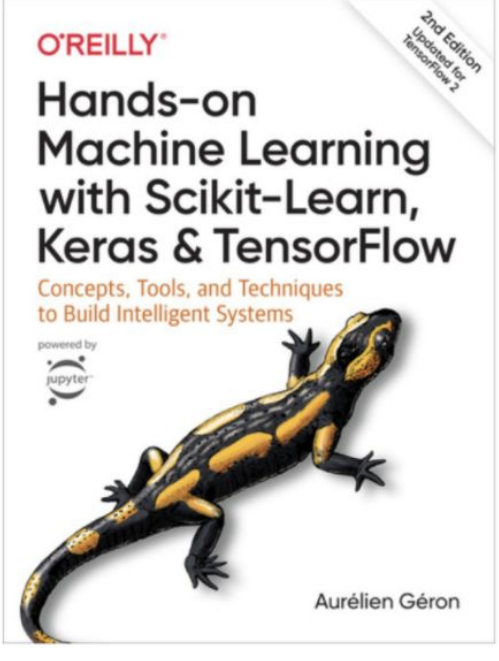
Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow, 2nd Edition

★★★★★ 92 reviews

By Aurélien Géron



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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
14	Deep Computer Vision Using Convolutional Neural Networks
15	Processing Sequences Using RNNs and CNNs
16	Natural Language Processing with RNNs and Attention
17	Representation Learning and Generative Learning Using Autoencoders and GANs
18	Reinforcement Learning
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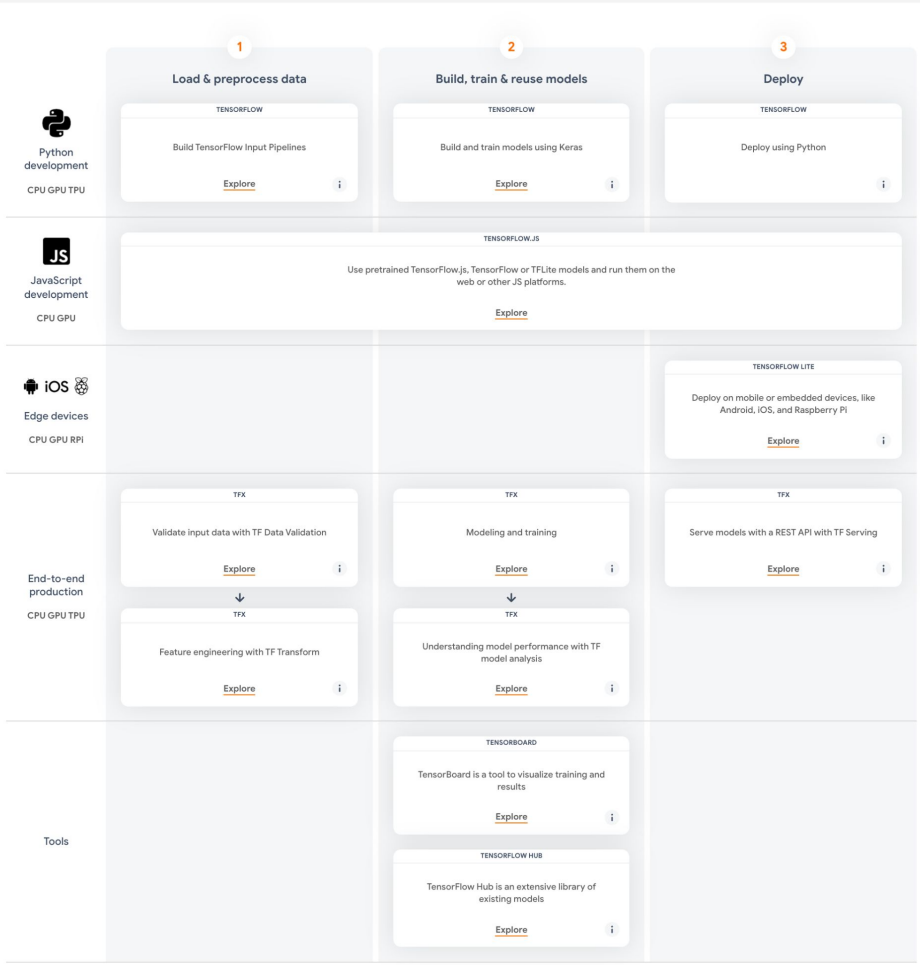
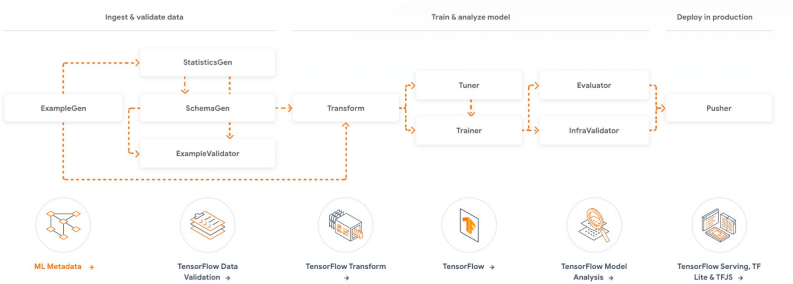
Chapter 12 : Custom Models and Training with TensorFlow
Discussion led by George Zoto

