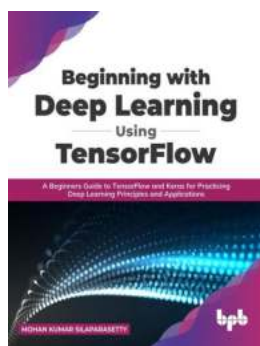


The Ultimate Beginner's Guide to TensorFlow and Keras for Practicing Deep Learning Principles

Deep Learning has revolutionized the field of Artificial Intelligence by enabling machines to learn and make decisions similar to humans. It has found applications in various domains, including computer vision, natural language processing, and robotics. TensorFlow and Keras are two popular frameworks that facilitate the development and deployment of deep learning models. In this beginner's guide, we will explore the basics of both TensorFlow and Keras, understand their functionalities, and learn how to apply them to tackle real-world problems.

Chapter 1: Understanding Deep Learning

In this chapter, we will provide a brief overview of deep learning, its history, and the principles behind it. We will explore how deep learning models are constructed, trained, and optimized to achieve high accuracy. Additionally, we will discuss the importance of data preprocessing, hyperparameter tuning, and model evaluation.



Beginning with Deep Learning Using TensorFlow: A Beginners Guide to TensorFlow and Keras for Practicing Deep Learning Principles and Applications (English Edition)

by Kayla Davenport (Kindle Edition)

★★★★★ 5 out of 5

Language : English

File size : 13528 KB

Text-to-Speech : Enabled

Enhanced typesetting : Enabled
Screen Reader : Supported
Print length : 372 pages



Chapter 2: to TensorFlow

TensorFlow, an open-source machine learning framework developed by Google, offers a comprehensive ecosystem for building and deploying computational graphs. In this chapter, we will get acquainted with TensorFlow, understand its architecture, and learn how to perform basic mathematical operations. We will explore the concept of tensors and delve into TensorFlow's graph execution model.

Chapter 3: Building Neural Networks with TensorFlow

In this chapter, we will dive deeper into TensorFlow's capabilities by building and training our first feedforward neural network. We will learn how to define the network's architecture, initialize variables, and specify the loss function. We will also implement gradient descent optimization and explore the various activation functions provided by TensorFlow.

Chapter 4: to Keras

Keras is a user-friendly neural network library that provides a high-level API for building and training deep learning models. In this chapter, we will introduce Keras and discuss its advantages. We will explore the different layers available in Keras and learn how to stack them to construct complex neural network architectures. We will also investigate the process of compiling models and setting various parameters.

Chapter 5: Transfer Learning with Keras

Transfer learning is a powerful technique that allows us to leverage pre-trained models to solve similar problems. In this chapter, we will explore how to use transfer learning in Keras. We will learn how to import pre-trained models, freeze specific layers, and fine-tune them for our specific task. We will also investigate data augmentation techniques to improve model performance.

Chapter 6: Convolutional Neural Networks using TensorFlow and Keras

Convolutional Neural Networks (CNNs) have evolved to become the state-of-the-art models for computer vision tasks. In this chapter, we will dive into the world of CNNs, understand their architecture, and learn how to build them using both TensorFlow and Keras. We will explore various CNN architectures, such as LeNet-5 and VGG-16, and discuss their applications in image classification and object detection.

Chapter 7: Recurrent Neural Networks using TensorFlow and Keras

Recurrent Neural Networks (RNNs) are widely used for handling sequential data, making them ideal for natural language processing and time series analysis. In this chapter, we will introduce RNNs, understand their inner workings, and learn how to build them using TensorFlow and Keras. We will explore different RNN architectures, such as LSTM and GRU, and discuss their applications in text generation and sentiment analysis.

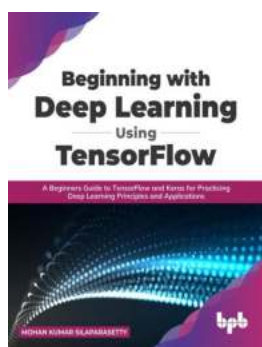
Chapter 8: Deploying Deep Learning Models

In this final chapter, we will discuss various techniques for deploying deep learning models into production. We will explore how to optimize our models for production environments, consider the impact of hardware and scalability, and

investigate the integration of deep learning models into web applications and mobile devices.

Deep learning offers immense opportunities for solving complex problems in various domains. TensorFlow and Keras provide user-friendly and powerful tools to harness the potential of deep learning. This beginner's guide has provided a comprehensive to both frameworks, enabling you to embark on your journey towards becoming a proficient deep learning practitioner.

Keywords: TensorFlow, Keras, deep learning, neural networks, convolutional neural networks, recurrent neural networks, transfer learning



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A Practising Guide to TensorFlow and Deep Learning

Key Features

- Equipped with a necessary to Deep Learning and AI.

- Includes demos and templates to give your projects a good start.
- Find more on the most important facets of AI, image, and speech recognition.

Description

This book begins with the configuration of an Anaconda development environment, essential for practicing the deep learning process. The basics of machine learning, which are needed for Deep Learning, are explained in this book.

TensorFlow is the industry-standard library for Deep Learning, and thereby, it is covered extensively with both versions, 1.x and 2.x. As neural networks are the heart of Deep Learning, the book explains them in great detail and systematic fashion, beginning with a single neuron and progressing through deep multilayer neural networks. The emphasis of this book is on the practical application of key concepts rather than going in-depth with them.

After establishing a firm basis in TensorFlow and Neural Networks, the book explains the concepts of image recognition using Convolutional Neural Networks (CNN), followed by speech recognition, and natural language processing (NLP). Additionally, this book discusses Transformers, the most recent advancement in NLP.

What you will learn

- Create machine learning models for classification and regression.
- Utilize TensorFlow 1.x to implement neural networks.
- Work with the Keras API and TensorFlow 2.
- Learn to design and train image categorization models.
- Construct translation and Q & A apps using transformer-based language models.

Who this book is for

This book is intended for those new to Deep Learning who want to learn about its principles and applications. Before you begin, you'll need to be familiar with Python.

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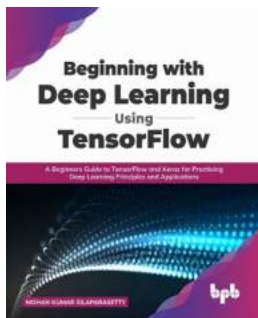
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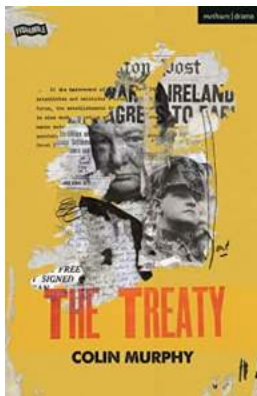
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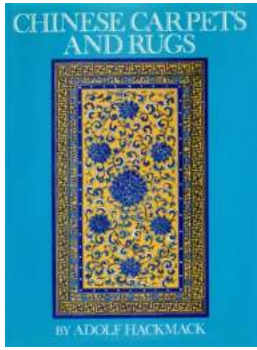
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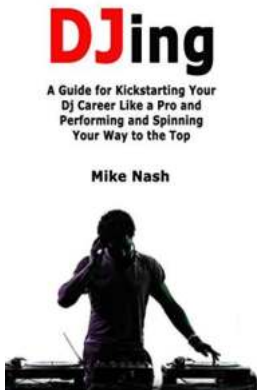
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