

Neural Networks

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Abstract

In this short paper we will discuss the fundamentals of neural networks and their implementation in detail. We will give a general overview of how neural networks work, discuss calculation of the gradient and implementation of back-propagation, and test our results on some real MNIST code.

Neural networks have been around for at least a few decades, but only recently have they become popular as a method for learning parameters that can correctly translate an input into an output. This is because of increased computational power, a greater availability of training data, as well as the fact that more complex models, like deep neural nets, are actually easy to train - the same back-propagation that works to update normal neural networks works just as well for multiple hidden layers.