

# Attention Is All You Need

**Chip Huyen**

**Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow** Aurélien Géron, 2022-10-04 Through a recent series of breakthroughs, deep learning has boosted the entire field of machine learning. Now, even programmers who know close to nothing about this technology can use simple, efficient tools to implement programs capable of learning from data. This bestselling book uses concrete examples, minimal theory, and production-ready Python frameworks (Scikit-Learn, Keras, and TensorFlow) to help you gain an intuitive understanding of the concepts and tools for building intelligent systems. With this updated third edition, author Aurélien Géron explores a range of techniques, starting with simple linear regression and progressing to deep neural networks. Numerous code examples and exercises throughout the book help you apply what you've learned. Programming experience is all you need to get started. Use Scikit-learn to track an example ML project end to end Explore several models, including support vector machines, decision trees, random forests, and ensemble methods Exploit unsupervised learning techniques such as dimensionality reduction, clustering, and anomaly detection Dive into neural net architectures, including convolutional nets, recurrent nets, generative adversarial networks, autoencoders, diffusion models, and transformers Use TensorFlow and Keras to build and train neural nets for computer vision, natural language processing, generative models, and deep reinforcement learning

**Hands-On Large Language Models** Jay Alammar, Maarten Grootendorst, 2024-09-11 AI has acquired startling new language capabilities in just the past few years. Driven by the rapid advances in deep learning, language AI systems are able to write and understand text better than ever before. This trend enables the rise of new features, products, and entire industries. With this book, Python developers will learn the practical tools and concepts they need to use these capabilities today. You'll learn how to use the power of pre-trained large language models for use cases like copywriting and summarization; create semantic search systems that go beyond keyword matching; build systems that classify and cluster text to enable scalable understanding of large amounts of text documents; and use existing libraries and pre-trained models for text classification, search, and clusterings. This book also shows you how to: Build advanced LLM pipelines to cluster text documents and explore the topics they belong to Build semantic search engines that go beyond keyword search with methods like dense retrieval and rerankers Learn various use cases where these models can provide value Understand the architecture of underlying Transformer models like BERT and GPT Get a deeper understanding of how LLMs are trained

Understanding how different methods of fine-tuning optimize LLMs for specific applications (generative model fine-tuning, contrastive fine-tuning, in-context learning, etc.)

**Ethics in Artificial Intelligence and Information Technologies** Gabriela Arriagada-Bruneau, Claudia López, Marcelo Mendoza, 2025-07-29 This book addresses the challenges posed by adopting and developing new AI technologies and how they impact people. Ethics, the scope, and the impact of technology on people are vital. The book starts with the ethical aspects of AI, presenting a socio-technical approach to integrating Ethics into AI projects, and outlines perspectives around feminism, sustainability, and labor transformation. Next, the concepts of fairness, accountability, and transparency are introduced, discussing their implications for developing information systems such as recommender systems, including aspects related to data privacy. Then the book covers the relevance of natural language processing systems, highlighting debias strategies and evaluation methodologies. The scopes of fairness-based approaches for ChatGPT and other generative text models are also introduced. Finally, advanced topics that include the relationship between AI and disinformation are addressed, including a discussion of the scope of news-generative models such as deep fakes. The book ends with a discussion of the perspectives and challenges in the area. The book is meant for an audience of advanced undergraduate and graduate students from all disciplines related to information systems. It is also helpful for researchers and practitioners interested in the subject.

*AI Engineering* Chip Huyen, 2024-12-04 Recent breakthroughs in AI have not only increased demand for AI products, they've also lowered the barriers to entry for those who want to build AI products. The model-as-a-service approach has transformed AI from an esoteric discipline into a powerful development tool that anyone can use. Everyone, including those with minimal or no prior AI experience, can now leverage AI models to build applications. In this book, author Chip Huyen discusses AI engineering: the process of building applications with readily available foundation models. The book starts with an overview of AI engineering, explaining how it differs from traditional ML engineering and discussing the new AI stack. The more AI is used, the more opportunities there are for catastrophic failures, and therefore, the more important evaluation becomes. This book discusses different approaches to evaluating open-ended models, including the rapidly growing AI-as-a-judge approach. AI application developers will discover how to navigate the AI landscape, including models, datasets, evaluation benchmarks, and the seemingly infinite number of use cases and application patterns. You'll learn a framework for developing an AI application, starting with simple techniques and progressing toward more sophisticated methods, and discover how to efficiently deploy these applications. Understand what AI engineering is and how it differs from traditional machine learning engineering Learn the process for developing an AI application, the challenges at each step, and approaches to address them Explore various model adaptation techniques, including prompt engineering, RAG, fine-tuning, agents, and dataset engineering, and understand how and why they work Examine the bottlenecks for latency and cost when

