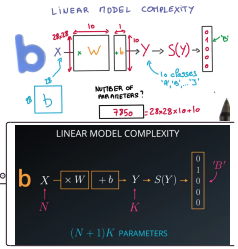
Lesson 4：Deep Neural Networks

DNN

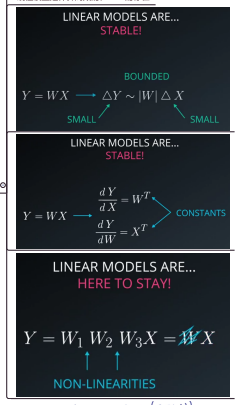
Number of Parameters



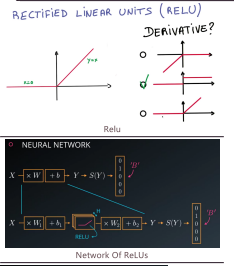
可以拟合线性函数，不能拟合非线性函数

线性模型是计算高效的，GPU的存在

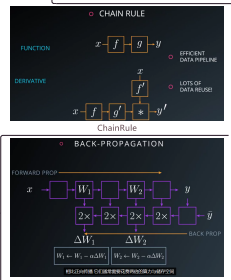
Linear Models Are Limited



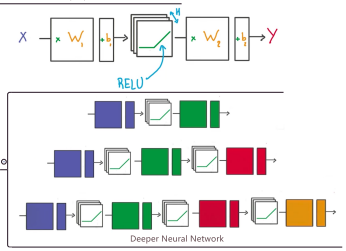
Rectified Linear Units



Training



Multilayer Perceptron



TensorFlow

tf.train.Saver

This class provides the functionality to save any tf.Variable to your file system.

Save and Restore TensorFlow Models

Since tf.train.Saver.restore() sets all the TensorFlow Variables, you don't need to call tf.global_variables_initializer()

Saving Variables

前提是每个张量和操作符的shape属性一样

Naming Error

TensorFlow对张量和操作符的命名使用被称为name的字符串标识符

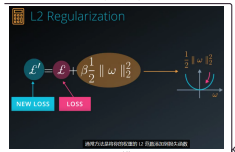
如果没有给出name，TensorFlow将自动创建一个name

TensorFlow将为第一个node命名为<type>，然后为后续node命名为<type>_<number>，每个node代表一个张量或者操作符

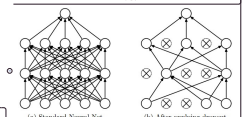
最好是自己定义张量或者操作符的时候添加name，这样Save和Load的时候不会由于张量和操作符定义顺序出错而导致的Naming Error

Regularization

Early Stoping



L2正则化



Dropout

是一种减少过拟合的正则化技术，这项技术暂时从网络中删除单元(人工神经元)，以及所有这些单元的输入和输出连接

tf.nn.dropout()

The tf.nn.dropout() function takes in two parameters:

hidden_layer: the tensor to which you would like to apply dropout

keep_prob: the probability of keeping (i.e. not dropping) any given unit

During training, a good starting value for keep_prob is 0.5.

keep_prob

During testing, use a keep_prob value of 1.0 to keep all units and maximize the power of the model.

keep_prob允许您调整要删除的单元数。为了补偿丢失的单元，tf.nn.dropout()将保留(即不丢失)的所有单元乘以1/keep_prob。