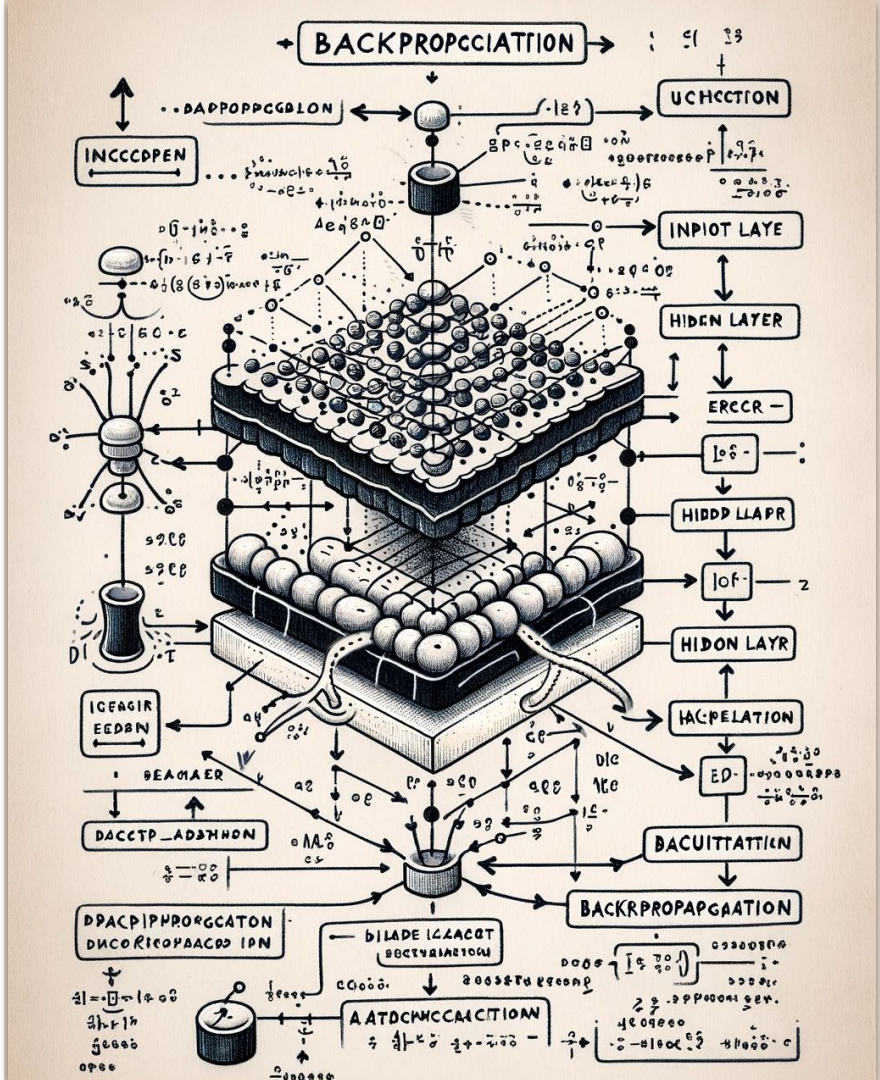
PPGEEC2318

Machine Learning

Course Outline

Ivanovitch Silva
ivanovitch.silva@ufrn.br



REFORMA CURRICULAR DO PROGRAMA DE PÓS-GRADUAÇÃO EM ENGENHARIA ELÉTRICA E DE COMPUTAÇÃO (PPgEEC)

Natal, RN, dezembro de 2022.

UNIVERSIDADE FEDERAL DO RIO GRANDE DO NORTE
CENTRO DE TECNOLOGIA
PROGRAMA DE PÓS-GRADUAÇÃO EM ENGENHARIA ELÉTRICA E DE COMPUTAÇÃO
UFRN
CT
PPgEEC

6. **Organização Curricular:**

Disciplinas Básicas do Programa:

Código	Denominação	Créditos	Áreas
PPGEEC2301	Metodologia do Ensino Superior	04	AS, EC, TEL
PPGEEC2302	Metodologia da Pesquisa Científica	04	AS, EC, TEL
PPGEEC2303	Sistemas Lineares	04	AS
PPGEEC2304	Sistemas de Controle	04	AS
PPGEEC2305	Eletrônica de Potência	04	AS
PPGEEC2306	Instrumentação Eletrônica	04	AS
PPGEEC2316	Algoritmos de Engenharia	04	EC
PPGEEC2317	Sistemas Probabilísticos	04	EC, TEL
PPGEEC2318	Aprendizado de Máquina	04	EC
PPGEEC2330	Ondas Guiadas	04	TEL
PPGEEC2331	Engenharia de Micro-Ondas	04	TEL
PPGEEC2332	Teoria de Antenas	04	TEL
PPGEEC2333	Comunicações Móveis	04	TEL

(*) EC = Engenharia de Computação, AS = Automação e Sistemas, TEL = Telecomunicações


ICE
BREAKEER

Nvidia CEO predicts the death of coding — Jensen Huang says AI will do the work, so kids don't need to learn

News

By Benedict Collins published February 26, 2024

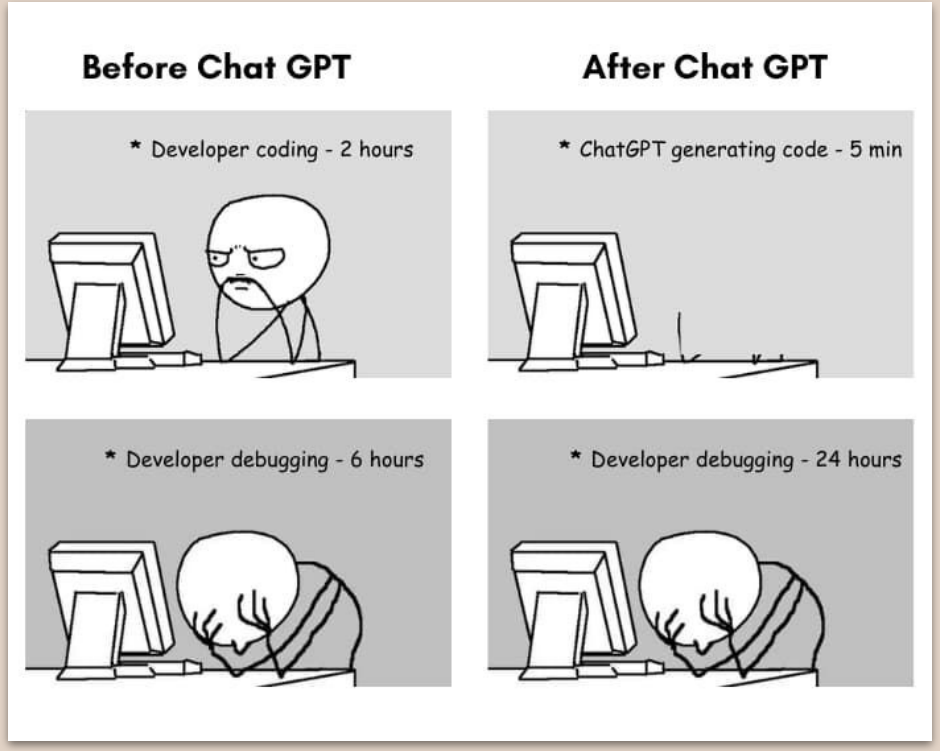
Jensen Huang believes coding languages are a thing of the past

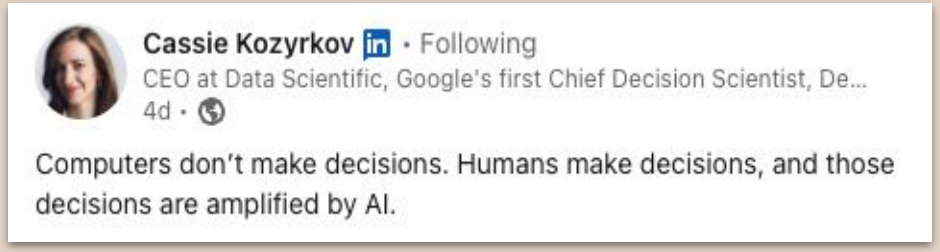
r/Futurology · 10 days ago
Maxie445

Nvidia CEO Jensen Huang says kids shouldn't learn to code — they should leave it up to AI

AI

tomshardware.com Open



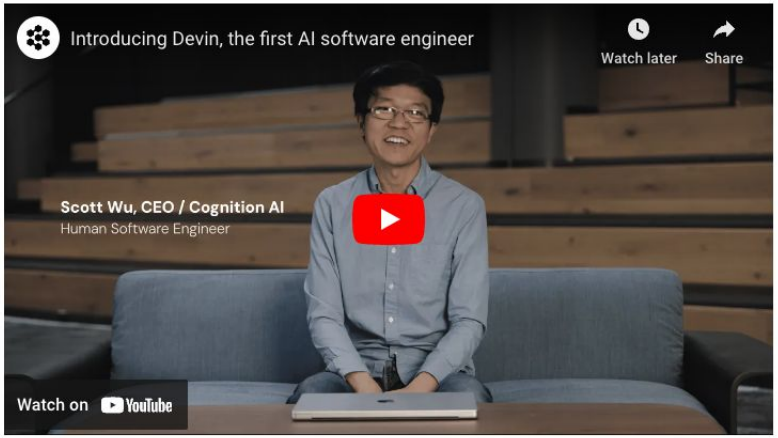


"AI will not replace you. A person using AI will."