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

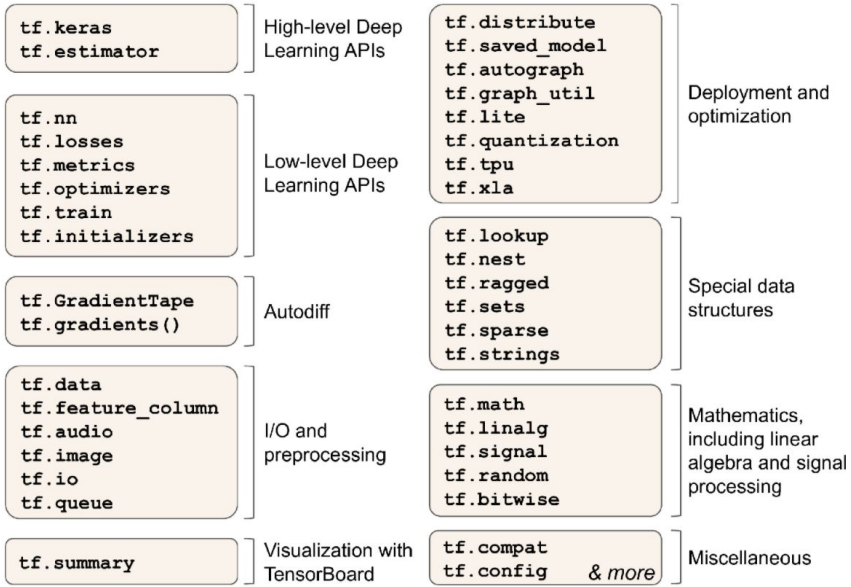


Figure 12-1. TensorFlow's Python API

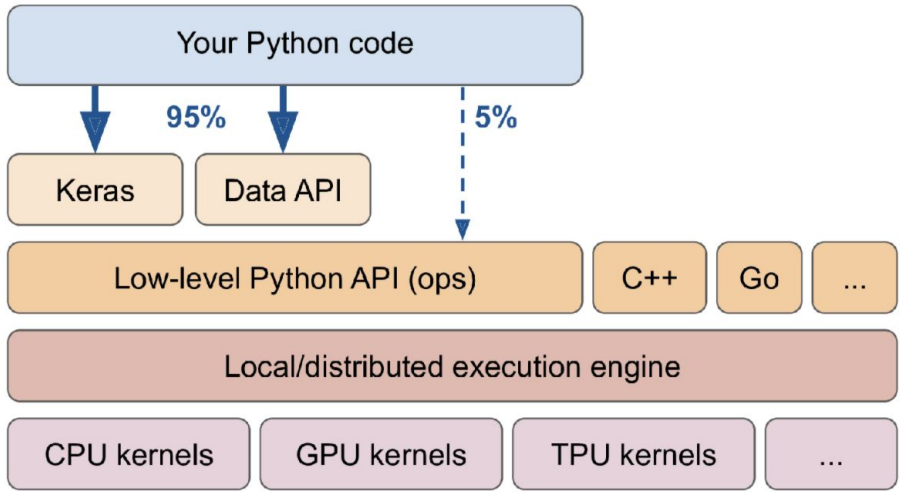


Figure 12-2. TensorFlow's architecture

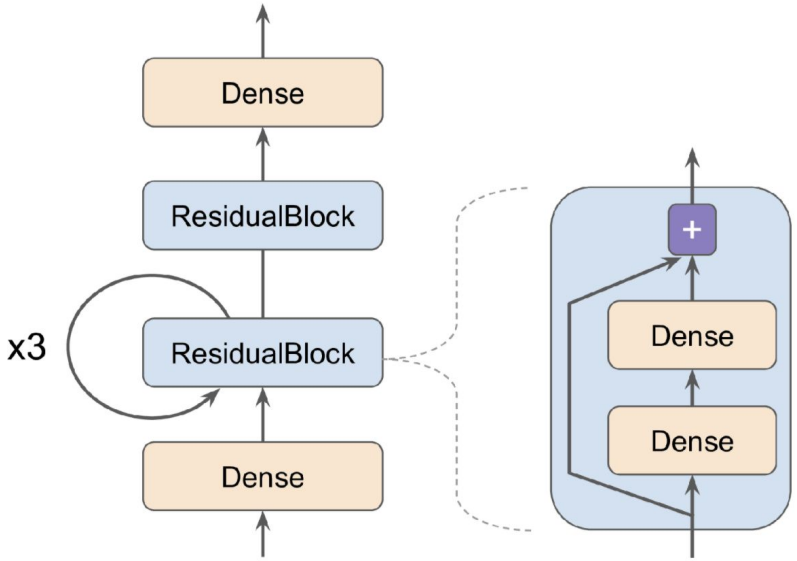


Figure 12-3. Custom model example: an arbitrary model with a custom ResidualBlock layer containing a skip connection

