https://skybooks.ir/products/CPython-Internals>

CPython Internals: Your Guide to the Python 3 Interpreter.

Are there certain parts of Python that just seem like magic? Once you see how Python works at the interpreter level, you'll be able to optimize your applications and fully leverage the power of Python.

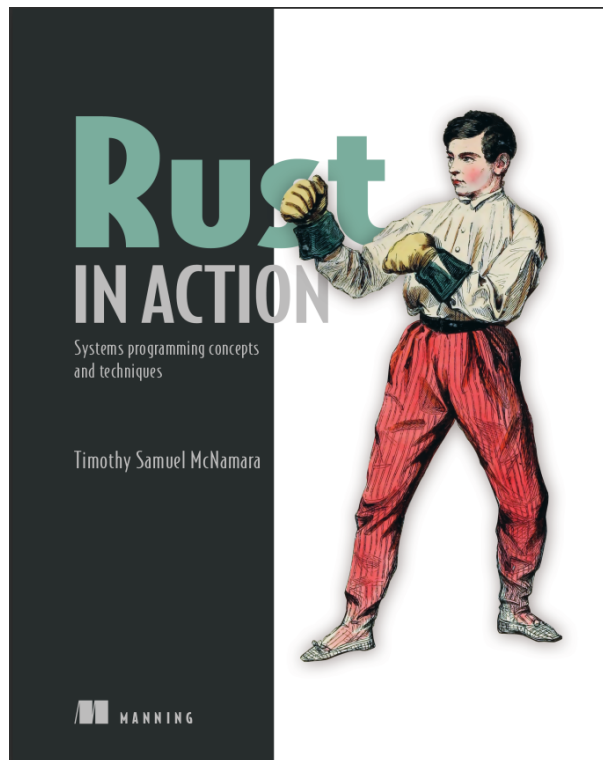
In CPython Internals, you'll unlock the inner workings of the Python language, learn how to compile the Python interpreter from source code, and cover what you'll need to know to confidently start contributing to CPython yourself!

2.6 Rust in Action

later-to-read

near-five-hundred-pages

234 T



“This well-written book will help you make the most of what Rust has to offer.”

Ramnivas Laddad, author of AspectJ in Action

Book link: <https://skybooks.ir/products/Rust-in-Action>

Rust in Action introduces the Rust programming language by exploring numerous systems programming concepts and techniques. You’ll be learning Rust by delving into how computers work under the hood. You’ll find yourself playing with persistent storage, memory, networking and even tinkering with CPU instructions. The book takes you through using Rust to extend

other applications and teaches you tricks to write blindingly fast code. You'll also discover parallel and concurrent programming. Filled to the brim with real-life use cases and scenarios, you'll go beyond the Rust syntax and see what Rust has to offer in real-world use cases.

about the technology

Rust is the perfect language for systems programming. It delivers the low-level power of C along with rock-solid safety features that let you code fearlessly. Ideal for applications requiring concurrency, Rust programs are compact, readable, and blazingly fast. Best of all, Rust's famously smart compiler helps you avoid even subtle coding errors.

about the book

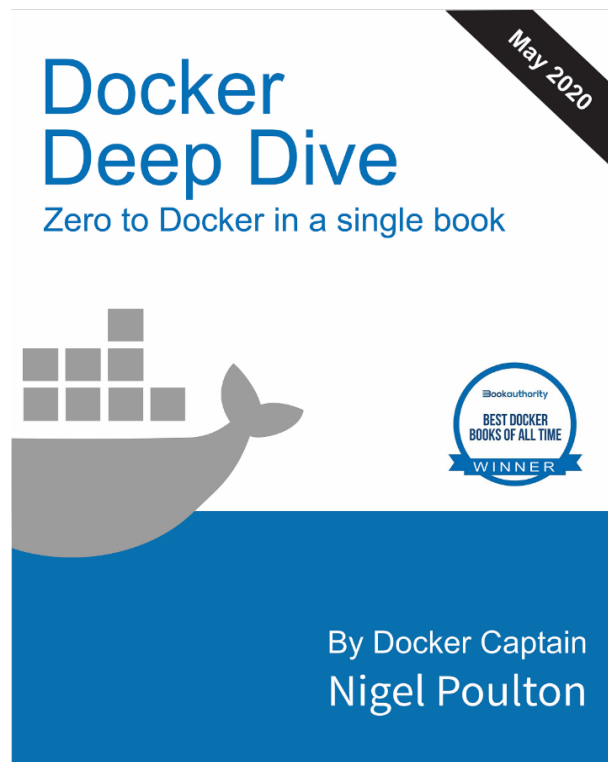
Rust in Action is a hands-on guide to systems programming with Rust. Written for inquisitive programmers, it presents real-world use cases that go far beyond syntax and structure. You'll explore Rust implementations for file manipulation, networking, and kernel-level programming and discover awesome techniques for parallelism and concurrency. Along the way, you'll master Rust's unique borrow checker model for memory management without a garbage collector.