We've raised a $21 million Series-A led by Founders Fund. Learn more here.

Cognition

About us Blog



March 12th, 2024 | Written by Scott Wu

Introducing Devin, the first AI software engineer

And setting a new state of the art on the SWE-bench coding benchmark

Meet Devin, the world's first fully autonomous AI software engineer.

Devin is a tireless, skilled teammate, equally ready to build alongside you or independently complete tasks for you to review.

With Devin, engineers can focus on more interesting problems and engineering teams can strive for more ambitious goals.

Home > Artificial Intelligence > Generative AI

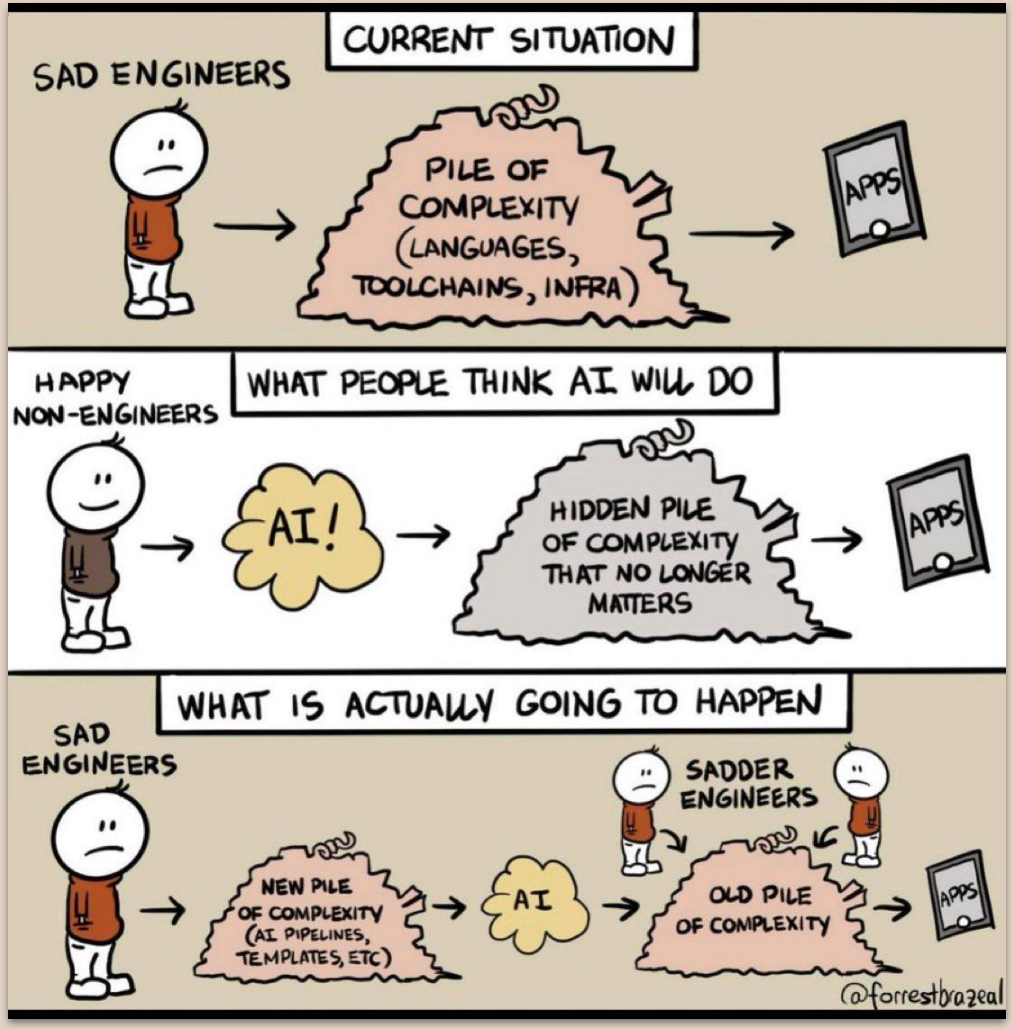
New AI assistant threatens software engineering jobs

Devin has the ability to actively collaborate with users during software development. This includes providing real-time progress updates, accepting feedback, and working together to make design choices.

By Sandeep Budki

InfoWorld | MAR 13, 2024 6:29 AM PDT

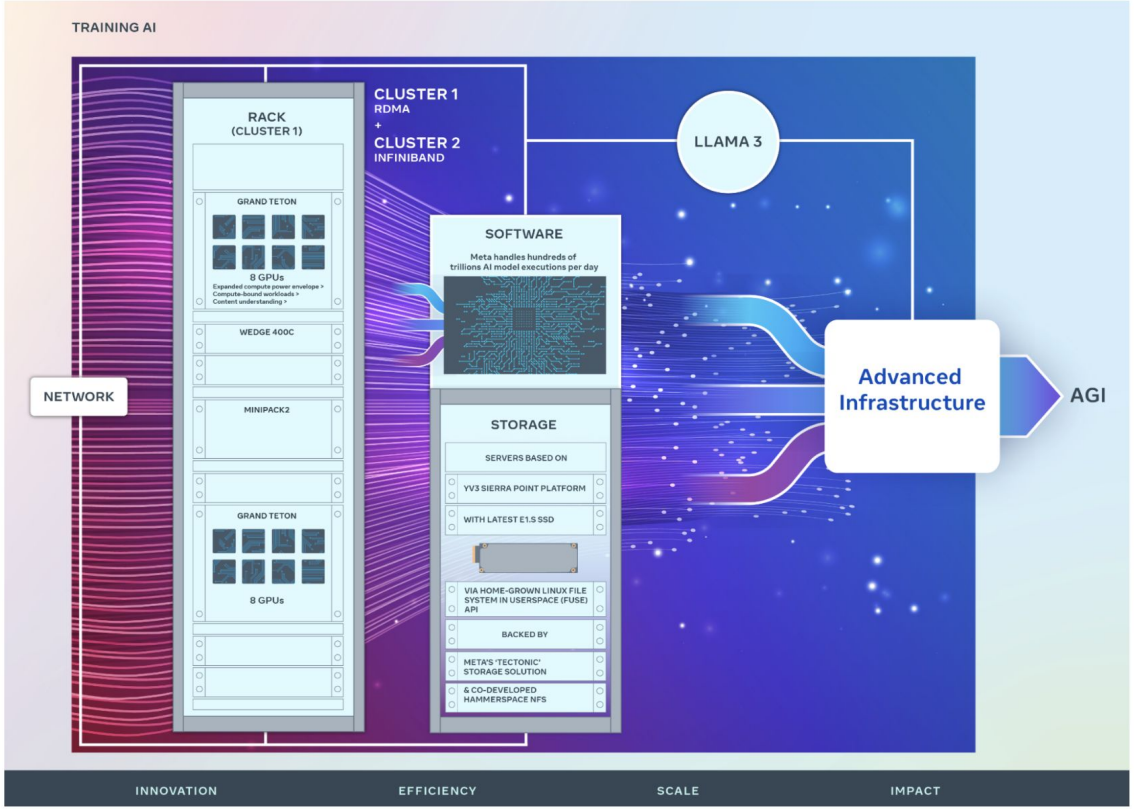
https://www.cognition-labs.com/blog



Even with the advent of no-code tools, why do I still have to focus into fundamental stuff?

POSTED ON MARCH 12, 2024 TO AI RESEARCH, DATA CENTER ENGINEERING, ML APPLICATIONS

Building Meta's GenAI Infrastructure



"Today, we're sharing details on two versions of our 24,576-GPU data center scale cluster at Meta. These clusters support our current and next generation AI models, including Llama 3, the successor to Llama 2, our publicly released LLM, as well as AI research and development across GenAI and other areas."