serving foundation models and learn how to overcome them Choose the right model, dataset, evaluation benchmarks, and metrics for your needs Chip Huyen works to accelerate data analytics on GPUs at Voltron Data. Previously, she was with Snorkel AI and NVIDIA, founded an AI infrastructure startup, and taught Machine Learning Systems Design at Stanford. She's the author of the book Designing Machine Learning Systems, an Amazon bestseller in AI. AI Engineering builds upon and is complementary to Designing Machine Learning Systems (O'Reilly).

**Hugging Face Transformers Essentials** Robert Johnson, 2025-01-05 Hugging Face Transformers Essentials: From Fine-Tuning to Deployment is an authoritative guide designed for those seeking to harness the power of state-of-the-art transformer models in natural language processing. Bridging the gap between foundational theory and practical application, this book equips readers with the knowledge to leverage Hugging Face's transformative ecosystem, enabling them to implement and optimize these powerful models effectively. Whether you are a beginner taking your first steps into the realm of AI or an experienced practitioner looking to deepen your expertise, this book offers a structured approach to mastering cutting-edge techniques in NLP. Spanning a comprehensive array of topics, the book delves into the mechanics of building, fine-tuning, and deploying transformer models for diverse applications. Readers will explore the intricacies of transfer learning, domain adaptation, and custom training while understanding the vital ethical considerations and implications of responsible AI development. With its meticulous attention to detail and insights into future trends and innovations, this text serves as both a practical manual and a thought-provoking resource for navigating the evolving landscape of AI and machine learning technologies.

**Mastering Large Language Models** Sanket Subhash Khandare, 2024-03-12 Do not just talk AI, build it: Your guide to LLM application development  
**KEY FEATURES** ● Explore NLP basics and LLM fundamentals, including essentials, challenges, and model types. ● Learn data handling and pre-processing techniques for efficient data management. ● Understand neural networks overview, including NN basics, RNNs, CNNs, and transformers. ● Strategies and examples for harnessing LLMs.  
**DESCRIPTION** Transform your business landscape with the formidable prowess of large language models (LLMs). The book provides you with practical insights, guiding you through conceiving, designing, and implementing impactful LLM-driven applications. This book explores NLP fundamentals like applications, evolution, components and language models. It teaches data pre-processing, neural networks, and specific architectures like RNNs, CNNs, and transformers. It tackles training challenges, advanced techniques such as GANs, meta-learning, and introduces top LLM models like GPT-3 and BERT. It also covers prompt engineering. Finally, it showcases LLM applications and emphasizes responsible development and deployment. With this book as your compass, you will navigate the ever-evolving landscape of LLM technology, staying ahead of the curve with the latest advancements and industry best practices.  
**WHAT YOU WILL LEARN** ● Grasp fundamentals of natural language processing (NLP) applications. ● Explore advanced architectures like transformers and their applications.

● Master techniques for training large language models effectively. ● Implement advanced strategies, such as meta-learning and self-supervised learning. ● Learn practical steps to build custom language model applications. WHO THIS BOOK IS FOR This book is tailored for those aiming to master large language models, including seasoned researchers, data scientists, developers, and practitioners in natural language processing (NLP). TABLE OF CONTENTS 1. Fundamentals of Natural Language Processing 2. Introduction to Language Models 3. Data Collection and Pre-processing for Language Modeling 4. Neural Networks in Language Modeling 5. Neural Network Architectures for Language Modeling 6. Transformer-based Models for Language Modeling 7. Training Large Language Models 8. Advanced Techniques for Language Modeling 9. Top Large Language Models 10. Building First LLM App 11. Applications of LLMs 12. Ethical Considerations 13. Prompt Engineering 14. Future of LLMs and Its Impact

