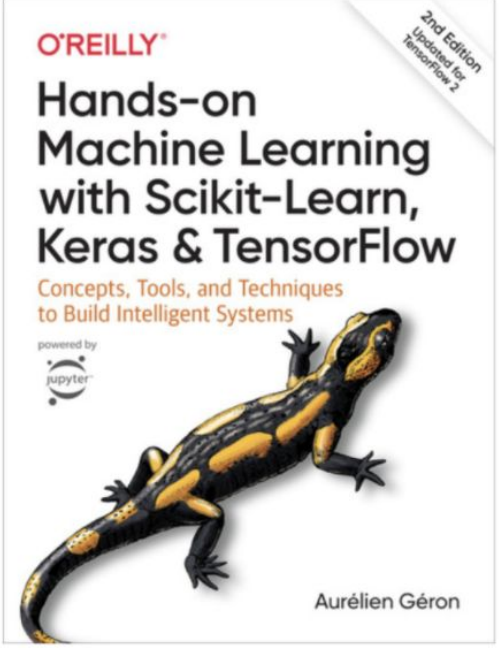
Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow, 2nd Edition

★★★★★ 92 reviews

By Aurélien Géron



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Chapter	Title
1	The Machine Learning Landscape
2	End-to-End Machine Learning Project
3	Classification
4	Training Models
5	Support Vector Machines
6	Decision Trees
7	Ensemble Learning and Random Forests
8	Dimensionality Reduction
9a	Unsupervised Learning Techniques: Clustering
9b	Unsupervised Learning Techniques: Gaussian Mixtures
10	Introduction to Artificial Neural Networks with Keras
11	Training Deep Neural Networks
12	Custom Models and Training with TensorFlow
13	Loading and Preprocessing Data with TensorFlow
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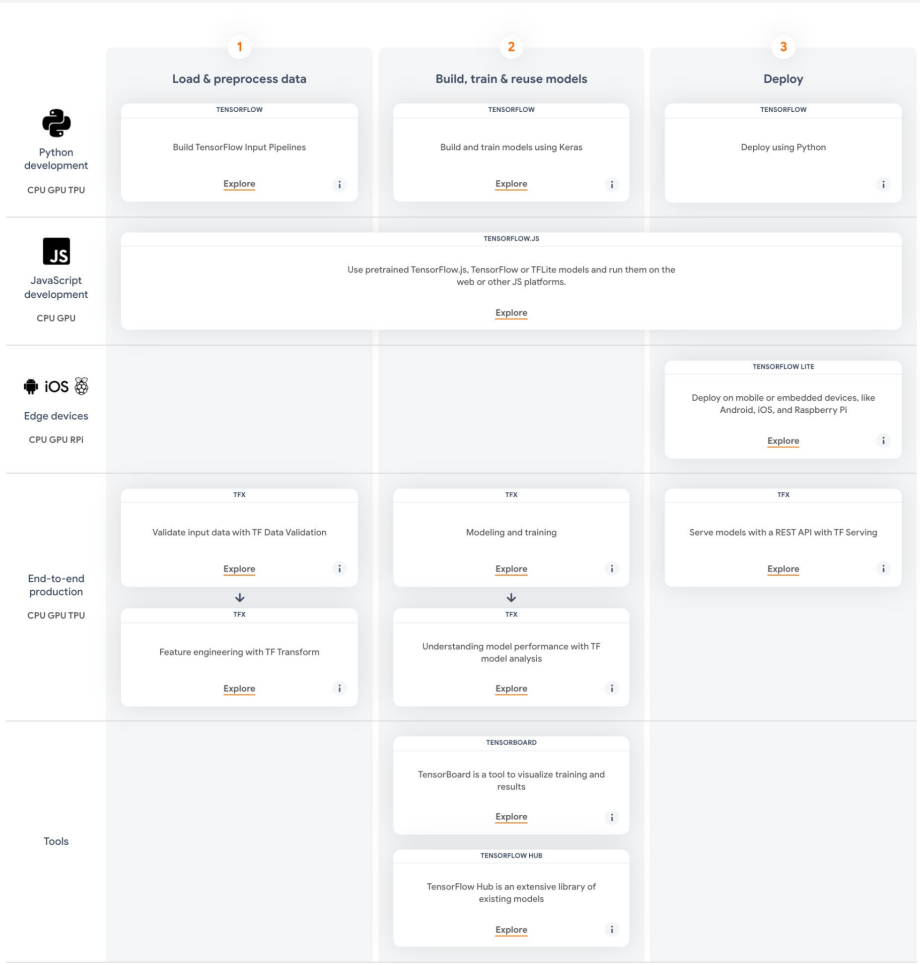
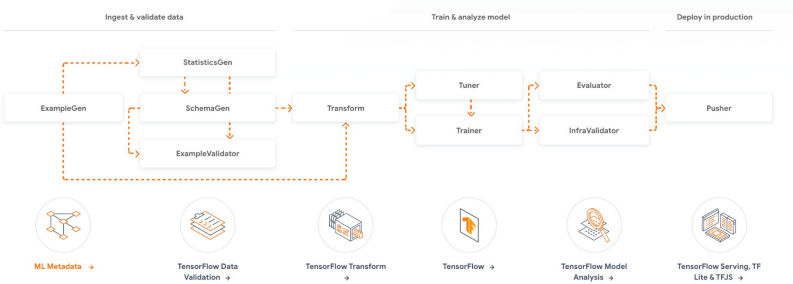
Chapter 11 : Custom Models and Training with TensorFlow
Discussion led by George Zoto