2.7 Docker Deep Dive

better-to-read

near-two-hundred-pages

155 T



Book link: <https://skybooks.ir/products/Docker-Deep-Dive>

Most applications, even the funky cloud-native microservices ones, need high-performance, production-grade infrastructure to run on. Having impeccable knowledge of Docker will help you to thrive in the modern cloud-first world. With this book, you'll gain the skills you need to work with Docker and its containers.

The book begins with an introduction to containers and explains its functionality and application in the real world. You'll then get an overview of VMware, Kubernetes, and Docker and learn to install Docker on Windows, Mac, and Linux. Once you've understood the Ops and Dev perspective of

Docker, you'll be able to see the big picture and understand what Docker exactly does. The book then turns its attention to the more technical aspects, guiding you through practical exercises covering Docker engine, Docker images, and Docker containers. You'll learn techniques for containerizing an app, deploying apps with Docker Compose, and managing cloud-native applications with Swarm. You'll also build Docker networks and Docker overlay networks and handle applications that write persistent data. Finally, you'll deploy apps with Docker stacks and secure your Docker environment.

By the end of this book, you'll be well-versed in Docker and containers and have developed the skills to create, deploy, and run applications on the cloud.

What you will learn:

- Become familiar with the applications of Docker and containers
- Discover how to pull images into Docker host's local registry
- Find out how to containerize an app
- Build and test a Docker overlay network in the swarm mode
- Use Docker compose to deploy and manage multi-container applications
- Securely share sensitive data with containers and Swarm services

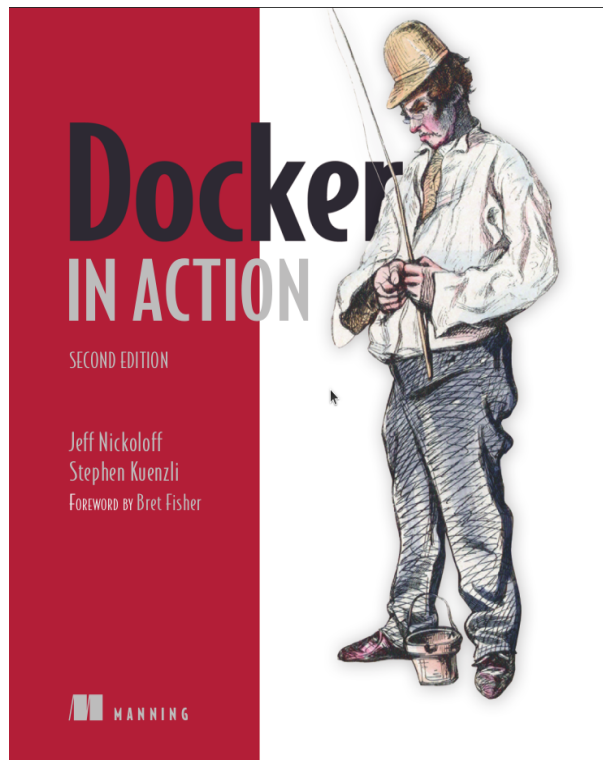
2.8 Docker in Action

must-be-read

near-five-hundred-pages

189 T

printed



“Jeff and Stephen took their battle-hardened experience and updated this already great book with new details and examples.”

