Book Reviews

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Continuous Delivery
Jez Humble and David Farley
Pearson Publishing, 2011, 464 pages
ISBN 978-0-321-60191-2

Reviewed by Mark Lamourine

The ideas of continuous integration (CI) and continuous delivery (CD) are fairly common, almost mainstream, today. CI originated in Extreme Programming DevOps in the mid to late 1990s, becoming more formalized over the following decade. CD was for a long time an afterthought. Humble and Farley offer what appears to be the first attempt to present CD as its own discipline.

The authors lay out all of the moving parts of a CD system and they explain why they are there and how they interact. Agile methods were developed as a practical response to the failure of earlier software management methods to account for human psychology and the realities of business and life. A CD system depends on the interactions and feedback from the components. The authors give both the theory and practice for each component so that the reader will understand how each is important to the function of the whole.

In many ways *Continuous Delivery* compares with Limoncelli, Hogan, and Chalup's *The Practice of System and Network Administration*. Humble and Farley treat the entire ecosystem of a CD system, from definition and implementation to maintenance and life-cycle operations.

There are a few ways in which *Continuous Delivery* shows its age. The authors list a number of tools that are no longer the first choice. They discuss CVS and Subversion and explicitly mention the need to disable mandatory locking for CI operations. When *Continuous Delivery* was published in 2011, Git had only existed for five years and GitHub for two, and neither had achieved the acceptance that they have now. The authors still refer to configuration management tools such as Cfengine, and there is no mention of Ansible or Salt. Other than the fact that recent configuration management tools are deemphasizing defining a state model in favor of just reexecuting a set of operations and the advent of software containers that replace long-lived hosts and VMs, the concepts and solutions remain applicable.

Continuous Delivery provides all that a new developer needs in order to understand the goals and motivations for a well-run CD system. For the advanced reader, it fills in the gaps that are the inevitable result of organic learning, providing context and completeness. It does stand the test of time.

Deep Learning and the Game of Go
Max Pumperla, Kevin Ferguson
Manning, 2019, 531 pages
ISBN 978-1-617-29532-4

Reviewed by Mark Lamourine

"Deep learning" is a relatively new term, and it partially supersedes an older term I'm more familiar with: "neural networks." Today, neural network refers to a technology, a well-defined software structure that takes some inputs and produces some outputs. Deep learning is a technique for using neural networks to do a set of tasks that are difficult, using conventional prescriptive programming.

The term "deep learning" is strongly associated in the mind of the general public with AlphaGo, the research project by Deep-Mind (now part of Alphabet). The game of Go was long thought to be intractable for AI because, when compared with chess, the move-branching factor is orders of magnitude higher. IBM's Deep Blue managed to beat the reigning chess champion, Gary Kasparov, in the late 1990s using primarily brute force branch search and some clever hand-programmed move ranking and pruning algorithms. Humans observed the play and tweaked the search and pruning rules until the system's ability exceeded the best human's.

In *Deep Learning and the Game of Go*, the authors use Go and the model provided by AlphaGo to introduce the reader to deep learning as a concept and a practice. AI research has long used games as well-known problem spaces to explore learning techniques. Games remove the messiness of the real world, and they have well-defined goals, rules, and states. This makes for a nice clean teaching/learning environment. The authors take advantage of this as well.

Deep Learning and the Game of Go provides some foundational context before jumping in but is light on theory and mathematics, saving those for the appendices. The approach is very practical, offering the reader examples and sample code from GitHub to work and play with. The method is hands-on, so the reader will build experience through contact.

This is also a weakness. At the end, the reader has only explored a single deliberately clean problem space. As a beginning, it suits, but readers must realize where they stand at the end of the book. They can choose to stop or to continue into the complexities that real-world deep learning entails. There are other books for that.

Deep Learning with Python

François Chollet
Manning Publications, 2018, 445 pages
ISBN 978-1-617-29443-3

Reviewed by Mark Lamourine

One of the leading pure AI fields is called "deep learning." It has revitalized the use of artificial "neural networks" (poorly named). Neural networks were first created in the late 1990s but languished from insufficient CPU power and imagination. A lot has happened since then, and neural networks have seen a revival. François Chollet wants to tell you all of it.

In *Deep Learning with Python,* Chollet tries to provide a working knowledge and code samples to allow the reader to create and verify a variety of deep learning experiments (as he calls them) using modern AI techniques based on convolutional neural networks.

After the too brief history, basically everything was new to me. In some ways this book feels like a detailed syllabus for a year-long graduate-level course in deep learning techniques and software. The book is structured around the Keras deep learning library. Python has a long history in scientific calculation and numerical systems due to the ability to create compiled libraries. The math and science communities have taken advantage of this to provide high performance libraries of domain-specific functions that can be used by a scripting language. This results in the ability to fast prototype the work logic using established, stable optimized algorithms.

Chollet does offer a bit of theory and context at the beginning, but it becomes clear after the first few chapters that he is assuming significant prior knowledge on the reader's part. Each chapter is more about the set of mathematical tools that the library provides and how to use them than it is about how they work and what the results mean. For someone first approaching deep learning, this might be overwhelming. For a researcher familiar with the math, but who just wants to use the tools to ask questions in their problem space, this is a breezy survey.

I did learn a lot despite being largely in over my head with the jargon and algorithms. The fact that there are flavors of neural networks and even flavors of algorithms for each layer of a network was new. I hadn't considered the implications of simple linear networks, with forward learning and feedback versus more complex network topologies. I don't expect to become an AI researcher, but I now have a better chance of understanding what they've achieved when I see it.

Fall, or Dodge in Hell

Neal Stephenson
Harper Collins, 2019, 800 pages
ISBN 978-0-062-45871-1

Reviewed by Rik Farrow

What might it be like to experience the Singularity, at least the part where your personality lives on beyond your body? Stephenson takes on this challenge of eschatology, giving some characters from *Reamde* a second chance at novel life and death.

Stephenson gets some of the technology right: simulating a single thought process will take enormous amounts of processing power, networking, storage, and just plain power. Doing it for everyone will involve taking over the earth. But the first in are, of course, the billionaires and their friends and family, and having the scions of industry involved affects everything. Their memories of real life may be partial, but the personalities are as overpowering as ever.

Halfway through the book, Stephenson gets a little biblical on us, but don't despair. His Jehovah is more like the one in the Book of Job, and the second coming, leading to the Fall mentioned in the title, is definitely twisted.

Stephenson has a knack for creating interesting, somewhat wacky, but wholly believable characters. Sometimes he subtly does things that I found disturbing without the cause being blatantly obvious.

While I don't expect to awaken in the cloud, Stephenson does a good job of imagining what it might be like and is still thoroughly entertaining—most of the time. Some of the world building does get tedious, but it's definitely a good read overall.