TensorFlow Ecosystem





- TensorFlow is a powerful library for numerical computation, particularly well suited and fine-tuned for large-scale Machine Learning

- Its core is very similar to NumPy, but with GPU support.
- It supports distributed computing (across multiple devices and servers).
- It includes a kind of just-in-time (JIT) compiler that allows it to optimize computations for speed and memory usage. It works by extracting the computation graph from a Python function, then optimizing it, and finally running it efficiently
- Computation graphs can be exported to a portable format, so you can train a TensorFlow model in one environment (e.g., using Python on Linux) and run it in another (e.g., using Java on an Android device).
- It implements autodiff to minimize all sorts of loss functions.

TensorFlow's Python API and Architecture

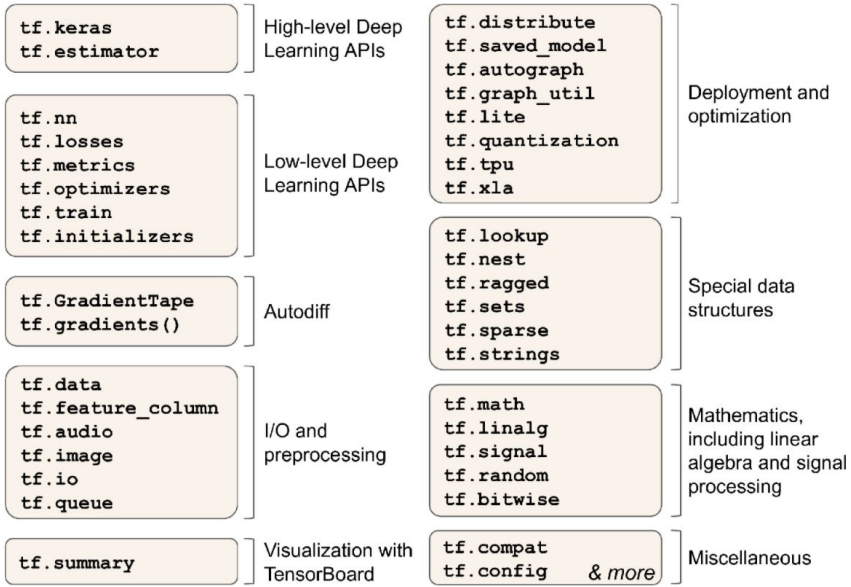


Figure 12-1. TensorFlow's Python API

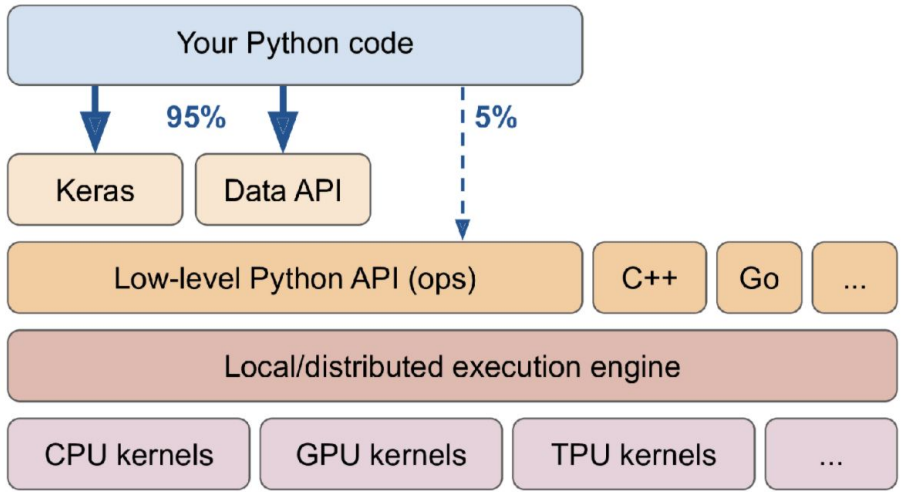