From the Foreword by Bret Fisher, Docker Captain and
Container Consultant

Book link: <https://skybooks.ir/products/Docker-in-Action>

Docker in Action, Second Edition teaches you the skills and knowledge you need to create, deploy, and manage applications hosted in Docker containers. This bestseller has been fully updated with new examples, best practices, and a number of entirely new chapters.

about the technology

The idea behind Docker is simple—package just your application and its dependencies into a lightweight, isolated virtual environment called a container. Applications running inside containers are easy to install, manage, and remove. This simple idea is used in everything from creating safe, portable development environments to streamlining deployment and scaling for microservices. In short, Docker is everywhere.

about the book

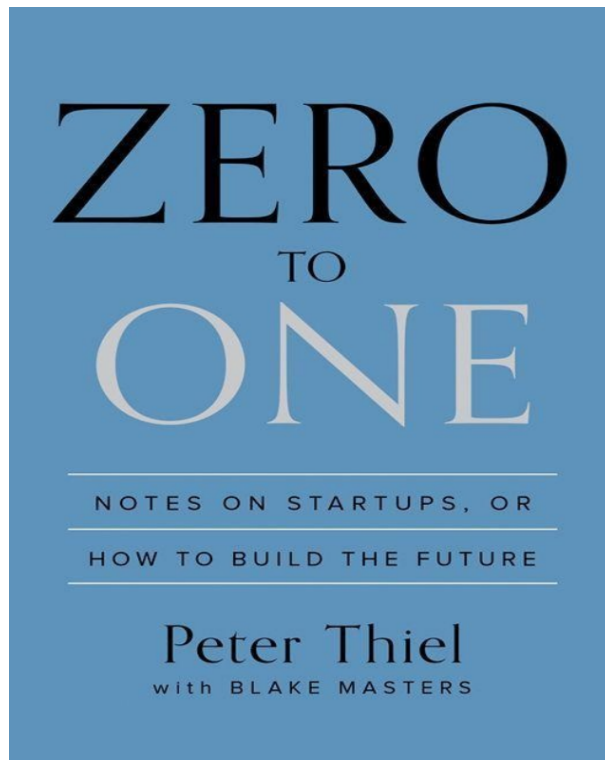
Docker in Action, Second Edition teaches you to create, deploy, and manage applications hosted in Docker containers running on Linux. Fully updated, with four new chapters and revised best practices and examples, this second edition begins with a clear explanation of the Docker model. Then, you go hands-on with packaging applications, testing, installing, running programs securely, and deploying them across a cluster of hosts. With examples showing how Docker benefits the whole dev lifecycle, you'll discover techniques for everything from dev-and-test machines to full-scale cloud deployments.

2.9 Zero to One

later-to-read

near-two-hundred-pages

110 T



Book link: <https://skybooks.ir/products/Zero-to-One>

Thiel starts from the bold premise that we live in an age of technological stagnation, even if we're too distracted by our new mobile devices to notice. Progress has stalled in every industry except computers, and globalization is hardly the revolution people think it is. It's true that the world can get marginally richer by building new copies of old inventions, making horizontal progress from "1 to n." But true innovators have nothing to copy. The most valuable companies of the future will make vertical progress from "0 to 1," creating entirely new industries and products that have never existed before. Zero to One is about how to build these companies. Tomorrow's champions will not win by competing ruthlessly in today's marketplace. They will escape competition altogether, because their businesses will be unique. In

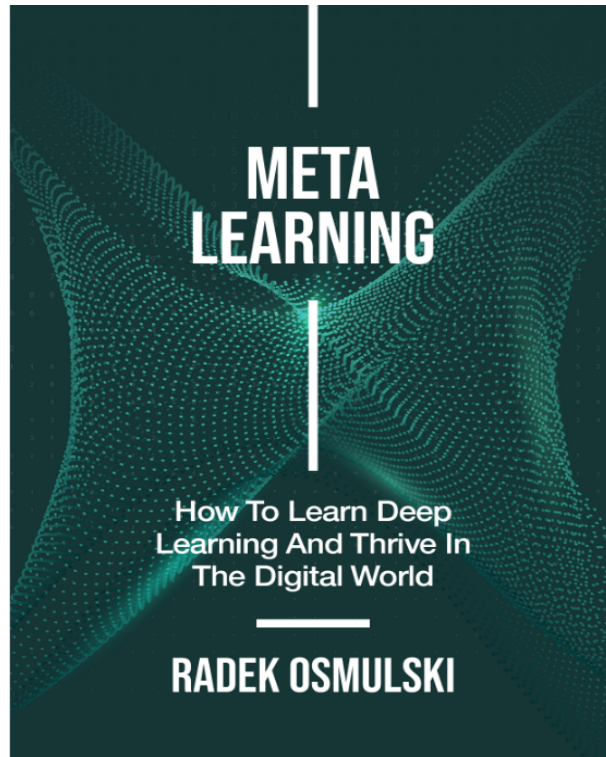
today's post-internet bubble world, conventional wisdom dictates that all the good ideas are taken, and the economy becomes a tournament in which everyone competes to reach the top. *Zero to One* shows how to quit the zero-sum tournament by finding an untapped market, creating a new product, and quickly scaling up a monopoly business that captures lasting value. Planning an escape from competition is essential for every business and every individual, not just for technology startups. The greatest secret of the modern era is that there are still unique frontiers to explore and new problems to solve. *Zero to One* shows how to pursue them using the most important, most difficult, and most underrated skill in every job or industry: thinking for yourself"—Provided by publisher.

