

Panoramas and Stitching Panoramas

Panoramas can make for a fun and interesting option for capturing photos. Whether you're capturing for a specific aspect ratio output such as wall display piece or website header, looking to incorporate a lot of visual data in the image, or just aiming for a different view, panoramas can be a creative approach. By capturing a very wide--or, for that matter, tall--field of view, they can be dramatic. And they can be revealing, by adding context.

They also bring with them some challenges. Among those is how you take multiple images and stitch them together into a single panoramic image.

What lens to use to make a panorama

Making a panorama isn't the time to use a wide-angle lens. The optical distortion inherent in these lenses tends to mess with the process of stitching them together. Pick a standard lens or a short telephoto; something between 40mm and 100mm will work well, though the use of a 200mm focal length will work, if the situation warrants.

Remove all filters from your lens, especially polarizers. They can cause gradations across an image that are impossible to work with later, so get that thing off your camera.

Cameras and settings

Shoot all panorama images in RAW format. This allows greater flexibility in post-processing to make sure that exposures, white balance, and other settings match from one image to the next. That said if you are careful in-camera, and manually select all your settings from ISO to exposure and white balance, you can get by with JPGs.

Exposure

Take a few sample shots of your subject. If you are shooting a landscape that varies in tones, meter off the brightest part of your scene and make the image as bright as possible without blowing out the highlights. Take note of those numbers (exposure settings), then using Manual Mode set your aperture and shutter speed accordingly.

Focus

Turn off autofocus. As you pan across your scene, you don't want your camera grabbing a new focus point each time. Set the focus so that your subject is sharp, then don't touch it again until you've finished the series.

White Balance

There are two options for white balance. The first, and easiest, is to set your white balance in camera, using one of the pre-sets. Don't use auto white balance, because the camera may decide each image varies slightly, and the colours will shift within the final panorama. Pick something appropriate and stick with it. The second option is to set the white balance of your RAW images in post-processing

Composition

Almost all panoramas are created using vertically formatted photos (i.e. the camera is oriented vertically). First, this allows the user to stitch together a greater number of photos for the same scene. Second, it allows you to compose with more negative at the top and bottom. This dead space is important to allow for cropping later.

Shooting

A level tripod is very useful, but not absolutely essential. If you are using a tripod, level it. With a level tripod, as you pan, your camera's angle will not shift up and down. If you are hand-holding be very careful to keep your camera level as you move across your scene shooting your images for the panorama.

Start a full frame to the side of where you expect your final image to begin. This assures that you have some negative on the sides of the image. Then begin making your series as you pan right or left. Overlap each shot by between a third to one-half of the frame each time. The overlap is what allows the computer to detect which images go where and line them up, so make sure to leave plenty of overlap.

Move across the scene making as many images as necessary to fully capture the landscape. Take a breath.

Software



Some newer cameras and smartphones have an automatic panorama setting built in where you can sweep the camera around the view and it'll all be stitched together in the camera. But as convenient as that is, you often don't get much control over the finished product and the resolution is often much lower than you might expect from the camera's usual capabilities. You can often get much better results, and infinitely more flexibility, by taking a series of individual, overlapping images that you then later stitch together using software.

There are quite a few different software options that can stitch panoramic images. They range from full-featured dedicated apps that give you an enormous amount of control and that produce very professional results, to lightweight free apps that can get the basic job done but don't give you much control. And some of the most popular image editing apps have panoramic stitching capabilities built in, even if it's not always obvious they're there.

So, here's a rundown of some of the better options for panorama stitching apps, ranging from simple, free apps, to much more powerful, paid ones.

The ones I'm focusing on here are still image, flat panoramas. There's quite a lot of overlap in software and technique between flat panoramas and 360° virtual tours, but there are some specific requirements when shooting and displaying the latter. Regular flat panoramas--still images that have a very wide or tall aspect ratio--are what I'm focusing on here.

Fun Tip: If you are stitching a panorama, a slow-moving subject can be taken multiple times when photographing the overlapping shots used in the stitch, hence your subject can appear multiple times in your panorama!

