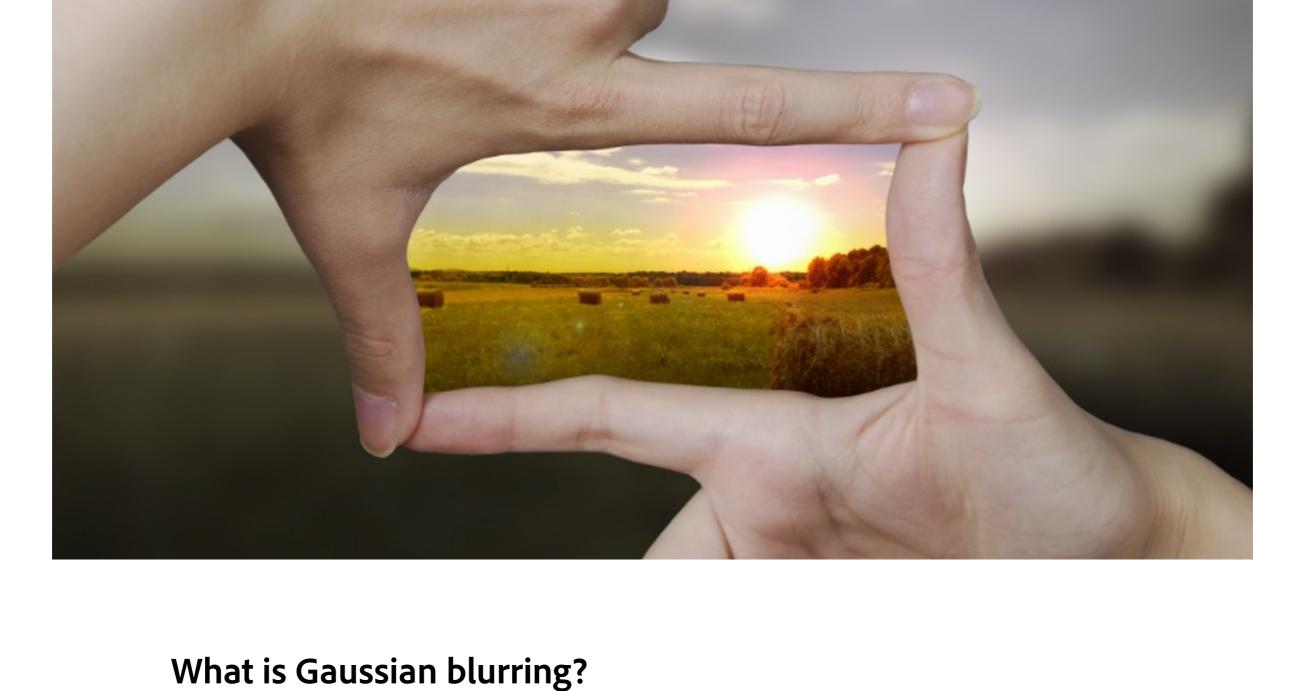
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# Demystifying Gaussian blur.

Learn when to use Gaussian blur filters during image processing, gain a better understanding of how they work, and how to pronounce "Gaussian."



### type of low-pass filter, Gaussian blur smoothes uneven pixel values in an image by cutting out the

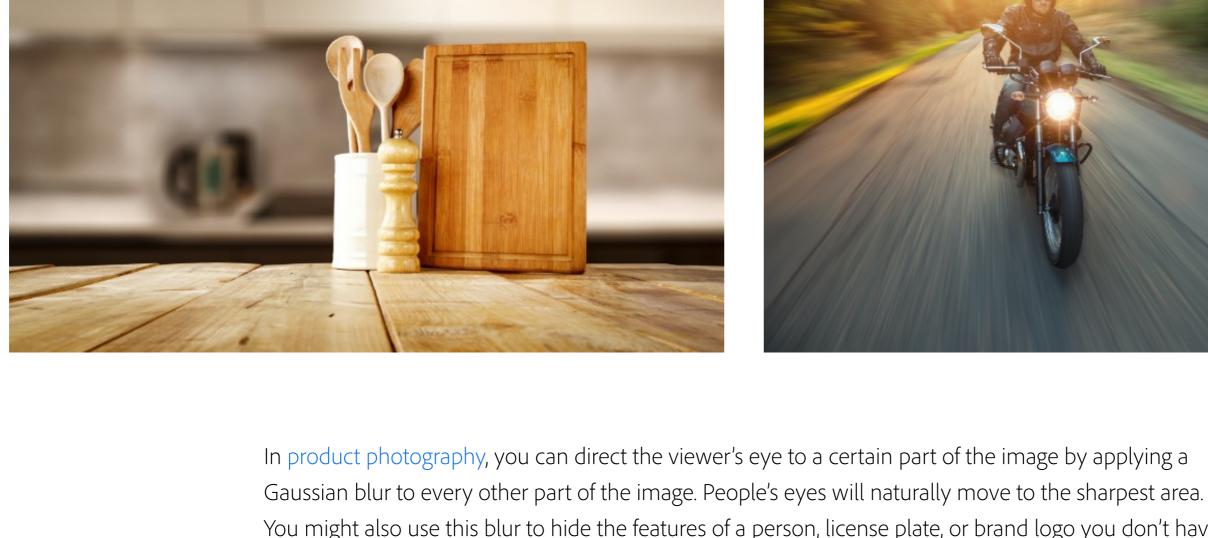
extreme outliers. When to use Gaussian blur. Photographers and designers choose Gaussian functions for several purposes. If you take a photo in low light, and the resulting image has a lot of noise, Gaussian blur can mute that noise. If you want to

