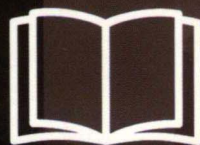


Quan Hua, Shams Ul Azeem, Saif Ahmed 著

# TensorFlow 1.x机器学习

(影印版)

Machine Learning with TensorFlow 1.x



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*I wish to thank everyone who has encouraged me on the way while writing this book.*

*I want to express my sincere gratitude to my co-authors, editors, and reviewers for their advice and assistance.*

*I would like to thank the members of my family and my wife, Kim Ngoc, who supported and encouraged me in spite of all the time it took me away from them. They all kept me going, and this book would not have been possible without them.*

*I would also like to thank my teachers who gave me knowledge of Computer Vision and Machine Learning.*

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*I want to thank my family and professors for all the help they have given me. Without them, I would have never been able to pursue my passion for software engineering and Machine Learning.*

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# Preface

Machine Learning has revolutionized the modern world. Many machine learning algorithms, especially deep learning, have been used worldwide, ranging from mobile devices to cloud-based services. TensorFlow is one of the leading open source software libraries and helps you build, train, and deploy your Machine Learning system for a variety of applications. This practical book is designed to bring you the best of TensorFlow and help you build real-world Machine Learning systems.

By the end of this book, you will have a deep understanding of TensorFlow and be able to apply Machine Learning techniques to your application.

## What this book covers

Chapter 1, *Getting Started with TensorFlow*, shows how to install Tensorflow and get started on Ubuntu, macOS, and Windows.

Chapter 2, *Your First Classifier*, guides you through your first journey with a handwriting recognizer.

Chapter 3, *The TensorFlow Toolbox*, gives you an overview of the tools that Tensorflow provides to work more effectively and easily.

Chapter 4, *Cats and Dogs*, teaches you how to build an image classifier using Convolutional Neural Networks in TensorFlow.

Chapter 5, *Sequence to Sequence Models—Parlez-vous Français?*, discusses how to build an English to French translator using sequence-to-sequence models.

Chapter 6, *Finding Meaning*, explores the ways to find the meaning in the text by using sentiment analysis, entity extraction, keyword extraction, and word-relation extraction.

Chapter 7, *Making Money with Machine Learning*, dives into an area with copious amounts of data: the financial world. You will learn how to work with the time series data to solve the financial problems.

Chapter 8, *The Doctor Will See You Now*, investigates ways to tackle an *enterprise-grade* problem—medical diagnosis—using deep neural networks.

Chapter 9, *Cruise Control - Automation*, teaches you how to create a production system, ranging from training to serving a model. The system can also receive user feedbacks and automatically train itself every day.

Chapter 10, *Go Live and Go Big*, guides you through the world of Amazon Web Services and shows you how to take advantage of a multiple GPUs system on Amazon servers.

Chapter 11, *Going Further - 21 Problems*, introduces 21 real-life problems that you can use in deep learning—TensorFlow to solve after reading this book.

Appendix, *Advanced Installation*, discusses GPUs and focuses on a step-by-step CUDA setup and a GPU-based TensorFlow installation.

## What you need for this book

For software, the whole book is based on TensorFlow. You can use either Linux, Windows, or macOS.

For hardware, you will need a computer or laptop that runs Ubuntu, macOS, or Windows. As authors, we encourage you to have an NVIDIA graphics card if you want to work with deep neural networks, especially when you want to work with large-scale datasets.

## Who this book is for

This book is ideal for you if you aspire to build Machine Learning systems that are smart and practical enough for real-world applications. You should be comfortable with Machine Learning concepts, Python programming, IDEs, and the command line. This book will be useful to people who program professionally as part of their job, or those who are working as scientists and engineers and need to learn about Machine Learning and TensorFlow in support of their work.

## Conventions

In this book, you will find a number of text styles that distinguish between different kinds of information. Here are some examples of these styles and an explanation of their meaning.



Code words in text, database table names, folder names, filenames, file extensions, pathnames, dummy URLs, user input, and Twitter handles are shown as follows: "We can include other contexts through the use of the `include` directive."

A block of code is set as follows:

```
batch_size = 128
num_steps = 10000
learning_rate = 0.3
data_showing_step = 500
```

When we wish to draw your attention to a particular part of a code block, the relevant lines or items are set in bold:

```
Layer 1 CONV (32, 28, 28, 4)
Layer 2 CONV (32, 14, 14, 4)
Layer 3 CONV (32, 7, 7, 4)
```

Any command-line input or output is written as follows:

```
sudo apt-get install python-pip python-dev
```

New terms and important words are shown in bold.



Warnings or important notes appear like this.



Tips and tricks appear like this.

## Reader feedback

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To send us general feedback, simply e-mail [feedback@packtpub.com](mailto:feedback@packtpub.com), and mention the book's title on the subject of your message.