Chpt4 Real-world Data Representations Using Tensors

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Often, our raw data won't be perfectly formed for the problem we'd like to solve. Each section in this chapter will describe a data type, and each will come with its own dataset. We'll also cover tabular data, time series, and text. Starting with image data, we'll then demonstrate working with a three-dimensional array using medical data that represents patient anatomy as a volume.

In every section, we will stop where a deep learning researcher would start: right before feeding the data to model. We encourage you to keep these datasets; they will constitute excellent material for when we start learning how to train neural network models in next chapter.

4.1 Working with images

An image is represented as a collection of scalars arranged in a regular grid with a height and width. We might have a single scalar per gird point, which would be represented as a grayscale image; or multiple scalars per grid point, which would typically represent different colors, or different *features* like depth from a depth camera.