*AI & I* Eugene Charniak, 2024-10-08 A concise and illuminating history of the field of artificial intelligence from one of its earliest and most respected pioneers. *AI & I* is an intellectual history of the field of artificial intelligence from the perspective of one of its first practitioners, Eugene Charniak. Charniak entered the field in 1967, roughly 12 years after AI's founding, and was involved in many of AI's formative milestones. In this book, he traces the trajectory of breakthroughs and disappointments of the discipline up to the current day, clearly and engagingly demystifying this oft revered and misunderstood technology. His argument is controversial but well supported: that classical AI has been almost uniformly unsuccessful and that the modern deep learning approach should be viewed as the foundation for all the exciting developments that are to come. Written for the scientifically educated layperson, this book chronicles the history of the field of AI, starting with its origin in 1956, as a topic for a small academic workshop held at Dartmouth University. From there, the author covers reasoning and knowledge representation, reasoning under uncertainty, chess, computer vision, speech recognition, language acquisition, deep learning, and learning writ large. Ultimately, Charniak takes issue with the controversy of AI—the fear that its invention means the end of jobs, creativity, and potentially even humans as a species—and explains why such concerns are unfounded. Instead, he believes that we should embrace the technology and all its potential to benefit society.

*Intelligent Information and Database Systems* Ngoc Thanh Nguyen, Kietikul Jearanaitanakij, Ali Selamat, Bogdan Trawiński, Suphamit Chittayasothorn, 2020-03-03 The two-volume set LNAI 12033 and 11034 constitutes the refereed proceedings of the 12th Asian Conference on Intelligent Information and Database Systems, ACIIDS 2020, held in Phuket, Thailand, in March 2020. The total of 105 full papers accepted for publication in these proceedings were carefully reviewed and selected from 285 submissions. The papers of the first volume are organized in the following topical sections: Knowledge Engineering and Semantic Web, Natural Language Processing, Decision Support and Control Systems, Computer Vision Techniques, Machine Learning and Data Mining, Deep Learning Models, Advanced Data Mining Techniques and

Applications, Multiple Model Approach to Machine Learning. The papers of the second volume are divided into these topical sections: Application of Intelligent Methods to Constrained Problems, Automated Reasoning with Applications in Intelligent Systems, Current Trends in Artificial Intelligence, Optimization, Learning, and Decision-Making in Bioinformatics and Bioengineering, Computer Vision and Intelligent Systems, Data Modelling and Processing for Industry 4.0, Intelligent Applications of Internet of Things and Data Analysis Technologies, Intelligent and Contextual Systems, Intelligent Systems and Algorithms in Information Sciences, Intelligent Supply Chains and e-Commerce, Privacy, Security and Trust in Artificial Intelligence, Interactive Analysis of Image, Video and Motion Data in Life Sciences.

**Deep Generative Modeling** Jakub M. Tomczak, 2024-09-10 This first comprehensive book on models behind Generative AI has been thoroughly revised to cover all major classes of deep generative models: mixture models, Probabilistic Circuits, Autoregressive Models, Flow-based Models, Latent Variable Models, GANs, Hybrid Models, Score-based Generative Models, Energy-based Models, and Large Language Models. In addition, Generative AI Systems are discussed, demonstrating how deep generative models can be used for neural compression, among others. Deep Generative Modeling is designed to appeal to curious students, engineers, and researchers with a modest mathematical background in undergraduate calculus, linear algebra, probability theory, and the basics of machine learning, deep learning, and programming in Python and PyTorch (or other deep learning libraries). It should find interest among students and researchers from a variety of backgrounds, including computer science, engineering, data science, physics, and bioinformatics who wish to get familiar with deep generative modeling. In order to engage with a reader, the book introduces fundamental concepts with specific examples and code snippets. The full code accompanying the book is available on the author's GitHub site: [github.com/jmtomczak/intro\\_dgm](https://github.com/jmtomczak/intro_dgm) The ultimate aim of the book is to outline the most important techniques in deep generative modeling and, eventually, enable readers to formulate new models and implement them.

**Applied Machine Learning Solutions with Python** Siddhanta Bhatta, 2021-08-31 A problem-focused guide for tackling industrial machine learning issues with methods and frameworks chosen by experts. **KEY FEATURES** ● Popular techniques for problem formulation, data collection, and data cleaning in machine learning. ● Comprehensive and useful machine learning tools such as MLFlow, Streamlit, and many more. ● Covers numerous machine learning libraries, including Tensorflow, FastAI, Scikit-Learn, Pandas, and Numpy. **DESCRIPTION** This book discusses how to apply machine learning to real-world problems by utilizing real-world data. In this book, you will investigate data sources, become acquainted with data pipelines, and practice how machine learning works through numerous examples and case studies. The book begins with high-level concepts and implementation (with code!) and progresses towards the real-world of ML systems. It briefly discusses various concepts of Statistics and Linear Algebra. You will learn how to formulate a problem, collect data, build a