"By the end of 2024, we're aiming to continue to grow our infrastructure build-out that will include 350,000 NVIDIA H100 GPUs..."

https://engineering.fb.com/2-024/03/12/data-center-engineering/building-metas-genai-infrastructure

Contents lists available at ScienceDirect

Surfaces and Interfaces

journal homepage: www.sciencedirect.com/journal/surfaces-and-interfaces

The three-dimensional porous mesh structure of Cu-based metal-organic-framework - aramid cellulose separator enhances the electrochemical performance of lithium metal anode batteries

Manshu Zhang [a,1], Liming Wu [a,1], Tao Yang [b], Bing Zhu [a], Yangai Liu [a,*]

[a] Beijing Key Laboratory of Materials Utilization of Nonmetallic Minerals and Solid Wastes, National Laboratory of Mineral Materials, School of Materials Science and Technology, China University of Geosciences, Beijing100083, China
[b] College of Materials & Environmental Engineering, Hangzhou Dianzi University, Hangzhou 310036, China

ARTICLE INFO

Keywords:
Lithium metal battery
Lithium dendrites
CuMOF-ANFs separator

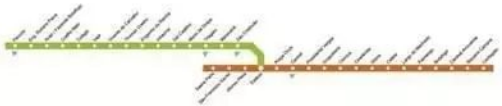
ABSTRACT

Lithium metal, due to its advantages of high theoretical capacity, low density and low electrochemical reaction potential, is used as a negative electrode material for batteries and brings great potential for the next generation of energy storage systems. However, the production of lithium metal dendrites makes the battery life low and poor safety, so lithium dendrites have been the biggest problem of lithium metal batteries. This study shows that the larger specific surface area and more pore structure of Cu-based metal-organic-framework - aramid cellulose (CuMOF-ANFs) composite separator can help to inhibit the formation of lithium dendrites. After 110 cycles at 1 mA/cm^2, the discharge capacity retention rate of the Li-Cu battery using the CuMOF-ANFs separator is about 96 %. Li-Li batteries can continue to maintain low hysteresis for 2000 h at the same current density. The results show that CuMOF-ANFs composite membrane can inhibit the generation of lithium dendrites and improve the cycle stability and cycle life of the battery. The three-dimensional (3D) porous mesh structure of CuMOF-ANFs separator provides a new perspective for the practical application of lithium metal battery.

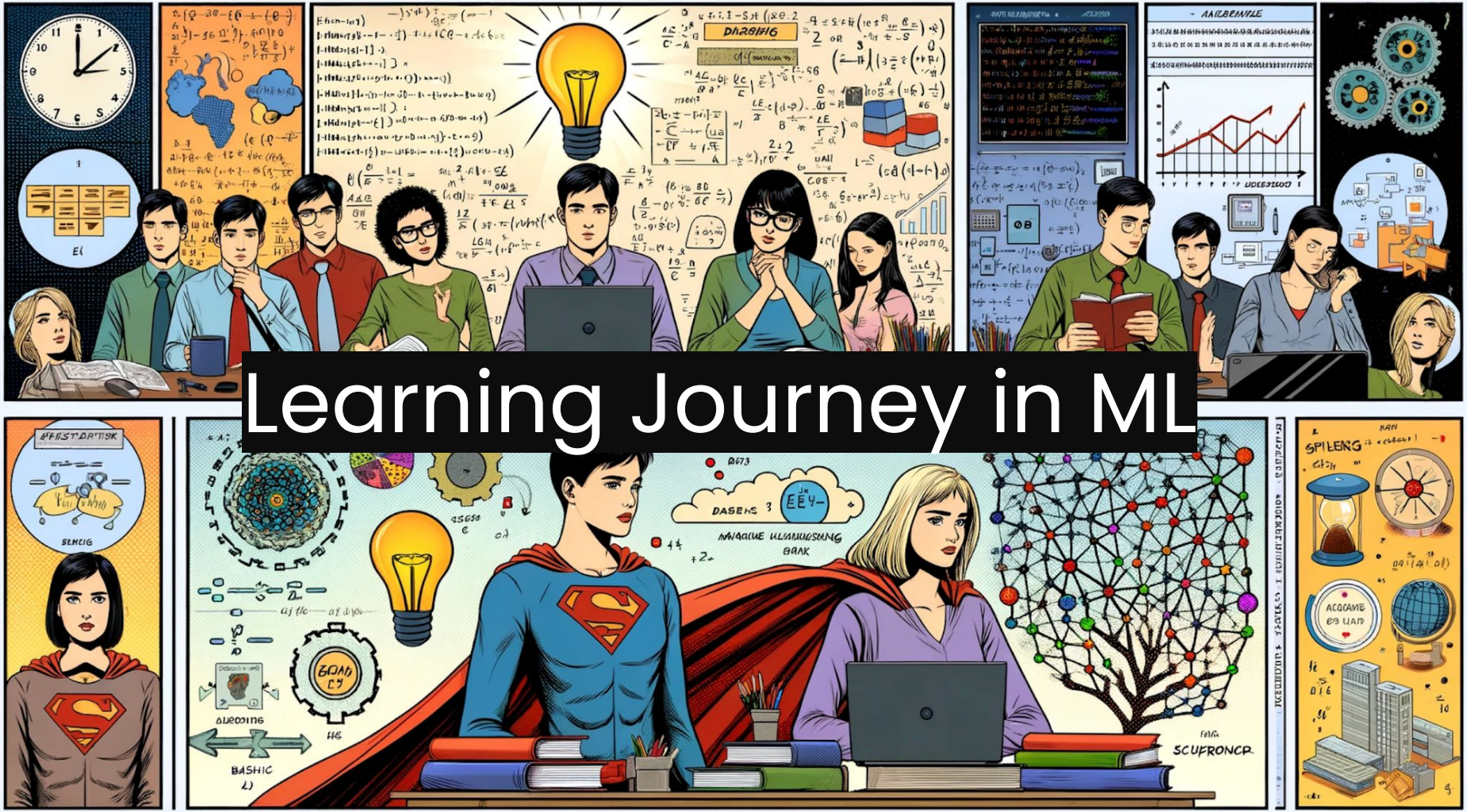
1. Introduction

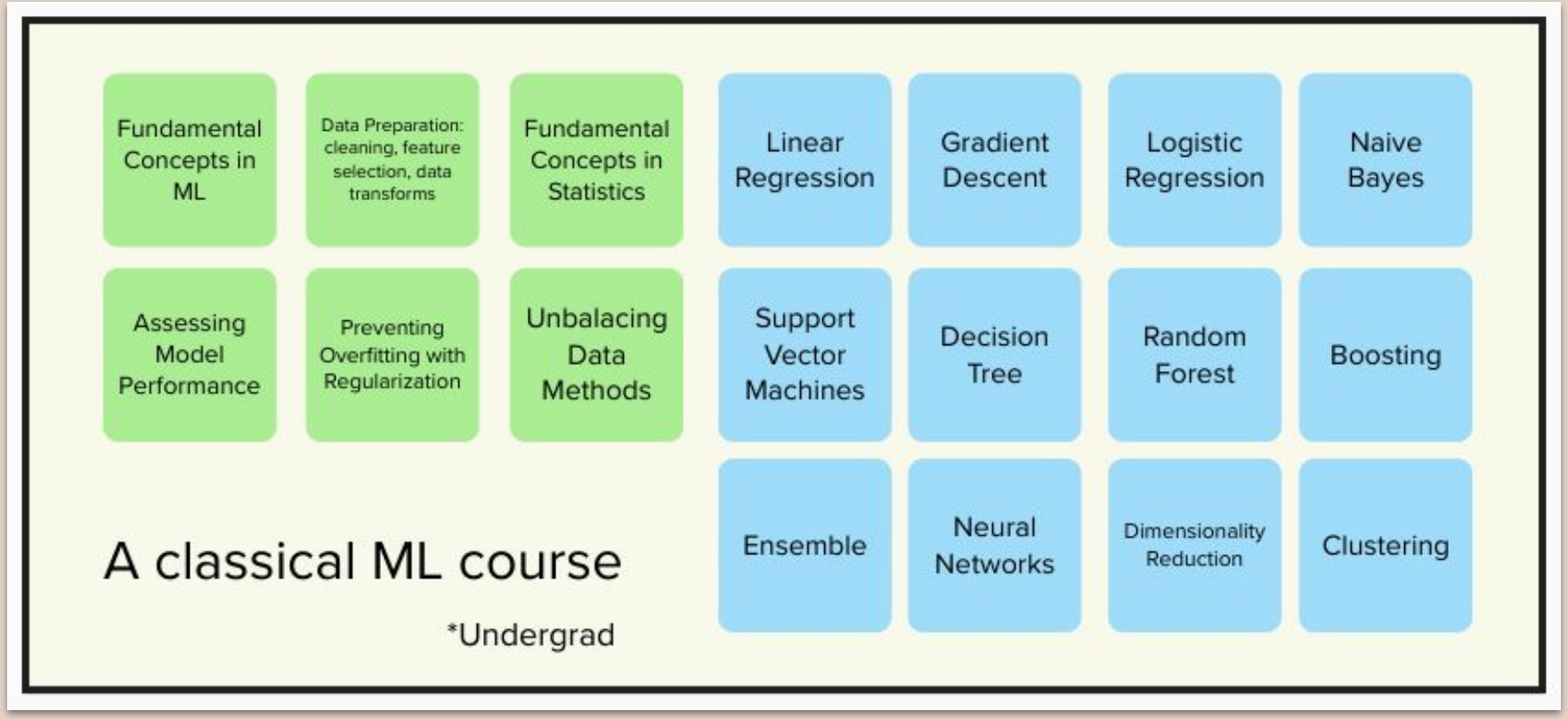
Certainly, here is a possible introduction for your topic:Lithium-metal batteries are promising candidates for high-energy-density rechargeable batteries due to their low electrode potentials and high theoretical capacities [1,2]. However, during the cycle, dendrites forming on the lithium metal anode can cause a short circuit, which can affect the safety and life of the battery [3–9]. Therefore, researchers are indeed focusing on various aspects such as negative electrode structure [10], electrolyte additives [11,12], SEI film construction [13,14], and collector modification [15] to inhibit the formation of lithium dendrites. However, using a separator with high mechanical strength and chemical stability is another promising approach to prevent dendrites from infiltrating the cathode. By incorporating a separator with high mechanical stability of the separator is equally important as it ensures that the separator remains intact and does not react or degrade in the presence of the electrolyte or other battery components. A chemically stable separator helps to prevent the formation of reactive species that can further promote dendrite growth. Researchers are actively exploring different materials and designs for separators to enhance their mechanical strength and chemical stability. These efforts aim to create separators that can effectively block dendrite formation, thereby improving the safety and performance of lithium-ion batteries. While there are several research directions to address the issue of dendrite formation, using a separator with high mechanical strength and chemical stability is an important approach to prevent dendrites from infiltrating the cathode and ensure safe operation of lithium metal batteries.

