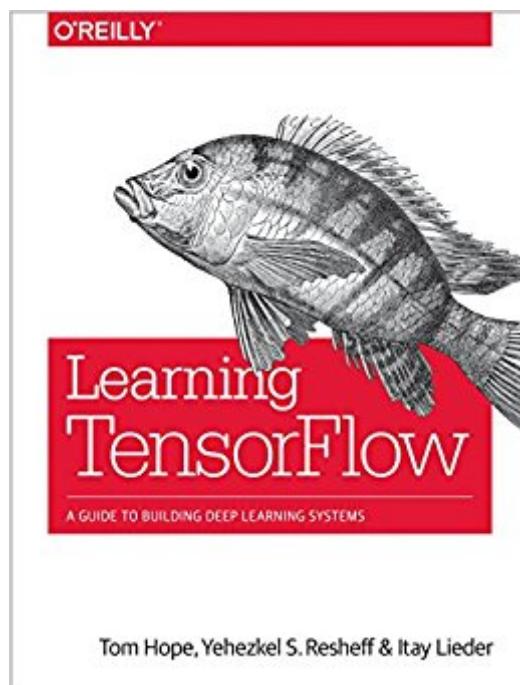


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# Learning TensorFlow: A Guide To Building Deep Learning Systems



## Synopsis

Roughly inspired by the human brain, deep neural networks trained with large amounts of data can solve complex tasks with unprecedented accuracy. This practical book provides an end-to-end guide to TensorFlow, the leading open source software library that helps you build and train neural networks for computer vision, natural language processing (NLP), speech recognition, and general predictive analytics. Authors Tom Hope, Yehezkel Resheff, and Itay Lieder provide a hands-on approach to TensorFlow fundamentals for a broad technical audience—from data scientists and engineers to students and researchers. You'll begin by working through some basic examples in TensorFlow before diving deeper into topics such as neural network architectures, TensorBoard visualization, TensorFlow abstraction libraries, and multithreaded input pipelines. Once you finish this book, you'll know how to build and deploy production-ready deep learning systems in TensorFlow. Get up and running with TensorFlow, rapidly and painlessly. Learn how to use TensorFlow to build deep learning models from the ground up. Train popular deep learning models for computer vision and NLP. Use extensive abstraction libraries to make development easier and faster. Learn how to scale TensorFlow, and use clusters to distribute model training. Deploy TensorFlow in a production setting.

## Book Information

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[View larger](#) From the Preface Deep learning has emerged in the last few years as a premier technology for building intelligent systems that learn from data. Deep neural networks, originally

roughly inspired by how the human brain learns, are trained with large amounts of data to solve complex tasks with unprecedented accuracy. With open source frameworks making this technology widely available, it is becoming a must-know for anybody involved with big data and machine learning. TensorFlow is currently the leading open source software for deep learning, used by a rapidly growing number of practitioners working on computer vision, natural language processing (NLP), speech recognition, and general predictive analytics. This book is an end-to-end guide to TensorFlow designed for data scientists, engineers, students, and researchers. The book adopts a hands-on approach suitable for a broad technical audience, allowing beginners a gentle start while diving deep into advanced topics and showing how to build production-ready systems. This book is written by data scientists with extensive R&D experience in both industry and academic research. The authors take a hands-on approach, combining practical and intuitive examples, illustrations, and insights suitable for practitioners seeking to build production-ready systems, as well as readers looking to learn to understand and build flexible and powerful models. **Prerequisites** This book assumes some basic Python programming know-how, including basic familiarity with the scientific library NumPy. Machine learning concepts are touched upon and intuitively explained throughout the book. For readers who want to gain a deeper understanding, a reasonable level of knowledge in machine learning, linear algebra, calculus, probability, and statistics is recommended. In this book you will learn how to: Get up and running with TensorFlow, rapidly and painlessly. Use TensorFlow to build models from the ground up. Train and understand popular deep learning models for computer vision and NLP. Use extensive abstraction libraries to make development easier and faster. Scale up TensorFlow with queuing and multithreading, training on clusters, and serving output in production. And much more!

Tom Hope is an applied machine learning researcher and data scientist with extensive background in academia and industry. He has background as a senior data scientist in large international corporation settings, leading data science and deep learning R&D across multiple domains including web mining, text analytics, computer vision, sales and marketing, IoT, financial forecasting and large-scale manufacturing. Previously he was at a successful e-commerce startup in its early days, leading data science R&D. He has also served as a data science consultant for major international companies and startups. His research in computer science, data mining and statistics revolves around machine learning, deep learning, NLP, weak supervision and time-series. Hezi Reshef is an applied researcher and PhD student in Machine Learning at the Hebrew University, developing Machine Learning and Deep Learning methods for wearable device data, and working

on using wearable devices to monitor patient health. He has worked at Intel Corp., leading Deep Learning R&D for monitoring and predicting patient outcomes using remote sensing and wearables. Prior to Intel, Hezi was at Microsoft, leading Machine Learning R&D for mining telemetry data, predicting software bugs, user segmentation, and other projects. Itay Lieder is an applied researcher in Machine Learning and Computational Neuroscience and a PhD student at the Hebrew University, in collaboration with the Gatsby Computational Neuroscience Unit at UCL, studying the human perception with massive crowd-sourcing experiments on Turk. His current work focuses on predicting and understanding the way humans react to sounds (e.g. music), via multiple online interactive experiments. He has worked for large international corporations, leading Deep Learning R&D in text analytics and web mining for sales and marketing.

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