Named after mathematician Carl Friedrich Gauss (rhymes with "grouse"), Gaussian ("gow-see-an") blur

is the application of a mathematical function to an image in order to blur it. "It's like laying a translucent

material like vellum on top of the image," says photographer Kenton Waltz. "It softens everything out." A

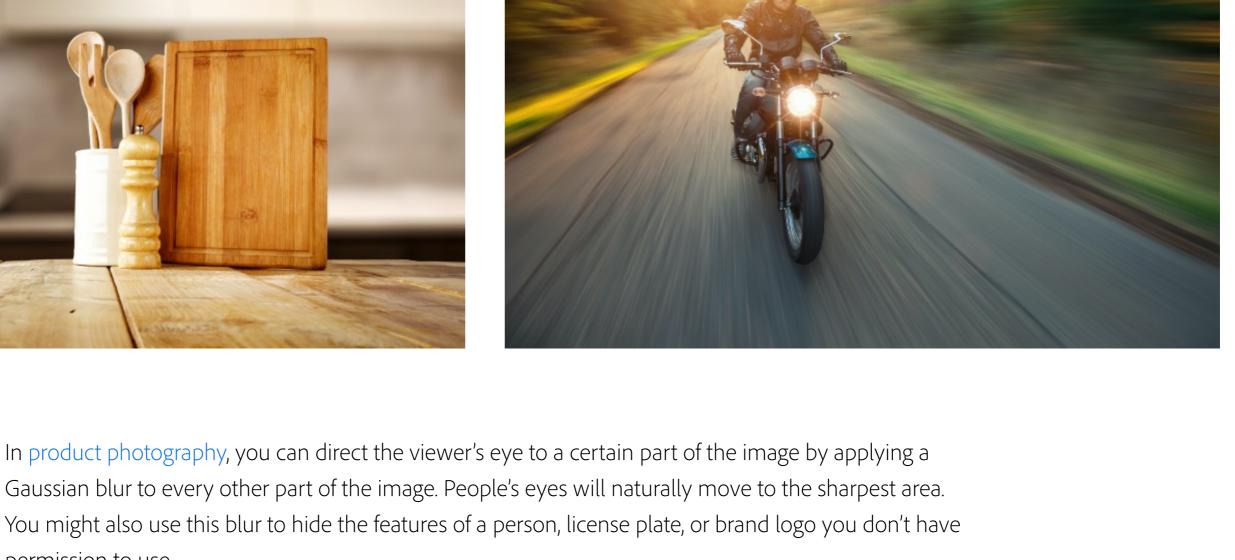
lay text over an image, a Gaussian blur can soften the image so the text stands out more clearly.



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loses definition.



edges in an image. For example, if you've taken a landscape photo of faraway palm trees against a light-blue sky, you might find bright white or red lines along the edges of your palm fronds. Applying a Gaussian blur will reduce the extremely bright pixels around the edge of the fronds, eliminating those bright spots. You can also take a more creative approach to this tool. For a portraiture project, photographer Andres

Gonzalez recalls using a Gaussian filter to create a surreal effect. In Adobe Photoshop, he added a

duplicate layer over the original image and applied a Gaussian blur to that. Then, he says, "I went in

with an eraser and erased the blur in places that I wanted to be focused. It created this foggy, frosted

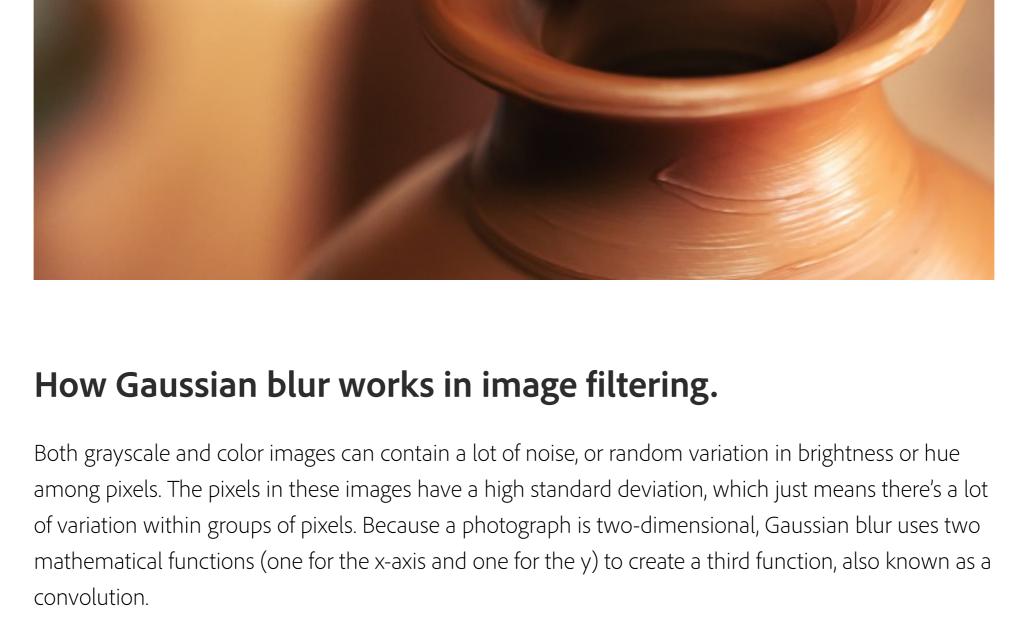
Gaussian blur is also useful for reducing chromatic aberration, those colored fringes at high-contrast