TensorFlow's Autograph and tracing

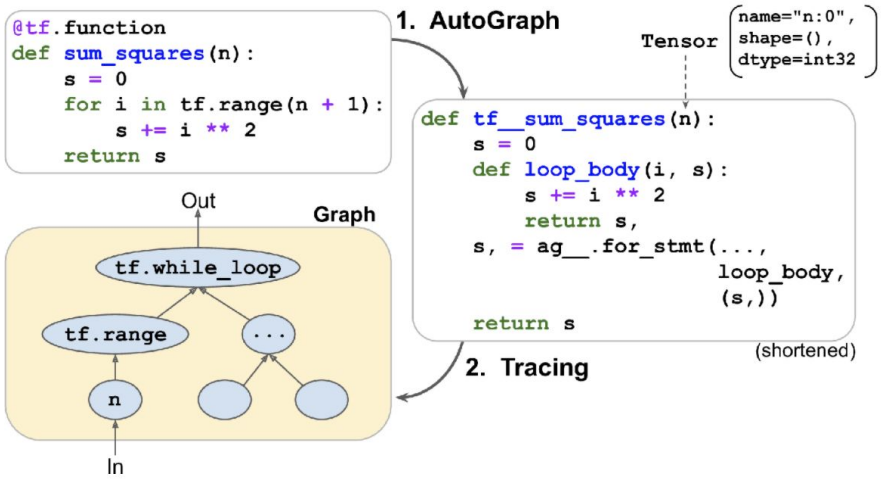


Figure 12-4. How TensorFlow generates graphs using AutoGraph and tracing

- 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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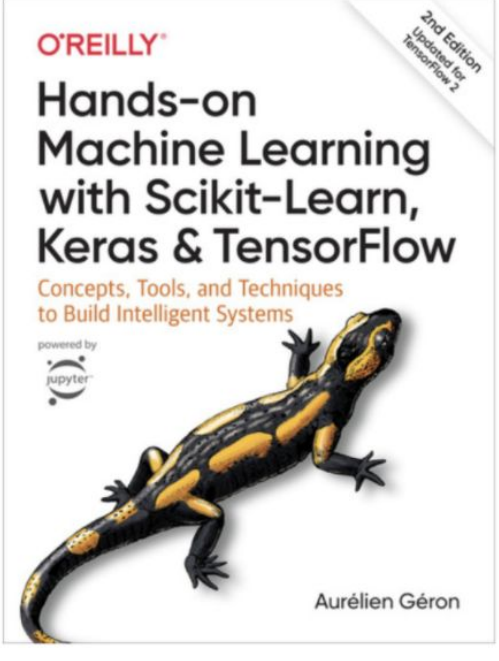

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