2.10 Meta Learning: How To Learn Deep Learning And Thrive In The Digital World

must-be-read

near-two-hundred-pages

88 T

printed

Book link: <https://skybooks.ir/products/Meta-Learning>

Why did I write Meta Learning?

A big part of the reason is that I find everything that has happened to me over the past couple of years surprising. I didn't expect you could learn to program on your own, neither did I expect you could learn enough ML online to hold your ground in conversations with people with PhDs, and to become perfectly employable.

Or that you could top it all off by defeating a team consisting of seasoned industry professionals in a DL competition.

I year ago I gave up on ML. I didn't know what to learn not how. After a 5 month break I decided to give ML one last try. If it would not work out I would need to let it go to not continue to waste my time - maybe I am unable to learn this. I then signed up for the *fastai*¹ course.

What is even more surprising is that there is nothing unique about me. These are things anyone can do... and they work :-). This is truly wonderful and liberating. You will learn about them in Jeremy Howard's lectures. You will encounter them listening to very experienced engineers talk². And in the stories of people switching careers³. And in the writing of people not sparing any effort to lift their community up⁴.

You will also find them in my book, curated and told through the lens of my experience. I experienced the power of these first-hand, and I continue to be surprised that they work so well. This is why I feel there is value in talking about them and sharing them widely :)

¹The course taught by Jeremy Howard, a professional in DL :)

²<https://twitter.com/HamelHusain/status/1349804023365345280?s=20>

³https://twitter.com/isaac_flath/status/1389714563667431427?s=20

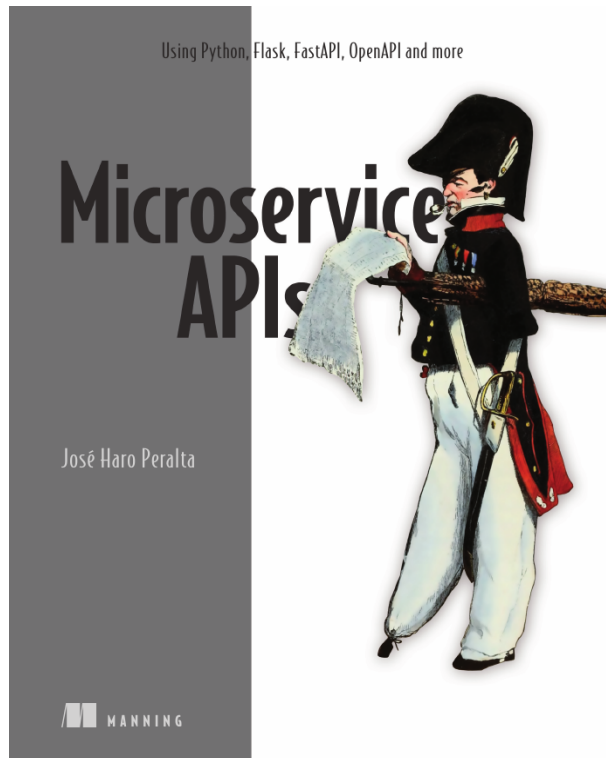
⁴https://medium.com/@init_27/how-not-to-do-fast-ai-or-any-ml-mooc-3d34a7e0ab8c

2.11 Microservice APIs: Using Python, Flask, FastAPI, OpenAPI and more

better-to-read

near-five-hundred-pages

250 T



“An insightful guide for creating REST and GraphQL APIs, with neat examples using FastAPI and Flask. The service implementation patterns chapter is a must-read for every developer.”

William Jamir Silva, Adjust

Book link: <https://skybooks.ir/products/Microservice-APIs>

Strategies, best practices, and patterns that will help you design resilient microservices architecture and streamline your API integrations.