How to restore sharpness. One thing to keep in mind when applying a Gaussian blur is that greater blur intensity results in decreased sharpness. In the case of the landscape photo above, when you apply the blur filter to the

image, the white or red chromatic aberration disappears but the border between palm leaves and sky

## You can add sharpness back into the image by decreasing the blur radius. This is measured in pixels,

and it determines just how many neighboring pixels the Gaussian function will take into account as it calculates the blur. You can also use an edge detection tool on the filtered image. As with the blur filters in Photoshop, the Refine Edge tool allows you to adjust the radius to create smooth, hard, or feathered edges.



This third function creates a normal distribution of those pixel values, smoothing out some of the

closer ones than to those farther away. The result of all this math is that the image is hazier.

randomness. How much smoothing depends on the size of the blur radius you choose. Each pixel will

pick up a new value set to a weighted average of its surrounding pixels, with more weight given to the

the depth of field, keeping some objects in focus while blurring others, with lens blur. Highlight a focal

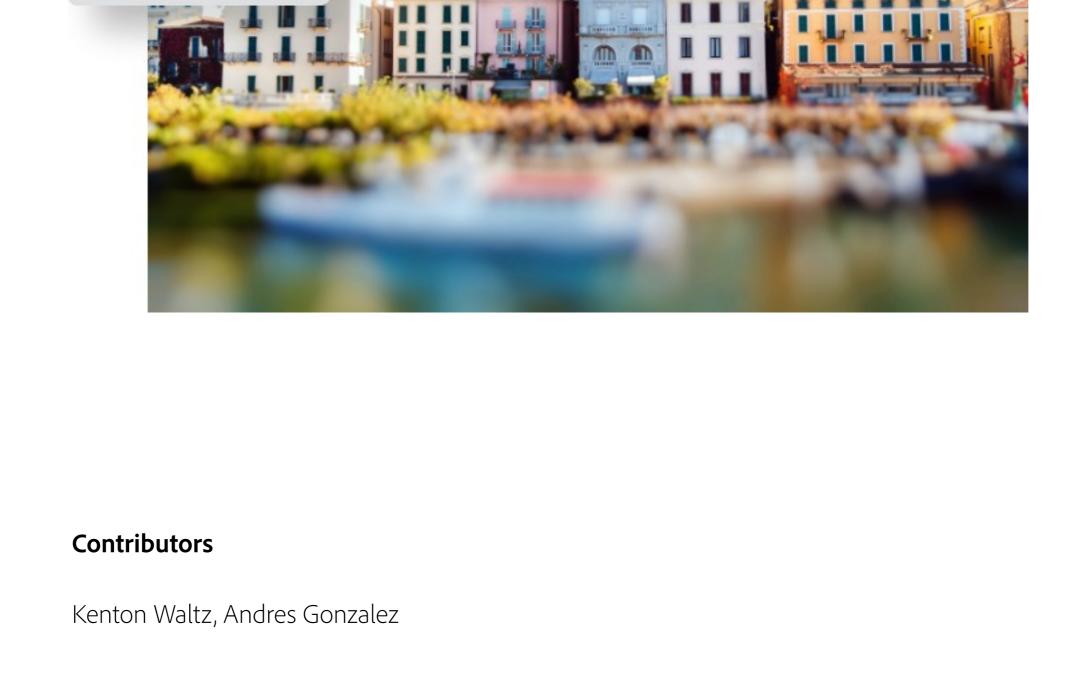
point and blur the background with iris blur, or create a dramatic sense of movement with motion blur.

smooth. Just remember the first rule of Photoshop: always create a new layer to ensure that your edits

You can also learn how to restore noise in blurred areas to keep surfaces from looking unnaturally

### Other blur effects and filters. With several options in the Photoshop Blur Gallery, there's plenty of room for experimentation. Narrow

are nondestructive. Field Blur...



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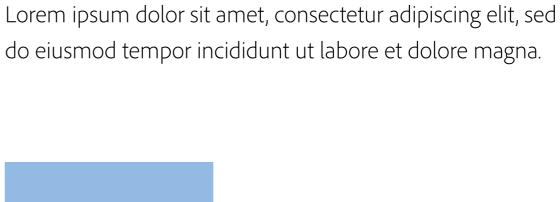
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