model, and tune it. You will learn about use cases for data analytics, computer vision, and natural language processing. You will also explore nonlinear architecture, thus enabling you to build models with multiple inputs and outputs. You will get trained on creating a machine learning profile, various machine learning libraries, Statistics, and FAST API. Throughout the book, you will use Python to experiment with machine learning libraries such as Tensorflow, Scikit-learn, Spacy, and FastAI. The book will help train our models on both Kaggle and our datasets. WHAT YOU WILL LEARN ● Construct a machine learning problem, evaluate the feasibility, and gather and clean data. ● Learn to explore data first, select, and train machine learning models. ● Fine-tune the chosen model, deploy, and monitor it in production. ● Discover popular models for data analytics, computer vision, and Natural Language Processing. ● Create a machine learning profile and contribute to the community. WHO THIS BOOK IS FOR This book caters to beginners in machine learning, software engineers, and students who want to gain a good understanding of machine learning concepts and create production-ready ML systems. This book assumes you have a beginner-level understanding of Python. TABLE OF CONTENTS 1. Introduction to Machine Learning 2. Problem Formulation in Machine Learning 3. Data Acquisition and Cleaning 4. Exploratory Data Analysis 5. Model Building and Tuning 6. Taking Our Model into Production 7. Data Analytics Use Case 8. Building a Custom Image Classifier from Scratch 9. Building a News Summarization App Using Transformers 10. Multiple Inputs and Multiple Output Models 11. Contributing to the Community 12. Creating Your Project 13. Crash Course in Numpy, Matplotlib, and Pandas 14. Crash Course in Linear Algebra and Statistics 15. Crash Course in FastAPI

*Python Deep Learning* Ivan Vasilev, 2023-11-24 Master effective navigation of neural networks, including convolutions and transformers, to tackle computer vision and NLP tasks using Python Key Features Understand the theory, mathematical foundations and structure of deep neural networks Become familiar with transformers, large language models, and convolutional networks Learn how to apply them to various computer vision and natural language processing problems Purchase of the print or Kindle book includes a free PDF eBook Book DescriptionThe field of deep learning has developed rapidly recently and today covers a broad range of applications. This makes it challenging to navigate and hard to understand without solid foundations. This book will guide you from the basics of neural networks to the state-of-the-art large language models in use today. The first part of the book introduces the main machine learning concepts and paradigms. It covers the mathematical foundations, the structure, and the training algorithms of neural networks and dives into the essence of deep learning. The second part of the book introduces convolutional networks for computer vision. We'll learn how to solve image classification, object detection, instance segmentation, and image generation tasks. The third part focuses on the attention mechanism and transformers – the core network architecture of large language models. We'll discuss new types of advanced tasks they can solve, such as chatbots and text-to-image generation. By the end of this book, you'll have a thorough understanding of the inner workings of deep neural networks. You'll have the ability to develop new models and adapt

existing ones to solve your tasks. You'll also have sufficient understanding to continue your research and stay up to date with the latest advancements in the field. What you will learn

- Establish theoretical foundations of deep neural networks
- Understand convolutional networks and apply them in computer vision applications
- Become well versed with natural language processing and recurrent networks
- Explore the attention mechanism and transformers
- Apply transformers and large language models for natural language and computer vision
- Implement coding examples with PyTorch, Keras, and Hugging Face Transformers
- Use MLOps to develop and deploy neural network models

Who this book is for This book is for software developers/engineers, students, data scientists, data analysts, machine learning engineers, statisticians, and anyone interested in deep learning. Prior experience with Python programming is a prerequisite.

**Modern Generative AI with ChatGPT and OpenAI Models** Valentina Alto, 2023-05-26

Harness the power of AI with innovative, real-world applications, and unprecedented productivity boosts, powered by the latest advancements in AI technology like ChatGPT and OpenAI

Purchase of the print or Kindle book includes a free PDF eBook

Key Features

- Explore the theory behind generative AI models and the road to GPT3 and GPT4
- Become familiar with ChatGPT's applications to boost everyday productivity
- Learn to embed OpenAI models into applications using lightweight frameworks like LangChain