Several types of separators currently used in research include

Rio de Janeiro, 1993	Xangai, 1993
	(sem metrô)
Rio de Janeiro, 2013	Xangai, 2013
	

How does this metaphor fit into our learning journey, really?


Learning Journey in ML


Fundamental Concepts in ML
Data Preparation: cleaning, feature selection, data transforms
Fundamental Concepts in Statistics
Linear Regression
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Preventing Overfitting with Regularization
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Support Vector Machines
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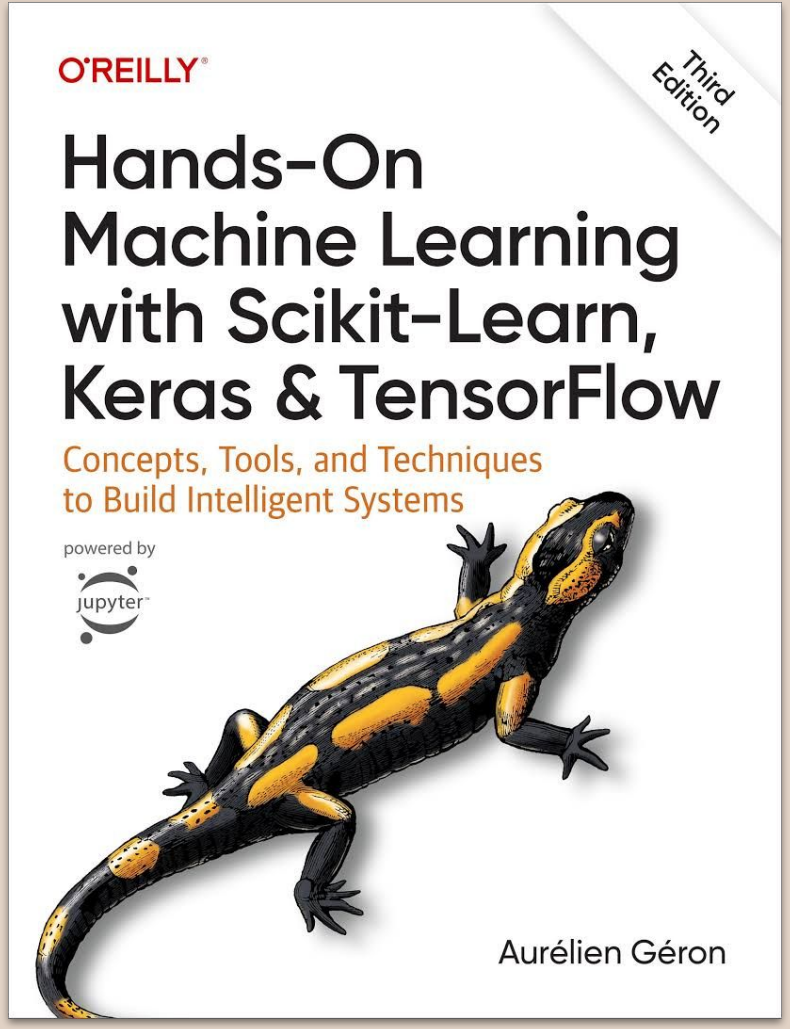
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Hands-On Machine Learning with Scikit-Learn, Keras & TensorFlow
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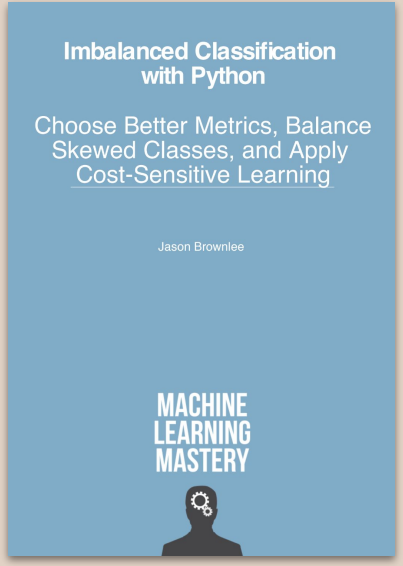
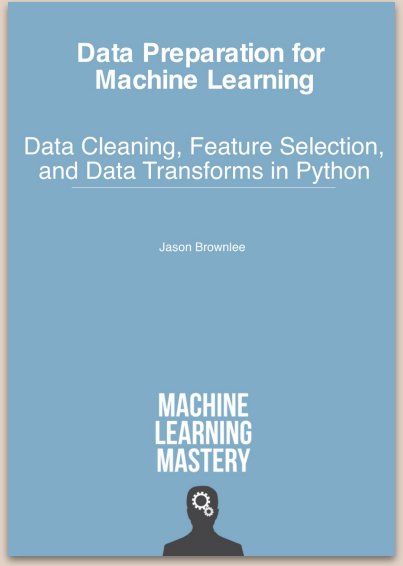

Imbalanced Classification with Python
Choose Better Metrics, Balance Skewed Classes, and Apply Cost-Sensitive Learning
Jason Brownlee
MACHINE LEARNING MASTERY


Data Preparation for Machine Learning
Data Cleaning, Feature Selection, and Data Transforms in Python
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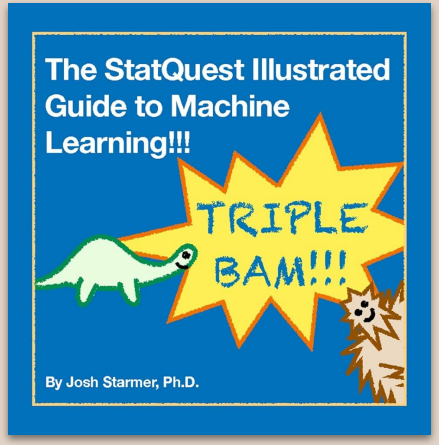
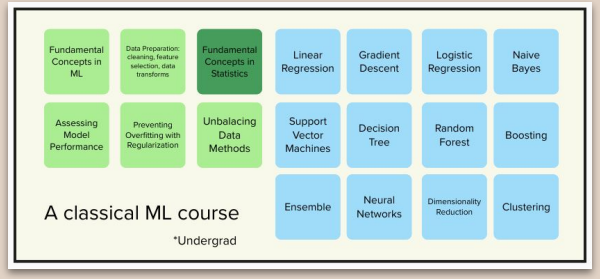

