**How to Read This Book**

Irreverently and hanging upside down!

We encourage you to read the book any which way you please! Conceptually, we have divided the content of this book into four parts. Based on the descriptions of these parts provided below, you can decide how you want to navigate the content.

Part I, “Introducing Deep Learning,” is well suited to any interested reader, anyone at all! The aim of this part is to serve as a high-level overview that establishes what deep learning is, how it evolved to be ubiquitous, and how it is related to concepts like AI, Machine Learning, and Reinforcement Learning.

Part 1 is full of illustrations, analogies, and narratives, and should be illuminating for anyone, including individuals with no software programming experience.

In contrast, Parts II through IV are intended for data scientists, researchers, software developers, analysts, and others who would like to learn how to apply deep learning techniques in their fields. In these parts of the book, essential underlying theory is covered. We minimize mathematical formulas. We emphasize instead, intuitive visuals and hands-on examples in Python.

Along with this theory, working code run-throughs available in accompanying Jupyter notebooks facilitate a pragmatic understanding of the principal families of deep learning approaches and applications: machine vision (Chapter 10), natural language processing (Chapter 11), image generation (Chapter 12), and game playing (Chapter 13).

For clarity, wherever we refer to code, we will provide it in fixed-width font, like this.

For further readability, in code chunks we also include the default Jupyter styling (e.g., numbers in green, strings in red, etc.).

*3. github.com/ the-deep-learners/ deep-learning-illustrated*

If you find yourself yearning for more detailed explanations of the mathematical and statistical foundations of deep learning than we offer in this book, our two favorite options for further study are:

Michael Nielsen’s e-book Neural Networks and Deep Learning, which is short, makes use of fun interactive applets to demonstrate concepts, and uses mathematical notation similar to ours.

Ian Goodfellow (introduced in Chapter 3), Yoshua Bengio (Figure 1.10), and Aaron Courville’s book Deep Learning, which comprehensively covers the math that underlies neural network techniques

*5. Goodfellow, I., et al. (2016). Deep Learning. MIT Press. Available for free at: deeplearningbook.org*

Scattered throughout this book, you will find images of Writer Sujatha who will provide you with tidbits of reading that we think you may find interesting or helpful. The reading Writer Sujatha (as in Figure P. 3) is someone who enjoys pushing the boundaries of your knowledge. Writer Sujatha calling for your attention, meanwhile (as in Figure P. 4), has noticed a passage of text that may be problematic, and so would like to clarify the situation. In addition to Writer Sujatha habituated within sidebars, we have made liberal use of footnotes. These are likewise not essential reading but provide quick explanations of new terms and abbreviations, as well as citations of seminal papers and other references for you to follow up with if you’re so inclined.

Figure P. 3 This Writer Sujatha enjoys expanding your knowledge.

Figure P. 4 This Writer Sujatha calls attention to tricky passages of text. Look out for him!

For much of this book’s content, corresponding video tutorials are also available. Although the book provided us with an opportunity to flesh out theoretical concepts more thoroughly, the videos enable you to become familiar with our Jupyter notebooks from a different perspective, in which the importance of each line of code is described verbally as it is typed out.