Book Description

Generative AI models and AI language models are becoming increasingly popular due to their unparalleled capabilities. This book will provide you with insights into the inner workings of the LLMs and guide you through creating your own language models. You'll start with an introduction to the field of generative AI, helping you understand how these models are trained to generate new data. Next, you'll explore use cases where ChatGPT can boost productivity and enhance creativity. You'll learn how to get the best from your ChatGPT interactions by improving your prompt design and leveraging zero, one, and few-shots learning capabilities. The use cases are divided into clusters of marketers, researchers, and developers, which will help you apply what you learn in this book to your own challenges faster. You'll also discover enterprise-level scenarios that leverage OpenAI models' APIs available on Azure infrastructure; both generative models like GPT-3 and embedding models like Ada. For each scenario, you'll find an end-to-end implementation with Python, using Streamlit as the frontend and the LangChain SDK to facilitate models' integration into your applications. By the end of this book, you'll be well equipped to use the generative AI field and start using ChatGPT and OpenAI models' APIs in your own projects. What you will learn

- Understand generative AI concepts from basic to intermediate level
- Focus on the GPT architecture for generative AI models
- Maximize ChatGPT's value with an effective prompt design
- Explore applications and use cases of ChatGPT
- Use OpenAI models and features via API calls
- Build and deploy generative AI systems with Python
- Leverage Azure infrastructure for enterprise-level use cases
- Ensure responsible AI and ethics in generative AI systems

Who this book is for This book is for individuals interested in boosting their daily productivity; businesspersons looking to dive deeper into real-world applications to empower their organizations; data scientists and developers trying to identify ways to

boost ML models and code; marketers and researchers seeking to leverage use cases in their domain – all by using Chat GPT and OpenAI Models. A basic understanding of Python is required; however, the book provides theoretical descriptions alongside sections with code so that the reader can learn the concrete use case application without running the scripts.

**Generative AI Essentials** Dr. Priyanka Singh, Hariom Singh, 2025-01-07 **DESCRIPTION** Generative AI is changing the way we think about creativity and problem-solving. This book is your go-to guide for understanding and working with this exciting technology. This book offers a clear introduction to generative AI, starting with basics like machine learning and deep learning. It explains key models, including GANs and VAEs, breaking down their architectures and training methods. You will discover how Transformer models like GPT have transformed natural language processing and enabled advancements in language generation. The book explores practical applications such as image synthesis, style transfer, and text generation, showing how generative AI merges technology with creativity. Advanced topics like reinforcement learning, AI ethics, and bias are also covered. Practical tips for creating your own generative AI models, along with insights into the future of this groundbreaking field, making it an essential resource for AI enthusiasts and professionals. By the end of this book, you will have a firm grasp of generative AI concepts and practical skills to get you started. You will be well-prepared to use cloud platforms like AWS, Azure, and GCP to build and launch powerful generative AI projects. From creating realistic images to crafting natural text, you will explore hands-on examples while tackling important ethical questions. This book gives you the skills and confidence to explore the limitless potential of generative AI. **KEY FEATURES** ● Learn GANs, VAEs, and Transformers with real-world applications. ● Build scalable generative AI models using AWS, Azure, and GCP. ● Explore ethical AI, creative projects, and future trends in technology. **WHAT YOU WILL LEARN** ● Build foundational knowledge of generative AI principles and models. ● Apply machine learning and deep learning for creative content generation. ● Leverage GANs, VAEs, and Transformer models in real-world scenarios. ● Master cloud tools for scalable generative AI development. ● Address ethical challenges and implement responsible AI practices. ● Explore advanced applications and future directions of generative AI **WHO THIS BOOK IS FOR** This book is designed for data scientists, machine learning engineers, software developers, cloud professionals, educators, students, and creative professionals. **TABLE OF CONTENTS** 1. Introduction to Generative AI 2. Generative Adversarial Networks 3. Variational Autoencoders 4. Transformer Models and Language Generation 5. Image Generation and Style Transfer 6. Text Generation and Language Models with Real-time Examples 7. Generative AI in Art and Creativity 8. Exploring Advanced Concepts 9. Future Direction and Challenges 10. Building Your Own-Generative AI Models 11. Conclusion and Outlook Appendices