The StatQuest Illustrated Guide to Machine Learning!!!
TRIPLE BAM!!!
By Josh Starmer, Ph.D.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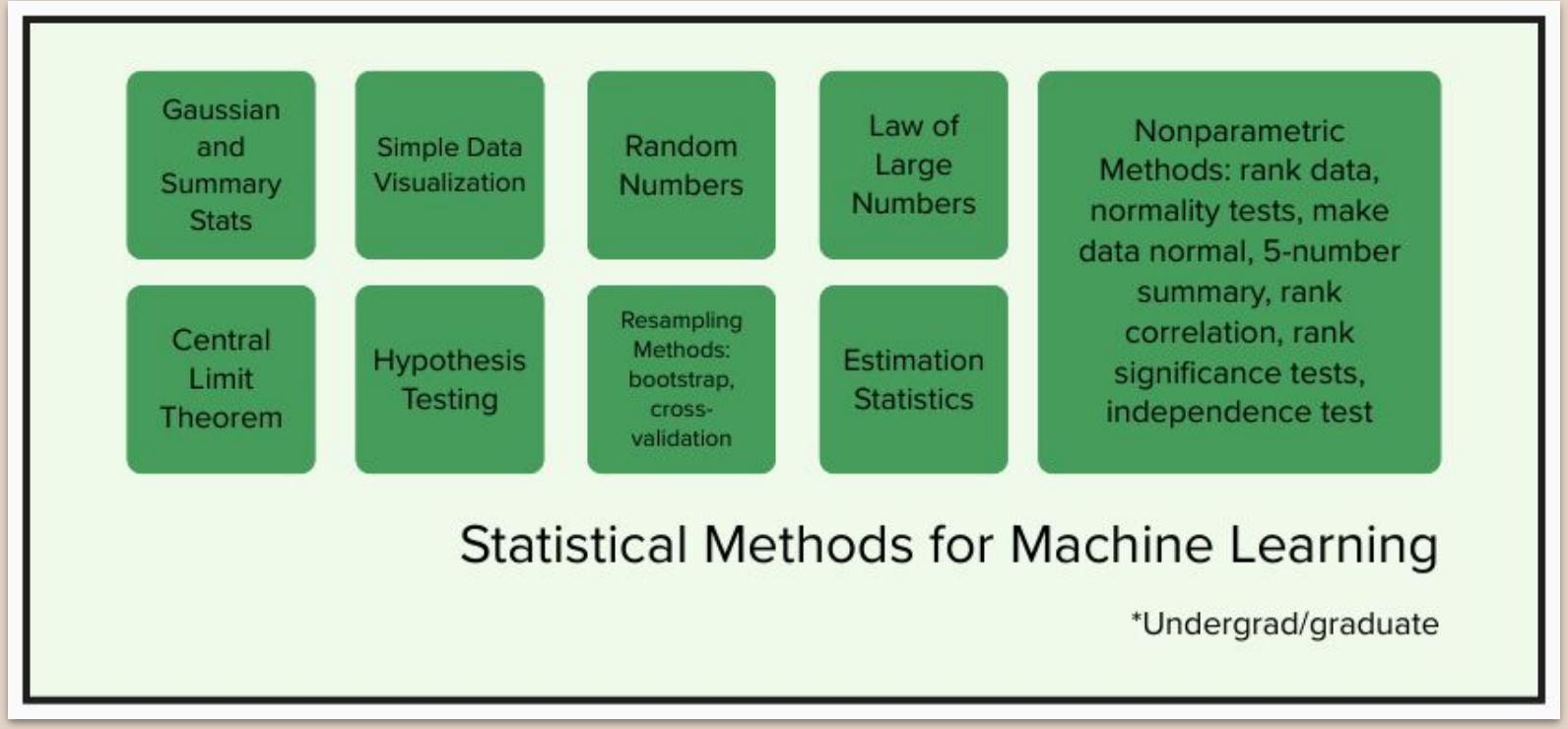
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Central Limit Theorem
Hypothesis Testing
Resampling Methods: bootstrap, cross-validation
Estimation Statistics
Statistical Methods for Machine Learning
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Statistical Methods for Machine Learning

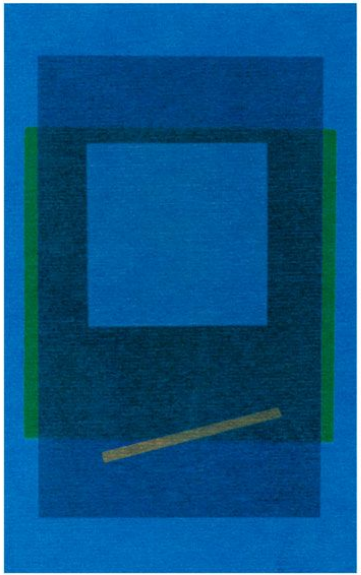
Discover how to Transform Data into Knowledge with Python

Jason Brownlee

MACHINE LEARNING MASTERY

Noções de Probabilidade e Estatística

Marcos Nascimento Magalhães
Antonio Carlos Pedroso de Lima



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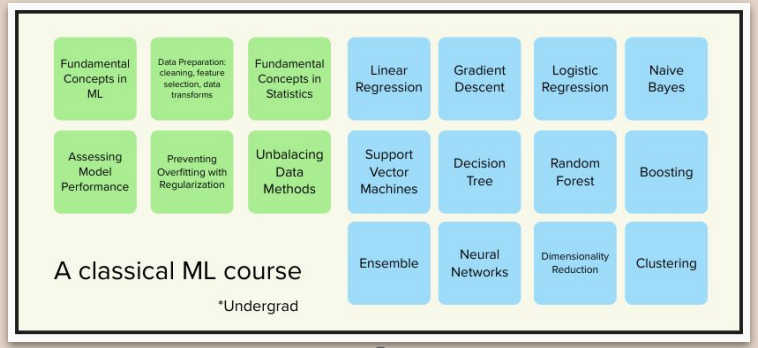
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extended


ML on Mobile and Edge IoT devices
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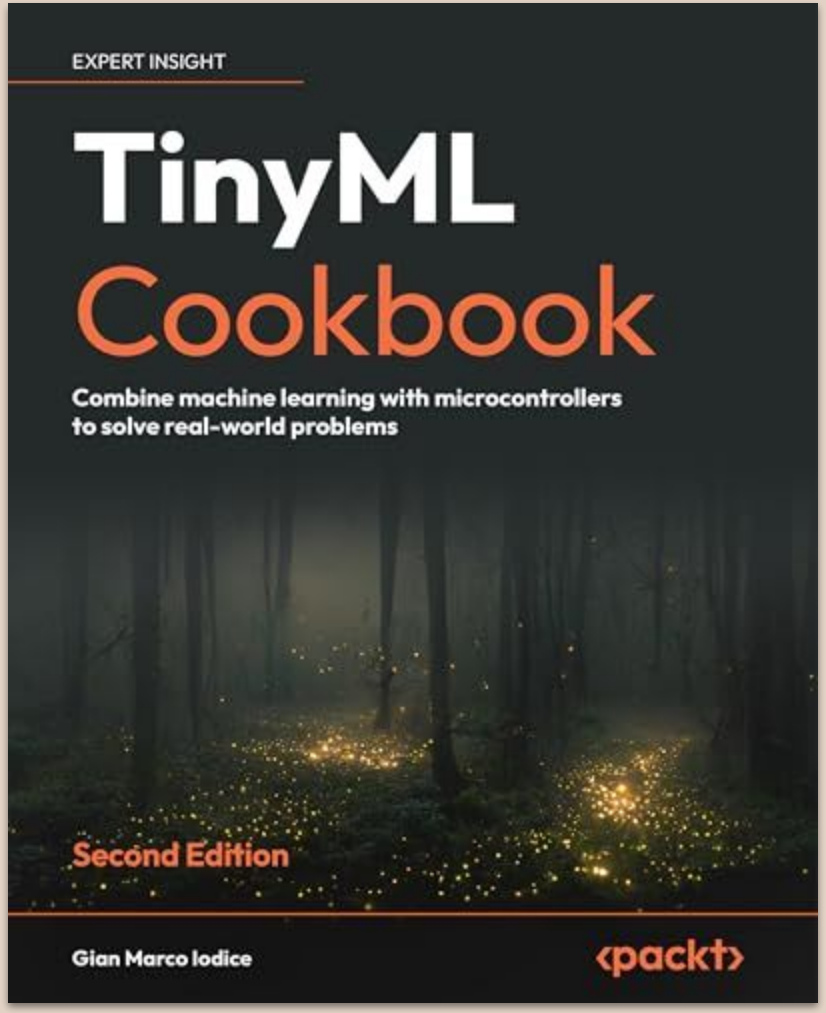

