

Data Parallel Training with Multiple GPUs on Cifar10

In this section, we will give you an in-depth walkthrough of how to train a data-parallel convolutional network on the Cifar10 benchmark set. Cifar10 consists of 60,000 images of size 32×32 . The Cifar10 dataset is often used to benchmark convolutional architectures. [Figure 9-7](#) displays sample images from the Cifar10 dataset.

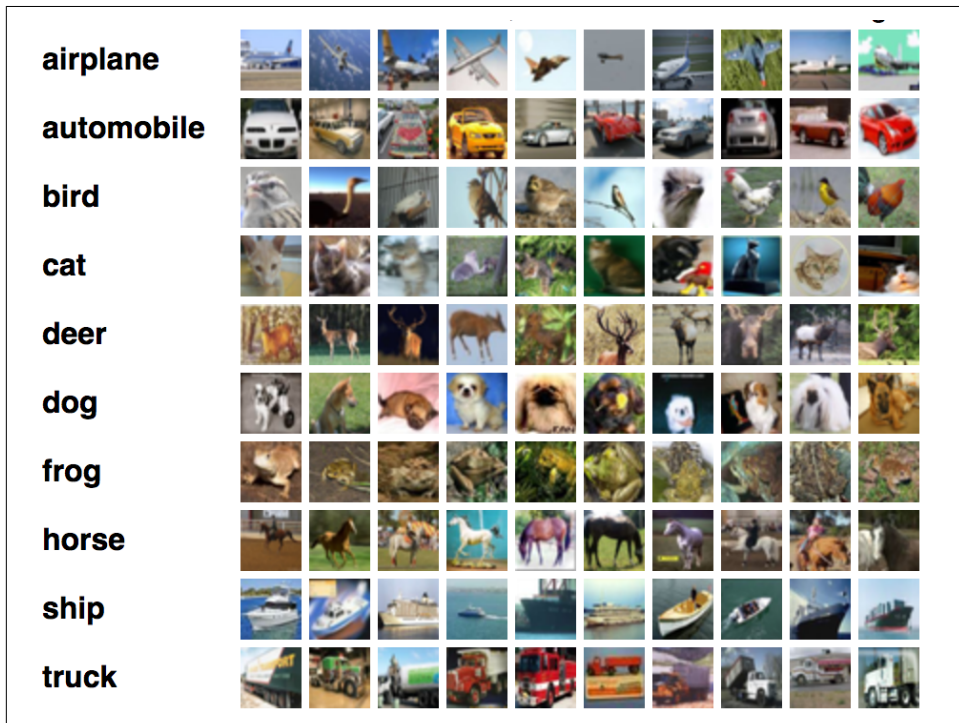


Figure 9-7. The Cifar10 dataset consists of 60,000 images drawn from 10 classes. Some sample images from various classes are displayed here.

The architecture we will use in this section loads separate copies of the model architecture on different GPUs and periodically syncs learned weights across cores, as [Figure 9-8](#) illustrates.

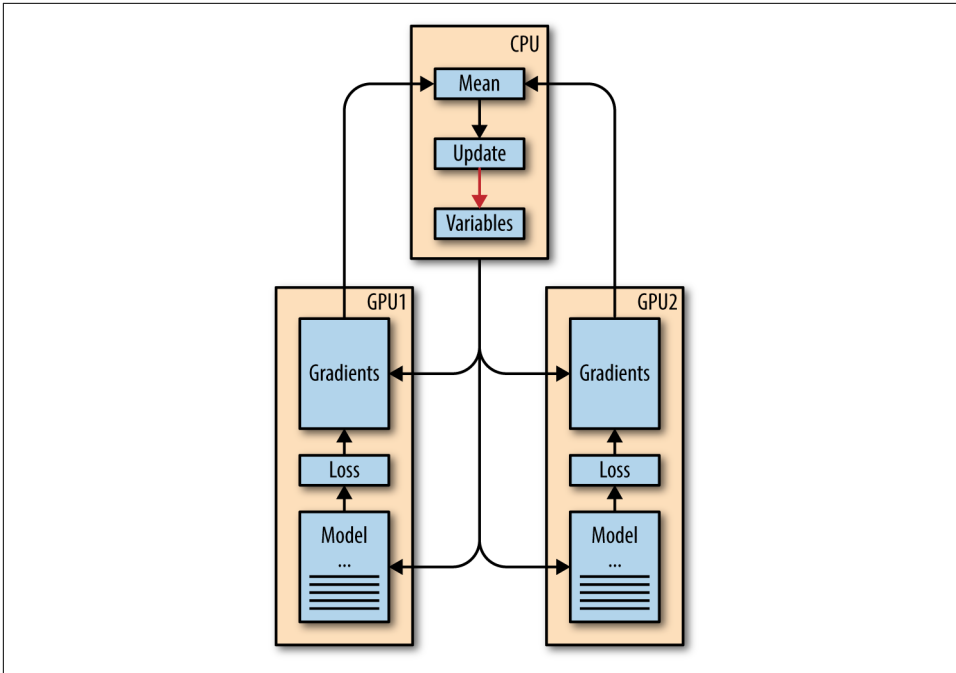


Figure 9-8. The data parallel architecture you will train in this chapter.

Downloading and Loading the DATA

The `read_cifar10()` method reads and parses the Cifar10 raw data files. [Example 9-1](#) uses `tf.FixedLengthRecordReader` to read raw data from the Cifar10 files.

Example 9-1. This function reads and parses data from Cifar10 raw data files

```
def read_cifar10(filename_queue):
    """Reads and parses examples from CIFAR10 data files.

    Recommendation: if you want N-way read parallelism, call this function
    N times. This will give you N independent Readers reading different
    files & positions within those files, which will give better mixing of
    examples.

    Args:
        filename_queue: A queue of strings with the filenames to read from.

    Returns:
        An object representing a single example, with the following fields:
        height: number of rows in the result (32)
        width: number of columns in the result (32)
        depth: number of color channels in the result (3)"""
```