**Ultimate Generative AI Solutions on Google Cloud** Arun Pandey, 2024-12-29 Unlock Generative AI's Potential: Transform Ideas into Reality on Google Cloud! Key Features ● Step-by-step guidance for building Generative AI apps on Google Cloud Platform. ● Pro tips for fine-tuning models to achieve optimal performance. ● Industry-specific use cases for practical, hands-



on learning. Book Description Generative AI, powered by Google Cloud Platform (GCP), is reshaping industries with its advanced capabilities in automating and enhancing complex tasks. The Ultimate Generative AI Solutions on Google Cloud is your comprehensive guide to harnessing this powerful combination to innovate and excel in your job role. It explores foundational machine learning concepts and dives deep into Generative AI, providing the essential knowledge needed to conceptualize, develop, and deploy cutting-edge AI solutions. Within these pages, you'll explore Large Language Models (LLMs), Prompt engineering, Fine-tuning techniques, and the latest advancements in AI, with special emphasis on Parameter-Efficient Fine-Tuning (PEFT) and Reinforcement Learning with Human Feedback (RLHF). You'll also learn about the integration of LangChain and Retrieval-Augmented Generation (RAG) to enhance AI capabilities. By mastering these techniques, you can optimize model performance while conserving resources. The integration of GCP services simplifies the development process, enabling the creation of robust AI applications with ease. By the end of this book, you will not only understand the technical aspects of Generative AI but also gain practical skills that can transform your work to drive innovation and boost operational efficiency with Generative AI on GCP. What you will learn

- Build and deploy cutting-edge generative AI solutions using Google Cloud, LangChain, and RAG.
- Fine-tune large language models (LLMs) with PEFT to meet precise business objectives.
- Master prompt engineering techniques to enhance model performance with GCP tools.
- Optimize production AI for efficiency and scalability using GCP's Cloud Functions and Cloud Run.
- Apply real-world industry use cases to drive innovation and solve complex problems with LLMops.
- Manage and streamline AI projects effectively using GCP services like Dataflow, Pub/Sub, and Monitoring.

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**Intelligent Networked Things** Lin Zhang,Wensheng Yu,Haijun Jiang,Yuanjun Laili,2023-01-27 This book constitutes the refereed proceedings of the 5th China Conference on Intelligent Networked Things, CINT 2022, held in Urumqi, China, during August 7-8, 2022. The 45 full papers included in this book were carefully reviewed and selected from 130 submissions. They were organized in topical sections as follows: Access, Perception, and Prediction in Intelligent Networked Things, Control of Intelligent Networked Things and Modeling, Simulation and Optimization of Intelligent Networked Things.

**Cracking the Data Science Interview** Leondra R. Gonzalez,Aaren Stubberfield,2024-02-29 Rise above the competition and excel in your next interview with this one-stop guide to Python, SQL, version control, statistics, machine learning, and much more Key Features Acquire highly sought-after skills of the trade, including Python, SQL, statistics, and machine learning Gain the confidence to explain complex statistical, machine learning, and deep learning theory Extend your

expertise beyond model development with version control, shell scripting, and model deployment fundamentals Purchase of the print or Kindle book includes a free PDF eBook Book DescriptionThe data science job market is saturated with professionals of all backgrounds, including academics, researchers, bootcampers, and Massive Open Online Course (MOOC) graduates. This poses a challenge for companies seeking the best person to fill their roles. At the heart of this selection process is the data science interview, a crucial juncture that determines the best fit for both the candidate and the company. Cracking the Data Science Interview provides expert guidance on approaching the interview process with full preparation and confidence. Starting with an introduction to the modern data science landscape, you'll find tips on job hunting, resume writing, and creating a top-notch portfolio. You'll then advance to topics such as Python, SQL databases, Git, and productivity with shell scripting and Bash. Building on this foundation, you'll delve into the fundamentals of statistics, laying the groundwork for pre-modeling concepts, machine learning, deep learning, and generative AI. The book concludes by offering insights into how best to prepare for the intensive data science interview. By the end of this interview guide, you'll have gained the confidence, business acumen, and technical skills required to distinguish yourself within this competitive landscape and land your next data science job. What you will learn Explore data science trends, job demands, and potential career paths Secure interviews with industry-standard resume and portfolio tips Practice data manipulation with Python and SQL Learn about supervised and unsupervised machine learning models Master deep learning components such as backpropagation and activation functions Enhance your productivity by implementing code versioning through Git Streamline workflows using shell scripting for increased efficiency Who this book is for Whether you're a seasoned professional who needs to brush up on technical skills or a beginner looking to enter the dynamic data science industry, this book is for you. To get the most out of this book, basic knowledge of Python, SQL, and statistics is necessary. However, anyone familiar with other analytical languages, such as R, will also find value in this resource as it helps you revisit critical data science concepts like SQL, Git, statistics, and deep learning, guiding you to crack through data science interviews.

