



Figure 6-16. The CycleGAN is capable of performing complex image transformations, such as transforming images of horses into those of zebras (and vice versa).

Unfortunately, generative adversarial networks are still challenging to train in practice. Making generators and discriminators learn reasonable functions requires a deep bag of tricks. As a result, while there have been many exciting GAN demonstrations, GANs have not yet matured into a state where they can be widely deployed in industrial applications.

Training a Convolutional Network in TensorFlow

In this section we consider a code sample for training a simple convolutional neural network. In particular, our code sample will demonstrate how to train a LeNet-5 convolutional architecture on the MNIST dataset using TensorFlow. As always, we recommend that you follow along by running the full code sample from the [GitHub repo associated with the book](#).

The MNIST Dataset

The MNIST dataset consists of images of handwritten digits. The machine learning challenge associated with MNIST consists of creating a model trained on the training set of digits that generalizes to the validation set. [Figure 6-17](#) shows some images drawn from the MNIST dataset.