In Microservice APIs, you'll discover:

- Service decomposition strategies for microservices
- Documentation-driven development for APIs
- Best practices for designing REST and GraphQL APIs
- Documenting REST APIs with the OpenAPI specification (formerly Swagger)
- Documenting GraphQL APIs using the Schema Definition Language
- Building microservices APIs with Flask, FastAPI, Ariadne, and other frameworks
- Service implementation patterns for loosely coupled services
- Property-based testing to validate your APIs, and using automated API testing frameworks like schemathesis and Dredd
- Adding authentication and authorization to your microservice APIs using OAuth and OpenID Connect (OIDC)
- Deploying and operating microservices in AWS with Docker and Kubernetes

Microservice APIs teaches you practical techniques for designing robust microservices with APIs that are easy to understand, consume, and maintain. You'll benefit from author José Haro Peralta's years of experience experimenting with microservices architecture, dodging pitfalls and learning from mistakes he's made. Inside you'll find strategies for delivering successful API integrations, implementing services with clear boundaries, managing cloud deployments, and handling microservices security. Written in a framework-agnostic manner, its universal principles can easily be applied to your favorite stack and toolset.

about the technology

Clean, clear APIs are essential to the success of microservice applications. Well-designed APIs enable reliable integrations between services and help simplify maintenance, scaling, and redesigns. This book teaches you the patterns, protocols, and strategies you need to design, build, and deploy effective REST and GraphQL microservices APIs.

about the book

Microservice APIs gathers proven techniques for creating and building easy-to-consume APIs for microservices applications. Rich with proven advice and Python-based examples, this practical book focuses on implementation over philosophy. You'll learn how to build robust microservice APIs, test and protect them, and deploy them to the cloud following principles and patterns that work in any language.

2.12 Reading and Writing Plan

For the summer of 1402 (2023) the book which will be read are:

1. [Deep Learning for Coders With Fastai and PyTorch](#)

Which will be read during the [Deep learning](#) course. This is a long book but 'cause it is dictated to be read in some sort of manner and sequence will be read nicely.

2. [Inside the Python Virtual Machine](#)

This book has many to say, many new things of CPython virtual machine. I will say how I will treat this book and [CPython Internals](#) books :D

It will be read in Saturdays and Sundays.

3. [CPython Internals](#)

Well, a long and comprehensive course on CPython itself. I asked to writer, Anthony Shaw, how to read this book and he said: Don't rust! just read chapter by chapter and do the exercise of each chapter when you finished it.

It will be read on Mondays and Tuesdays.

4. [Docker in Action](#)

A long book full of really new information! I have not touched docker yet, so this book should be read carefully.

It will be read on Wednesdays and Thursdays.

5. [Meta Learning](#)

This is a really easy and small book. It will be finished really soon in summer :D

2.12.1 Additional information about [Inside the Python Virtual Machine](#) and [CPython Internals](#) books

In order to learn something, the best way is to teach it to others :D Yes this is approved both by experience and academically researched by scientist which say "The learning effectiveness of teaching a thing is 90 %". I really

wanna learn these two books and in order to achieve that, I will write articles about them and put my articles in <https://virgool.io/@liewpl>⁵ and <https://medium.com>⁶

⁵Persian version

⁶English version

Replacing just a few key negative habits with a few positive habits can easily be the difference between being mostly unhappy and being happy almost all of the time.

Tynan, Superhuman by Habit

3

Habits

To continue to live and rest I found some ways to spend my leisure time, just like the books they've got small tags to make them more clear.

The tags:

1. **always** which says this item has no specific time.
2. **weekends** the weekends are good for this item
3. **time-to-time** you can do it whenever you want to
4. **activity** needs body activity
5. **rest** is done to rest and NOT to think about anything else

3.1 Podcast

“Listening to podcast, reading a book, listening to an audiobook and watching films isn't waste of time. It's how somebody becomes wise!”

Deyth Banger

time-to-time

activity

Talk Python to Me is a weekly podcast hosted by developer and entrepreneur Michael Kennedy. We dive deep into the popular packages and software developers, data scientists, and incredible hobbyists doing amazing things with Python. If you're new to Python, you'll quickly learn the ins and outs of the community by hearing from the leaders. And if you've been Pythoning for years, you'll learn about your favorite packages and the hot new ones coming out of open source.

Listening to old and new Python podcasts, specially from *Talk Python to Me* channel helps a lot, It provides many information, introduces mane new technologies and brings many good people to the show.

3.2 Music

“Music doesn't lie. If there is something to be changed in this world, then it can only happen through music.”