Deep Learning with TensorFlow and Keras Amita Kapoor, Antonio Gulli, Sujit Pal, Francois Chollet, 2022-10-06 Build cutting edge machine and deep learning systems for the lab, production, and mobile devices Key Features Understand the fundamentals of deep learning and machine learning through clear explanations and extensive code samples Implement graph neural networks, transformers using Hugging Face and TensorFlow Hub, and joint and contrastive learning Learn cutting-edge machine and deep learning techniques Book Description Deep Learning with TensorFlow and Keras teaches you neural networks and deep learning techniques using TensorFlow (TF) and Keras. You'll learn how to write deep learning applications in the most powerful, popular, and scalable machine learning stack available. TensorFlow 2.x focuses on simplicity and ease of use, with updates like eager execution, intuitive higher-level APIs based on Keras, and flexible model building on any platform. This book uses the latest TF 2.0 features and libraries to present an overview of supervised and

unsupervised machine learning models and provides a comprehensive analysis of deep learning and reinforcement learning models using practical examples for the cloud, mobile, and large production environments. This book also shows you how to create neural networks with TensorFlow, runs through popular algorithms (regression, convolutional neural networks (CNNs), transformers, generative adversarial networks (GANs), recurrent neural networks (RNNs), natural language processing (NLP), and graph neural networks (GNNs)), covers working example apps, and then dives into TF in production, TF mobile, and TensorFlow with AutoML. What you will learn Learn how to use the popular GNNs with TensorFlow to carry out graph mining tasks Discover the world of transformers, from pretraining to fine-tuning to evaluating them Apply self-supervised learning to natural language processing, computer vision, and audio signal processing Combine probabilistic and deep learning models using TensorFlow Probability Train your models on the cloud and put TF to work in real environments Build machine learning and deep learning systems with TensorFlow 2.x and the Keras API Who this book is for This hands-on machine learning book is for Python developers and data scientists who want to build machine learning and deep learning systems with TensorFlow. This book gives you the theory and practice required to use Keras, TensorFlow, and AutoML to build machine learning systems. Some machine learning knowledge would be useful. We don't assume TF knowledge.

**Computer Vision on AWS** Lauren Mullenex, Nate Bachmeier, Jay Rao, 2023-03-31 Develop scalable computer vision solutions for real-world business problems and discover scaling, cost reduction, security, and bias mitigation best practices with AWS AI/ML services Purchase of the print or Kindle book includes a free PDF eBook Key Features Learn how to quickly deploy and automate end-to-end CV pipelines on AWS Implement design principles to mitigate bias and scale production of CV workloads Work with code examples to master CV concepts using AWS AI/ML services Book Description Computer vision (CV) is a field of artificial intelligence that helps transform visual data into actionable insights to solve a wide range of business challenges. This book provides prescriptive guidance to anyone looking to learn how to approach CV problems for quickly building and deploying production-ready models. You'll begin by exploring the applications of CV and the features of Amazon Rekognition and Amazon Lookout for Vision. The book will then walk you through real-world use cases such as identity verification, real-time video analysis, content moderation, and detecting manufacturing defects that'll enable you to understand how to implement AWS AI/ML services. As you make progress, you'll also use Amazon SageMaker for data annotation, training, and deploying CV models. In the concluding chapters, you'll work with practical code examples, and discover best practices and design principles for scaling, reducing cost, improving the security posture, and mitigating bias of CV workloads. By the end of this AWS book, you'll be able to accelerate your business outcomes by building and implementing CV into your production environments with the help of AWS AI/ML services. What you will learn Apply CV across industries, including e-commerce, logistics, and media Build custom image classifiers with Amazon Rekognition

Custom Labels Create automated end-to-end CV workflows on AWS Detect product defects on edge devices using Amazon Lookout for Vision Build, deploy, and monitor CV models using Amazon SageMaker Discover best practices for designing and evaluating CV workloads Develop an AI governance strategy across the entire machine learning life cycle Who this book is for If you are a machine learning engineer or data scientist looking to discover best practices and learn how to build comprehensive CV solutions on AWS, this book is for you. Knowledge of AWS basics is required to grasp the concepts covered in this book more effectively. A solid understanding of machine learning concepts and the Python programming language will also be beneficial.

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