

Preface

The Machine Learning Tsunami

In 2006, Geoffrey Hinton et al. published a paper¹ showing how to train a deep neural network capable of recognizing handwritten digits with state-of-the-art precision (>98%). They branded this technique “Deep Learning.” Training a deep neural net was widely considered impossible at the time,² and most researchers had abandoned the idea since the 1990s. This paper revived the interest of the scientific community and before long many new papers demonstrated that Deep Learning was not only possible, but capable of mind-blowing achievements that no other Machine Learning (ML) technique could hope to match (with the help of tremendous computing power and great amounts of data). This enthusiasm soon extended to many other areas of Machine Learning.

Fast-forward 10 years and Machine Learning has conquered the industry: it is now at the heart of much of the magic in today’s high-tech products, ranking your web search results, powering your smartphone’s speech recognition, and recommending videos, beating the world champion at the game of Go. Before you know it, it will be driving your car.

Machine Learning in Your Projects

So naturally you are excited about Machine Learning and you would love to join the party!

Perhaps you would like to give your homemade robot a brain of its own? Make it recognize faces? Or learn to walk around?

1 Available on Hinton’s home page at <http://www.cs.toronto.edu/~hinton/>.

2 Despite the fact that Yann Lecun’s deep convolutional neural networks had worked well for image recognition since the 1990s, although they were not as general purpose.