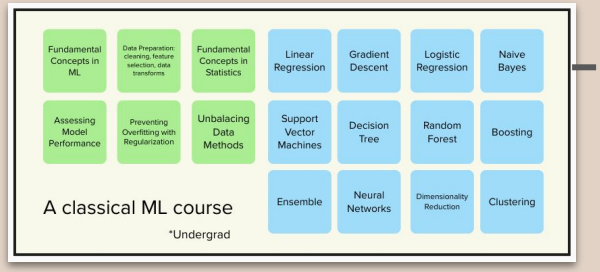

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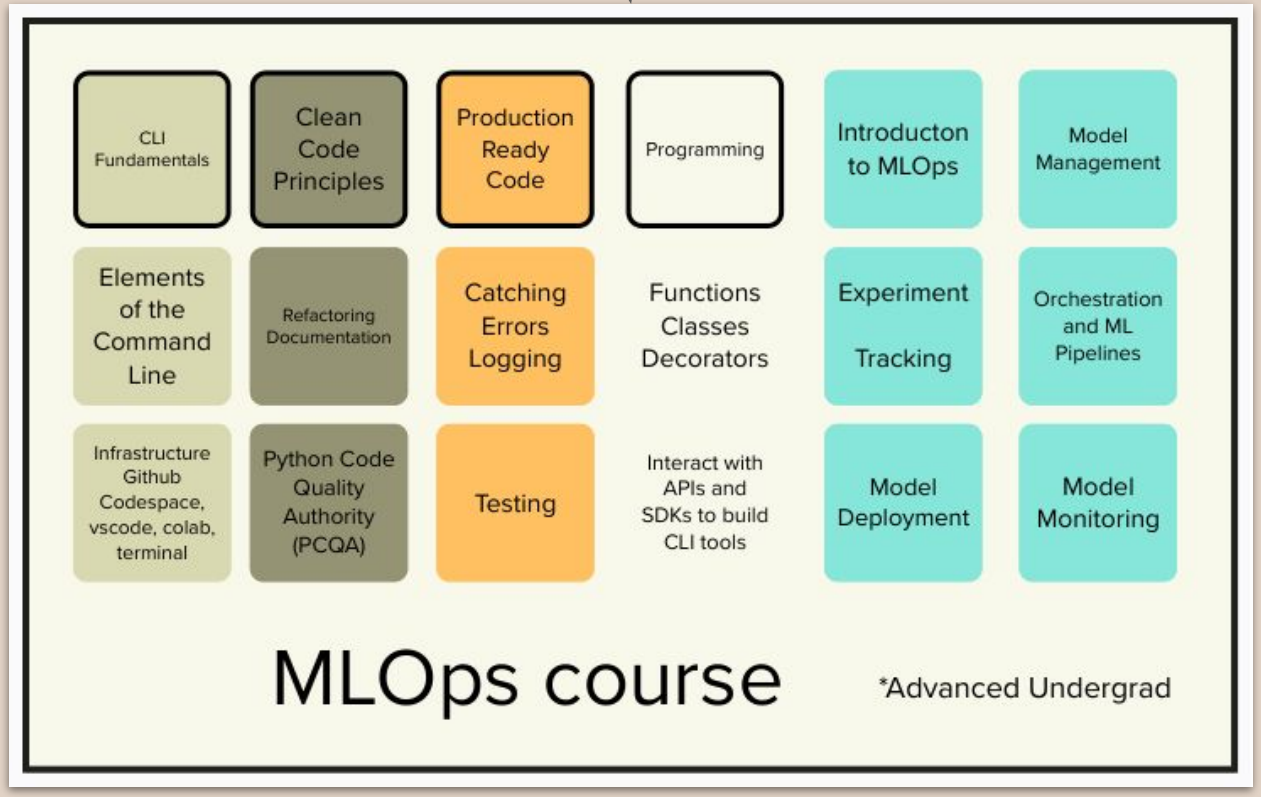
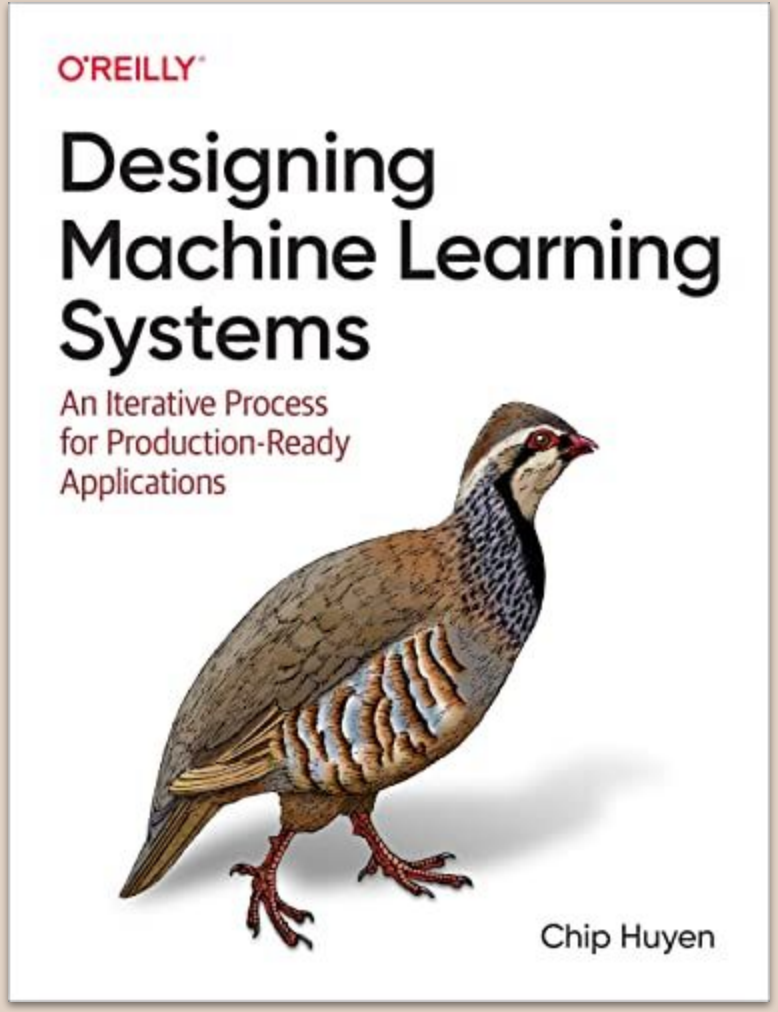
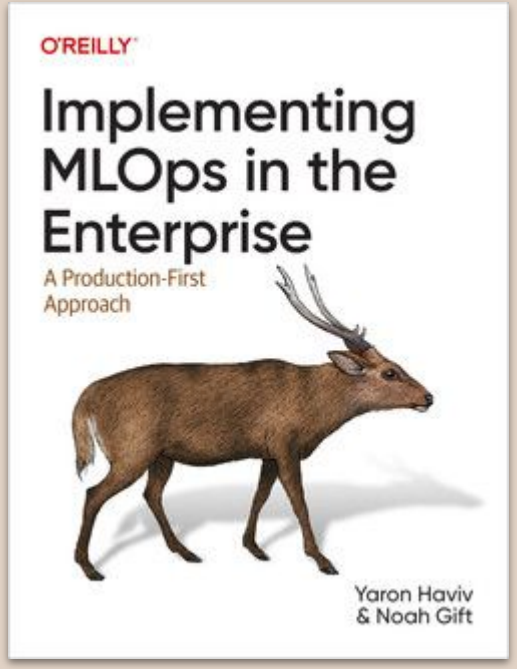


Learn how to design, build, deploy, and scale machine learning systems to solve real-world problems.





https://noahgift.com/courses/latest/

Go, Python, Rust, and production AI applications

March 11, 2024

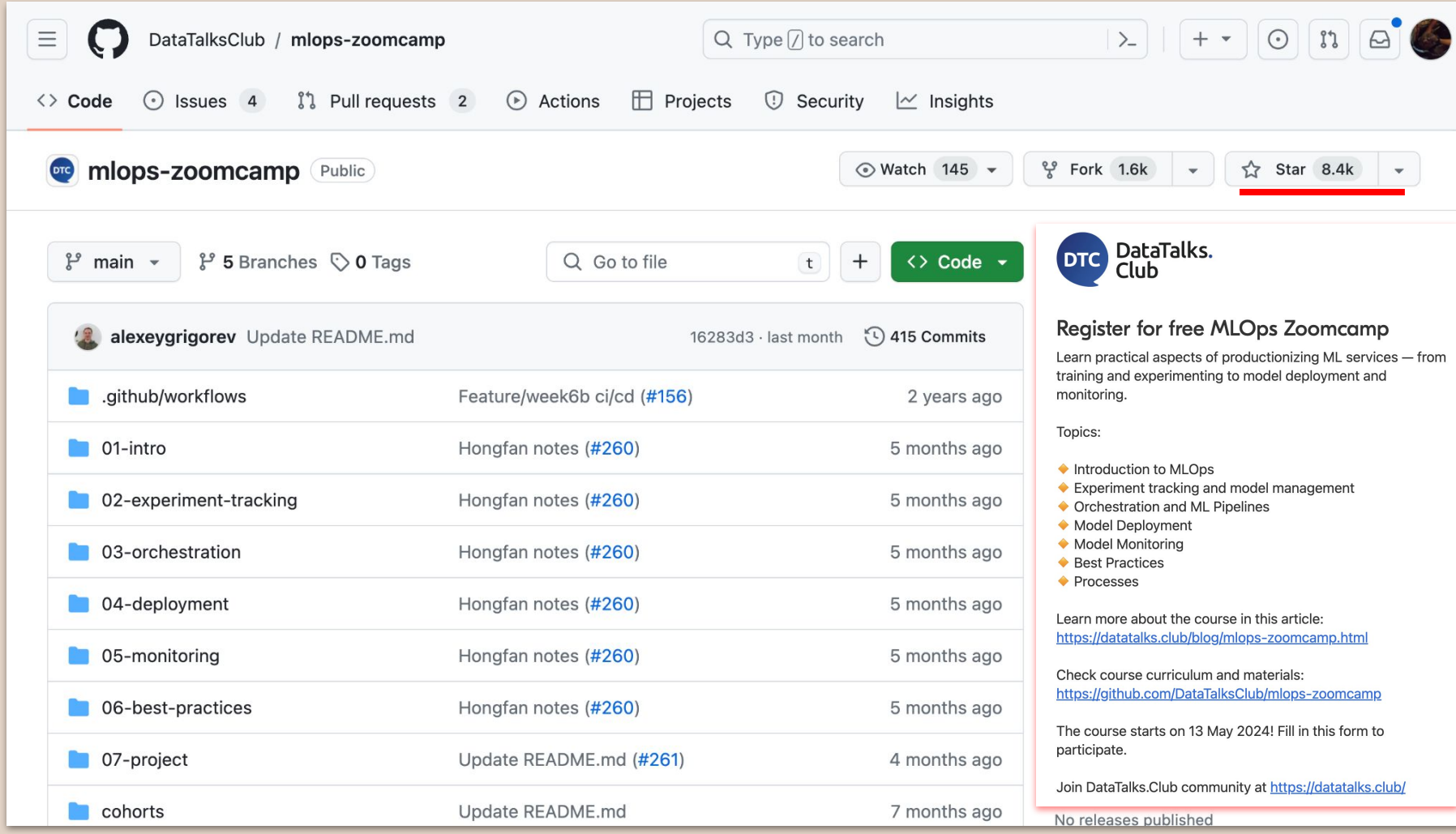
In this article, I'll talk about Go, Python, and Rust, and each language's role in building AI-powered applications.

