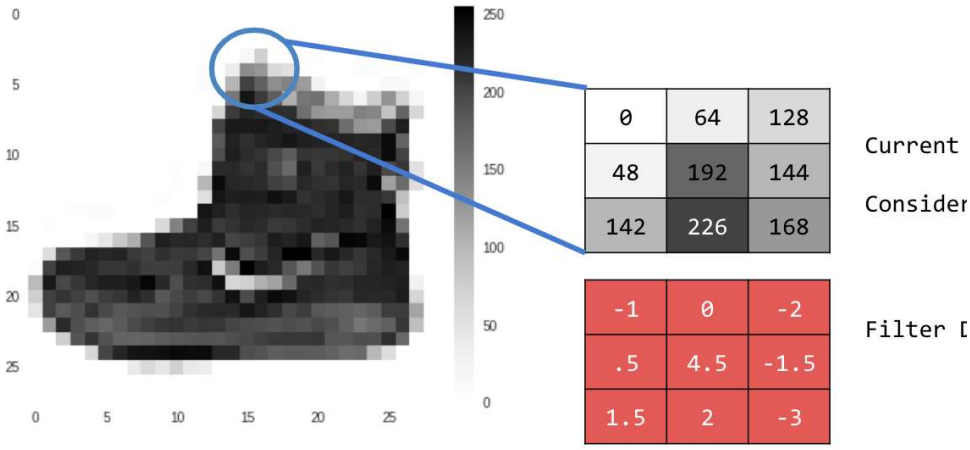
2. What are convolutions? (#1)

A convolution is a filter that passes over an image, processes it, and extracts the

Let's say you have an image of a person wearing a sneaker. How would you dete
In order for your program to "see" the image as a sneaker, you'll have to extract t
inessential features. This is called *feature mapping*.

The feature mapping process is theoretically simple. You'll scan every pixel in the
pixels. You multiply the values of those pixels by the equivalent weights in a filter

For example:




```
CURRENT_PIXEL_VALUE = 192
NEW_PIXEL_VALUE = (-1 * 0) + (0 * 64) + (-2 *
                  (.5 * 48) + (4.5 * 192) + (
                  (1.5 * 42) + (2 * 226) + (-
```

In this case, a 3x3 convolution matrix, or image *kernel*, is specified.

The current pixel value is 192. You can calculate the value of the new pixel by loo
them by the values specified in the filter, and making the new pixel value the final

Now it's time to explore how convolutions work by creating a basic convolution c

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