Dedicated Panorama Stitching Software | Free

The best panorama apps tend to be paid ones, and not inexpensive at that. But there are also some free options available. Overall, their features tend to be pretty limited and their user interface is not particularly polished. But if you're dabbling or just have a one-off need, they're a useful place to start.

AutoStitch

<http://matthewalunbrown.com/autostitch/autostitch.html>

A free (for non-commercial use) rudimentary stitching editor. Little editing control over projection, but it's simple and free. Windows and Mac.

Dedicated Panorama Stitching Software | Paid

While Photoshop continues to be the industry-standard for both beginners and experts alike, because of the amount of different functions it can perform, Lightroom is quickly becoming a new favourite among photographers as well. It's simplicity and streamlined approach to the editing process are making it easier than ever to make professional quality photos right from your own computer.

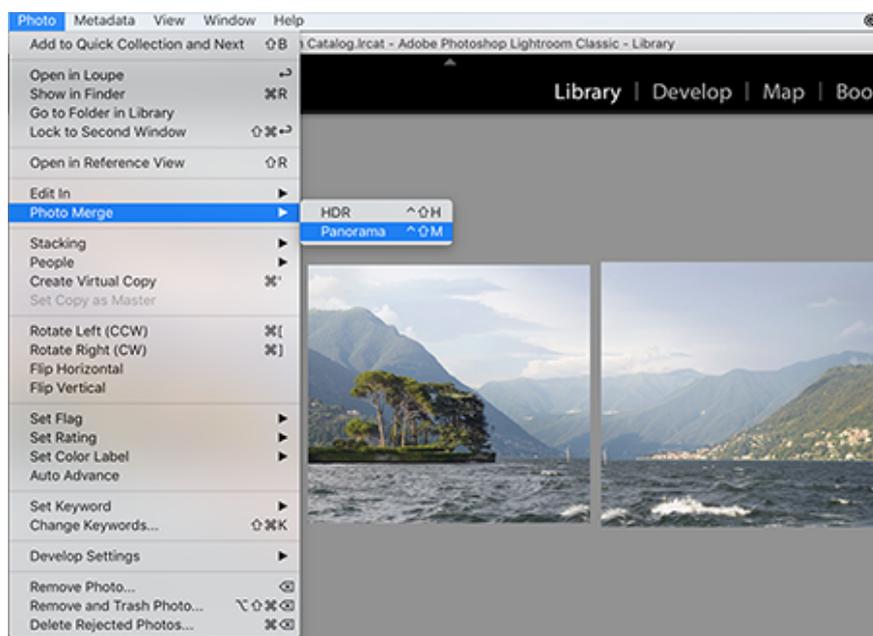
Light Room

Part of the Adobe Photography Package, that includes RAW Editor and Photoshop, approximately \$15 per month on subscription.

How to Stitch Photos Together in Lightroom

First thing's first, pick out the source images you want to include.

Select Photo > Photo Merge > Panorama



Panorama Options

Select a Projection

Spherical

Cylindrical

Perspective

In the **Pano Merge Preview** dialog box, choose the layout that will work best with your photo. There are three different layout choices, all of which accomplish different things:

Spherical: True to its name, this layout transforms images to appear as if they were inside of a sphere. This layout is ideal for wide panoramas or 360 photos.

Perspective: Unlike the **Spherical** layout, **Perspective** displays the photos as if they were on a flat surface. It creates a “bow tie effect” in which the middle of the final image is emphasized. This layout is great for architectural photography, but not so great for very wide photos.

Cylindrical: The **Cylindrical** layout projects the image as if it were inside of a cylinder. It also works well for wide panoramas but, unlike the **Spherical** layout, maintains the shape of vertical lines.

Note: It’s best to wait until your photos are merged to make more detailed adjustments (filters, saturation, etc.), because most of the changes you make to individual photos won’t carry over with the final merge.

Perspective

Auto Crop

Boundary Warp: 0

Utilize the “**Auto Crop**” setting to remove all the remaining white space from the merged image.

After you’re done cropping, use the **Boundary Warp** setting to adjust the photograph until it fills the canvas.

Boundary Warp saves the part of the image that would have been forced out by **Auto Crop**. When everything is set, click **Merge!**

