CHAPTER 34

Regularization for Deep Learning

Regularization is a technique for reducing the variance in the validation set, thus preventing the model from overfitting during training. In doing so, the model can better generalize to new examples. When training deep neural networks, a couple of strategies exist for use as a regularizer.

Dropout

Dropout is a regularization technique that prevents a deep neural network from overfitting by randomly discarding a number of neurons at every layer during training. In doing so, the neural network is not overly dominated by any one feature as it only makes use of a subset of neurons in each layer during training. In doing so, Dropout resembles an ensemble of neural networks as a similar but distinct neural network is trained at each layer. Dropout works by designating a probability that a neuron will be dropped in a layer. This probability value is called the Dropout rate. Figure 34-1 shows an example of a network with and without Dropout.

E. Bisong, *Building Machine Learning and Deep Learning Models on Google Cloud Platform*,
https://doi.org/10.1007/978-1-4842-4470-8_34