Figure 12-2. TensorFlow's architecture

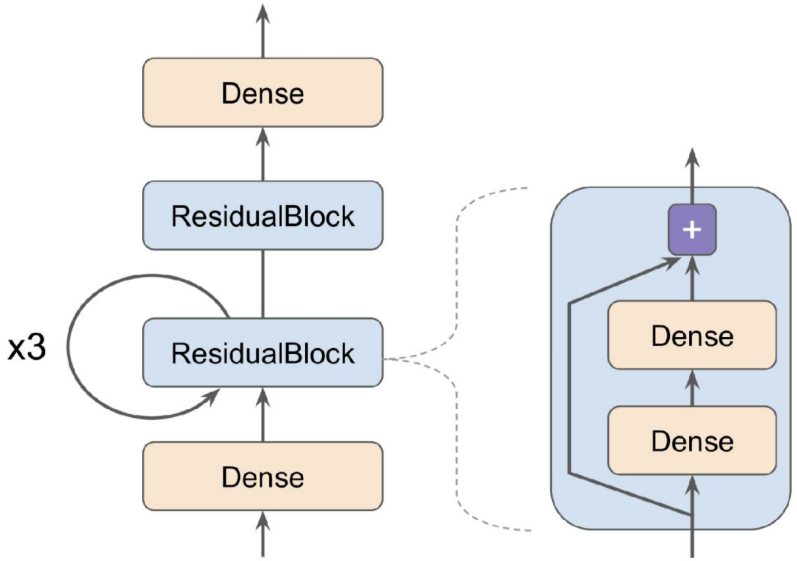


Figure 12-3. Custom model example: an arbitrary model with a custom ResidualBlock layer containing a skip connection

TensorFlow's Autograph and tracing

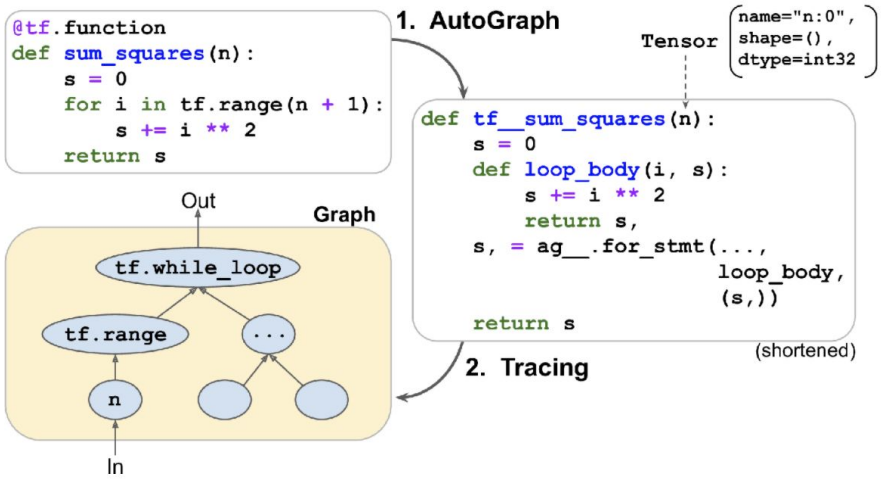


Figure 12-4. How TensorFlow generates graphs using AutoGraph and tracing

- Notebook – Custom Models and Training with TensorFlow
- My edited notebook from above
- Module tf
- What makes TPUs fine-tuned for deep learning?
- TensorFlow ecosystem
- TensorFlow Extended (TFX)
- TensorFlow Model Garden
- Models & datasets
- A list of TensorFlow experiments, libraries, and projects
- Papers with code
- TensorFlow on Github
- Huber Loss
- Wide & Deep Learning for Recommender Systems
- Resource #1 on tracing
- Resource #2 on tracing

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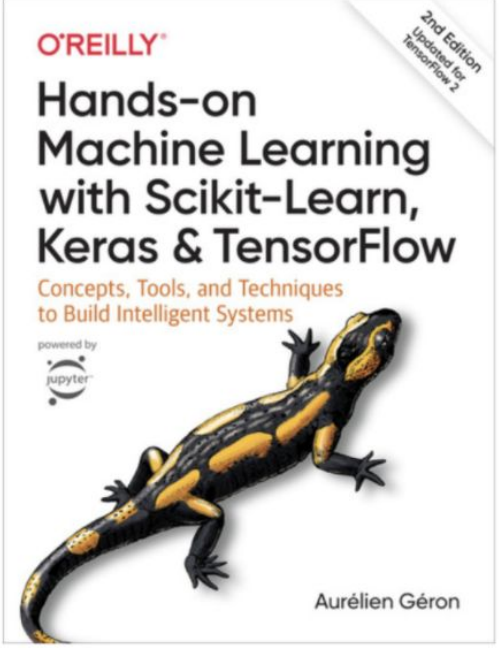

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