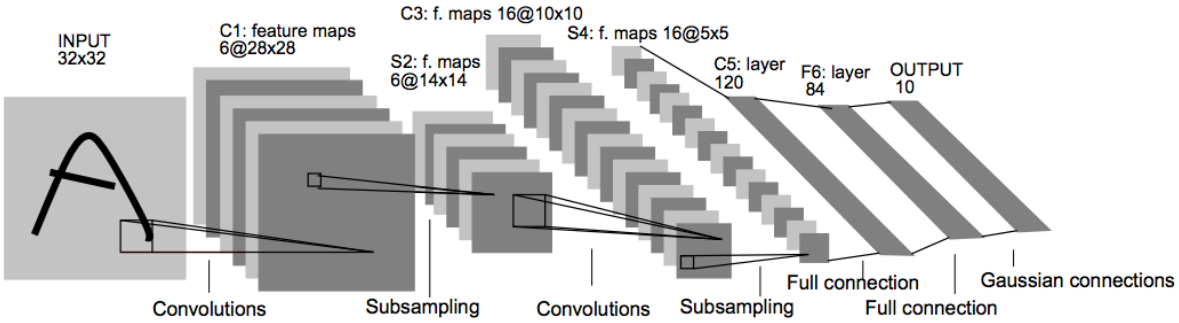
LeNet Lab



Source: Yan LeCun

Load Data

Load the MNIST data, which comes pre-loaded with TensorFlow.

You do not need to modify this section.

In [ ]:
```
from tensorflow.examples.tutorials.mnist import input_data

mnist = input_data.read_data_sets("MNIST_data/", reshape=False)
X_train, y_train           = mnist.train.images, mnist.train.labels
X_validation, y_validation = mnist.validation.images, mnist.validation.labels
X_test, y_test             = mnist.test.images, mnist.test.labels

assert(len(X_train) == len(y_train))
assert(len(X_validation) == len(y_validation))
assert(len(X_test) == len(y_test))

print()
print("Image Shape: {}".format(X_train[0].shape))
print()
print("Training Set:   {} samples".format(len(X_train)))
print("Validation Set: {} samples".format(len(X_validation)))
print("Test Set:       {} samples".format(len(X_test)))
```

The MNIST data that TensorFlow pre-loads comes as 28x28x1 images.

However, the LeNet architecture only accepts 32x32xC images, where C is the number of color channels.

In order to reformat the MNIST data into a shape that LeNet will accept, we pad the data with two rows of zeros on the top and bottom, and two columns of zeros on the left and right (28+2+2 = 32)