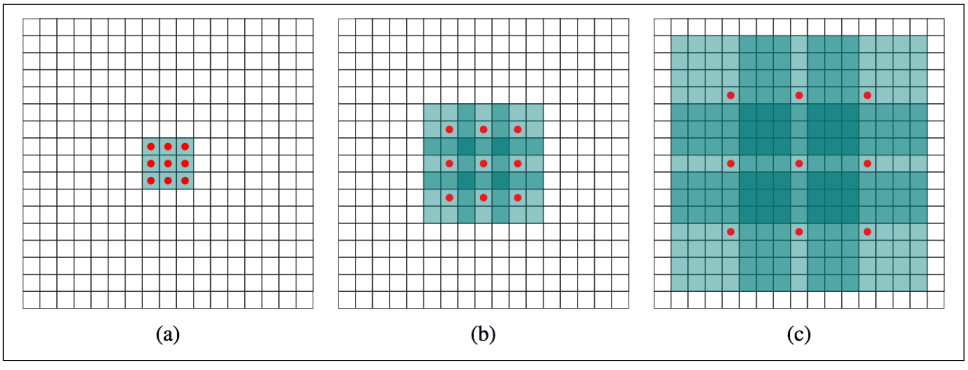


*Figure 6-8. A dilated (or atrous) convolution. Gaps are left in the local receptive field for each neuron. Diagram (a) depicts a 1-dilated 3 × 3 convolution. Diagram (b) depicts the application of a 2-dilated 3 × 3 convolution to (a). Diagram (c) depicts the application of a 4-dilated 3 × 3 convolution to (b). Notice that the (a) layer has receptive field of width 3, the (b) layer has receptive field of width 7, and the (c) layer has receptive field of width 15.*

# Applications of Convolutional Networks

In the previous section, we covered the mechanics of convolutional networks and introduced you to many of the components that make up these networks. In this section, we describe some applications that convolutional architectures enable.

## Object Detection and Localization

Object detection is the task of detecting the objects (or entities) present in a photograph. Object localization is the task of identifying where in the image the objects exist and drawing a "bounding box" around each occurrence. Figure 6-9 demonstrates what detection and localization on standard images looks like.

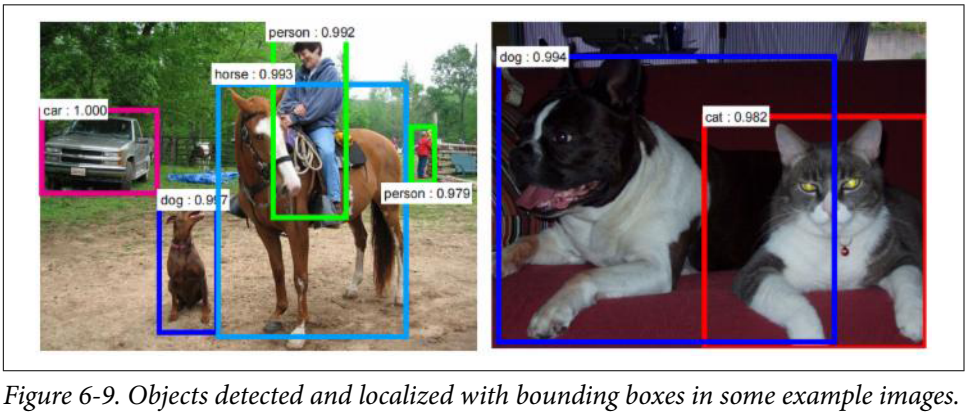


*Figure 6-9. Objects detected and localized with bounding boxes in some example images.*