Sameer Ajmani

he/him · Brooklyn, NY, USA

Engineering Director at Google

https://ajmani.net/2024/03/11/go-python-rust-and-production-ai-applications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main
5 Branches
0 Tags
Go to file
t
Code
alexeygrigorev Update README.md
16283d3 · last month
415 Commits
.github/workflows
Feature/week6b ci/cd (#156)
2 years ago
01-intro
Hongfan notes (#260)
5 months ago
02-experiment-tracking
Hongfan notes (#260)
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03-orchestration
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Model Monitoring
Best Practices
Processes
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Check course curriculum and materials:
https://github.com/DataTalksClub/mlops-zoomcamp
The course starts on 13 May 2024! Fill in this form to participate.
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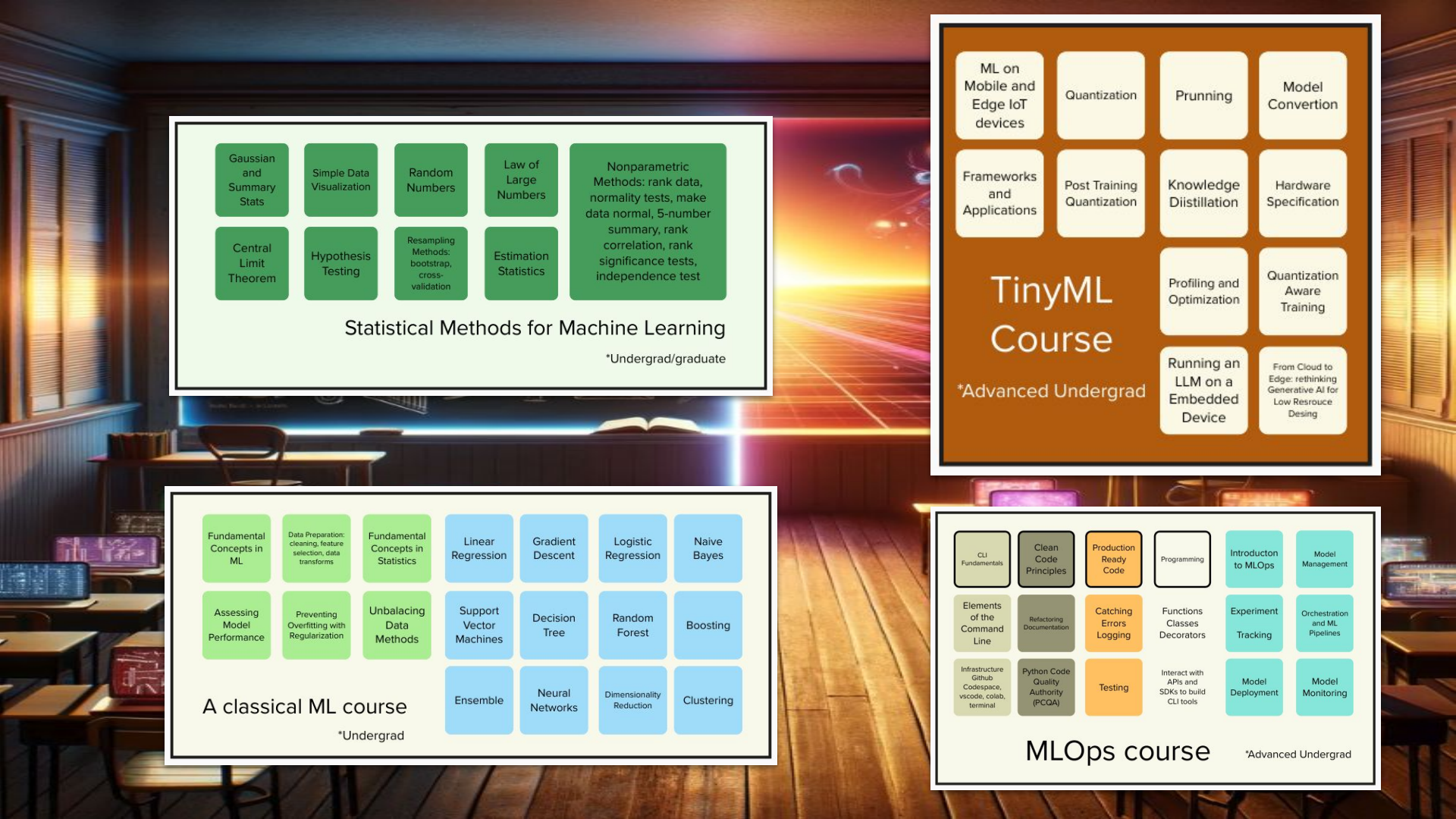
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Production Ready Code
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Introducton to MLOps
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Refactoring Documentation
Catching Errors Logging
Functions Classes Decorators
Experiment Tracking
Orchestration and ML Pipelines
Infrastructure Github Codespace, vscode, colab, terminal
Python Code Quality Authority (PCQA)
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Interact with APIs and SDKs to build CLI tools
Model Deployment
Model Monitoring
MLOps course
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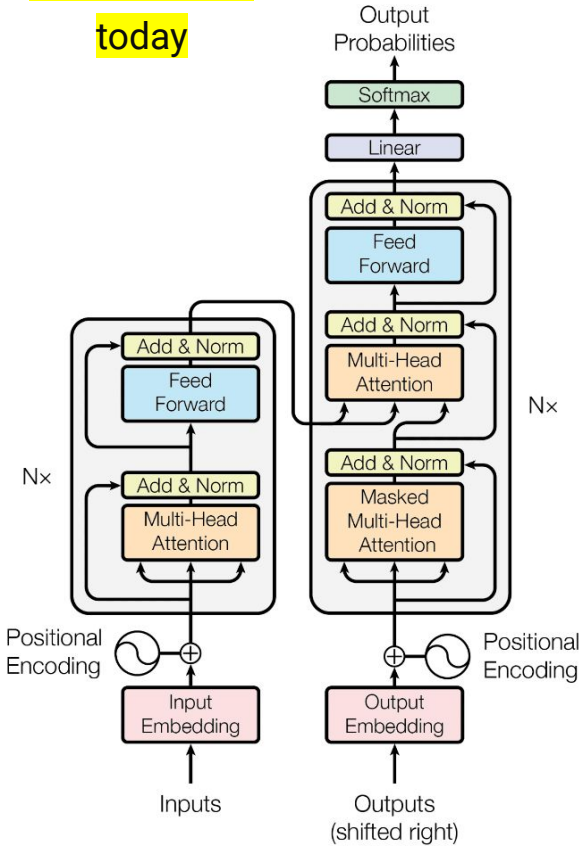


LLMOps Specialization (Specialization: 6 Courses)

Publisher: Coursera + Duke

Release Date: 2/1/2024

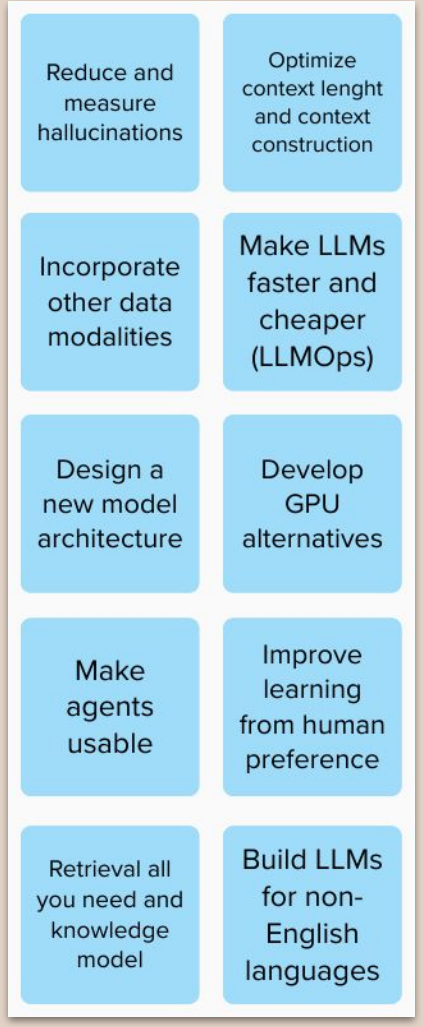
- 📚Operationalizing LLMs on Azure

Rust Programming Specialization (Specialization: 5 Courses)