Jimi Hendrix

always

As always: *I live because of my musics :)*

3.3 Films

“Movies are like an expensive form of therapy for me. ”

Tim Burton

weekends

rest

Watching new films and series, enjoys a LOT. The dedicated series which I want to watch is *The Mentalist*. A TV show which reminds me of Sherlock!

Also I will download the films which I haven't watch in 1080p quality and enjoy the leisure :)

3.4 Biking

“Life is like riding a bicycle. To keep your balance you must keep moving”

Albert Einstein

time-to-time

activity

Physical activity to become fresh again, and to empty the mind outta the learned stuff is really important and Biking has to be done in summer.

Find out what you like doing best, and get someone to pay you for it.

Katharine Whithorn

The only way to do great work is to love what you do. If you haven't found it yet, keep looking. Don't settle.

Steve Jobs

4 Career

Well, **the career to choose**. It may be a simple question: *What do you wanna do buddy?* But the answer? absolutely not. You have to chose something that you will be doing in the rest of your life... I've talked about *What* and *Why* I have chosen in this chapter :D

Choosing what to do. If you are young (somehow under 16 or 17) you may have many options in your head, or have none, it's totally natural. You are not OLD enough and your brain doesn't care about this, but after a while, becoming an adult, your brain, will create something in your head that you say to yourself "I have to finally make my decision and choose something to do and to be!" Well it happened for me. When I was 17 (11th grade at high school) I thought: "well I don't what to be?! How about to follow and be a good example of the best of the things I see?"

Our calculus teacher was the best ever I saw, well I decided to be a very nice math teacher. I talked to him and he told: "You are absoulty a foo, go and find something which really fits you. It will a waste for you to be teacher!!" He was somehow right, I reallized in a while. I love teaching but it is not my type, I needed something more attractive.

Once a day, a friend of mine told me: "Go and find yourself a good video course for programming. You will definitely love programming, I see it inside of you buddy." Well after some searching I found *Python masterclass* by *Tim Buchalka* AND pandemic hit :)) I started watching this realllllllly niiaiiiiice course and finally found it: "**Programming**", with no doubt programming will be the thing I was seeking :D

The journey started. I was seeing nearly 5 videos per day, seriously taking notes and reading Python documentation. I was the happiest Python learner in the world. I read, nearly every part of the documentation, every *type*¹ which was taught by Tim, I read the documentation afterwards and learned way more than the course.

Time passed and I got into 12th grade and abandoned learning Python due to *entrance exam of university* or in short *KonKoor*. I really stopped learning, after a very long year and one day after the exam, I downloaded nearly 60GB of videos just for one course: *Python Deep Dive 1-4*. This is the most brilliant course ever, it really teaches you the best things and the most important things you HAVE TO know. I finished it before starting of the first semester of my university.

¹type: the datatypes which are built-in to Python such as `str`, `int` and `dict` types

Thanks to Allah, I was accepted as a *Computer Engineering* student at *Isfahan University*. I started joining Python communities created in Telegram, and after the first semester finished, I became one of the Admins of those groups :D

Then I found someone who I really like and is one of my best friends :) *Seyed Iliya*. He is really nice, and a really nice Python developer as well. We started working on real world projects and had a collaboration of something called JsonicDB²

At that time, WE wanted to be professional back-end engineers and started watching courses on that field, BUT:

- for me: the 3rd semester started and it was not online (thanks Allah for that)
- for him: He had to study for KonKoor

So everything was nearly stopped again :/

However going to university, although just for one semester, changed my way, it really changed it. After studying math, searching for the hot fields in programming and meeting new people with new expertise, I made my one-step-to-final decision: *Data Science*.

Data science is sexy isn't it? It needs a deep knowledge of the both worlds, programming and science, also learning it takes time and effort. The 3rd semester passes and I more fall in love with the field.

After searching and making my final decisions, I met Homayoun Sadeghi, a DevOps expert. I remembered the days I liked back-end and DevOps world and missed it :(but there were a solution for it: *MLOps* field, one of the hardest fields anyone can choose and the final decision was made: "I want to be an MLOps specialist :D"

I have to confess that I really like this journey AND this is a really hard field to learn and to be a good one in it. It needs many knowledge about

²a database toolkit, written specifically for JSON datatype

maaaaaaaanay things, It is shaped from three worlds: Machine learning (data science) + Development (programming) + Operation (the server and all of its stuff world).

After all this is what I chose and this is the things which shows my learning and career way, I may or may not change it future. I just concentrate on learning and learning and learning.

Thanks