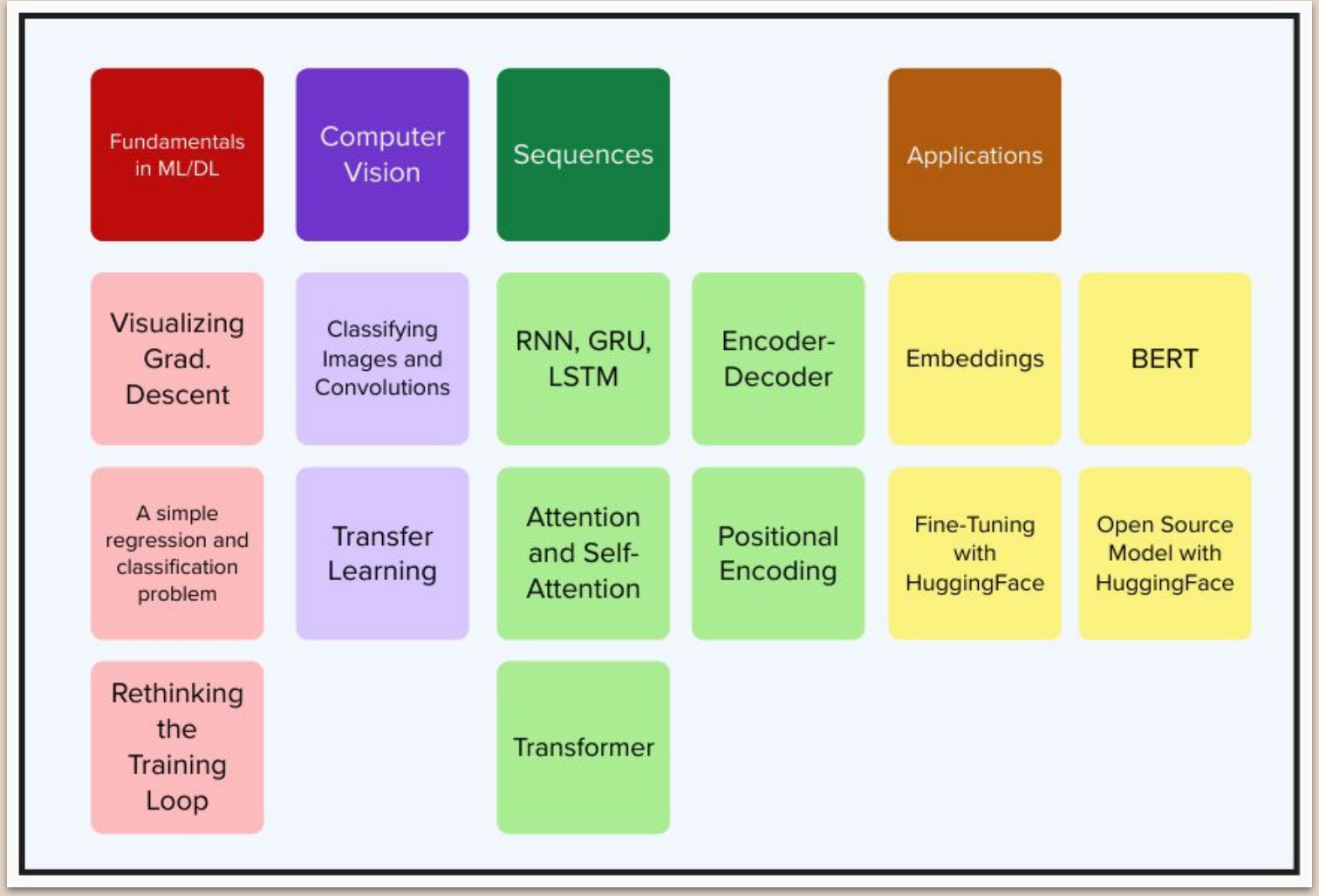
Publisher: Coursera + Duke

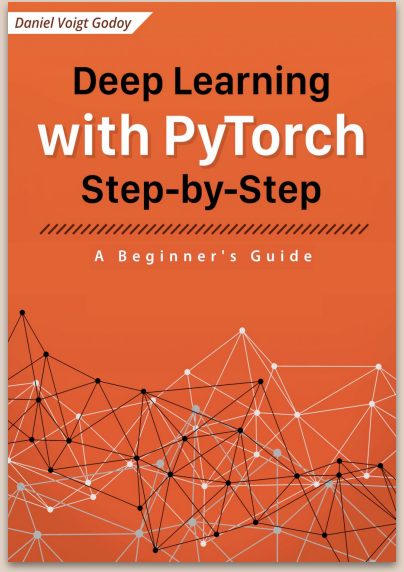
Release Date: 1/1/2024

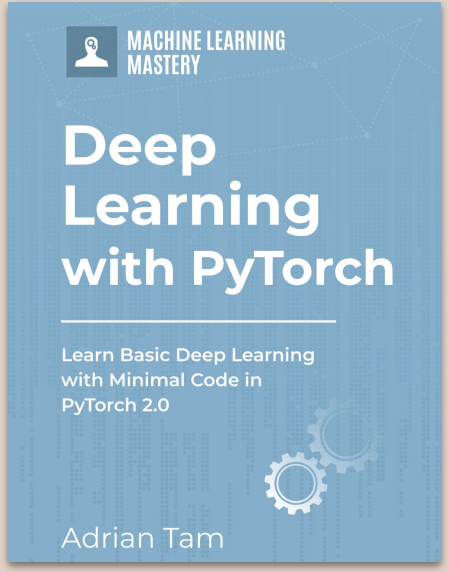
- 📚Rust Programming Specialization
- 📚Rust for DevOps
- 📚Rust LLMOps
- 📚Rust Fundamentals
- 📚Data Engineering with Rust
- 📚Python and Rust with Linux Command Line Tools

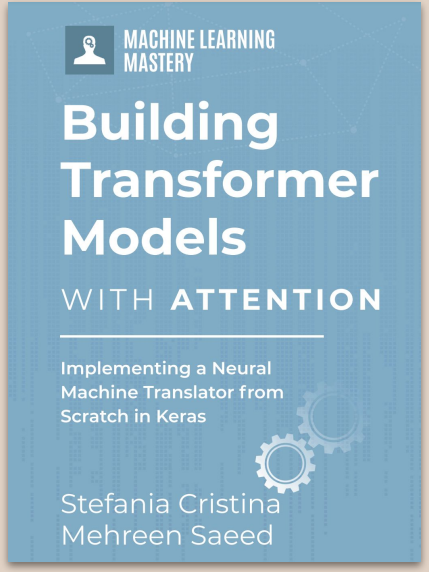


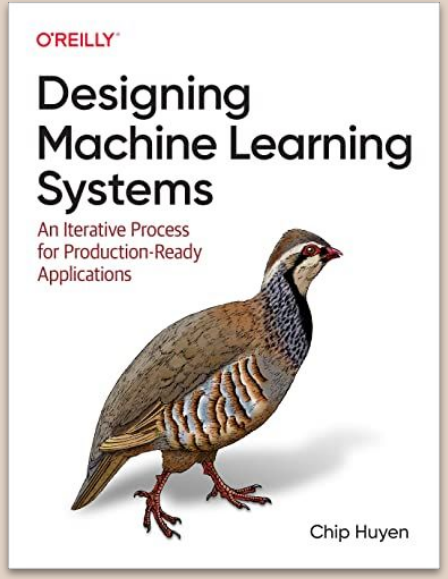
Course Syllabus




Daniel Voigt Godoy
Deep Learning
with PyTorch
Step-by-Step
A Beginner's Guide


MACHINE LEARNING
MASTERY
Deep
Learning
with PyTorch
Learn Basic Deep Learning
with Minimal Code in
PyTorch 2.0
Adrian Tam


MACHINE LEARNING
MASTERY
Building
Transformer
Models
WITH ATTENTION
Implementing a Neural
Machine Translator from
Scratch in Keras
Stefania Cristina
Mehreen Saeed


O'REILLY
Designing
Machine Learning
Systems
An Iterative Process
for Production-Ready
Applications
Chip Huyen

What will the grades be like?

[95,100] - A
[85,95) - B
[70,85) - C
[-,70) - D, E