NPS Workshop 12 July 2025

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These notes cover basic Lightroom Classic and Photoshop use. More complex work such as merging HDR images is not covered, rather a Google search will bring up guidance on advanced workflows.

Panorama Photos or pano's for short

What is a panorama

Panoramic photos are created by taking a series of overlapping photos of a scene, usually with a standard lens but often with a zoom or telephoto lens.

How it works:

Two parts:

- The photos are taken with the camera mounted on a tripod (see guidelines below on must dos and helpful gear) or hand held.
- The photos are stitched together to form a single seamless panoramic image using commonly used photo editing software. For this workshop I will be using either Adobe Lightroom Classic and / or Photoshop. It's a simple process and assuming the base photos are taken with sufficient overlap, there are sufficient points that the software can recognize and match in adjacent photos, the camera is kept level and swung in a consistent arc and the camera settings remain the same throughout each sequence- then the stitch will most likely succeed.

Panoramic v Super wide-angle lens:

Why bother with creating a pano when could get a wide angle (field of view) with a super wide-angle lens e.g. 14-30mm, 16-35 etc

Super wide-angle lens are specialist lenses best used to capture a wide-angle scene when importantly there is a strong foreground element that anchors the photo. The foreground element that may be a few metres in front of the camera and be the dominant feature with the background appearing small. For many landscape scenes this will work well but in the absence of a dominant foreground element the photo may lack focus or viewer staying power.

Panoramic photos allow you to capture a wide field of view (FOV) and at the same time achieve the depth of field (DOF) you wish, with the zoom ring. This allows you to capture different DOF perspectives e.g. compressing the background and by using the lens in portrait mode or multi rows (with tripod) to end up with a stitched image both wide and high. Although there is a bit of extra work in the capture and editing phases, you can create the image you want v the composition limits of a one photo wide angle shot.

Panoramic photos do have limits. A super wide / pencil height stitched image may not be to everyone's liking but do have the benefit of, if for instance you have limited time in the field to take a series of photos for stitching and then cropping to suit your composition preferences, at your leisure. This is a tactic I have used on helicopter snow landings where you may have only 10 minutes on the ice field.

Some scenes such as waves breaking don't lend themselves to successful stitching. In these cases, you need to take multiple photos of the static elements and in Photoshop blend in a wide angle shot of the moving water. Level of complexity may exceed what you are prepared to do.

The technique:

Hand held- daylight shots:

In doing landscapes hand held will work well in most cases, in the writer's experience. To achieve a good stitch the following should be done.

- Camera must be kept level and swung in a smooth arc
- Overlap minimum of 30% and suggest up to 50%
- Remove polarizing filter. These will cause banding
- Once focus is locked in for the first image in the sequence, turn the camera to manual focus.
- Likewise, its good practice to put the camera into manual mode i.e. shutter speed and ISO (i.e. turn off auto ISO) so exposure is unchanged between frames. Also set aperture to provide the depth of field desired.
- With differing levels of light across the arc intended, it's recommended that you adjust the shutter speed and / or ISO to ensure no blown highlights.
- To achieve a good result shutter speed needs to be such that sharp focus is achieved
- Keep an eye on the electronic level guide in the camera (eye piece and / or rear screen)
- After each sequence take a photo of your hand to mark the end of that group.
- Composition tips:
    - If using camera in landscape mode & taking a single row- make sure you have plenty of headroom over the hills, trees etc that dominate the skyline. This is to achieve a pleasing composition, particularly for a wide stitched image.
    - Panning in portrait mode and single row. In the writer's experience this is not as natural, because of hand position, as landscape mode. However, with care and persistence you can still get a good amount of sky into the composition when zoomed in more and importantly will get away from the pencil thin stitched image you get in landscape mode. This depends of course on how wide you wish to go.
- Benefits- hand held is quick, you capture the fleeting light and allows you to be spontaneous. Assuming there are enough points within each overlapping photo for the software to work its magic, modern software does work. But as a back-stop it pays to take some other shots i.e in landscape mode in case the stitch does not work- this particularly applies if you are taking vertical photos (portrait mode)

- Limitations. It depends on the scene in front of you, the number of anchoring points, lighting, cloud movement etc that affects the stitching phase.
    - Sometimes the stitch cannot be made in Adobe Lightroom or Photoshop.
    - Compositions with close in elements etc tall trees or other prominent items may not stitch well due to parallax error. See comments under tripod use.
    - Composition may not turn out as you wish i.e, the long pencil shaped image may not be to your liking – more likely when taking in landscape mode. However, the image may be a candidate for duplication for the purposes of re-cropping for a more pleasing composition. This is a good technique where you have limited time to take the photos e.g. on an ice field landing trip or other situations where time is limited.
    - Stitch may result in parts of the image being replicated in odd places e.g. buildings, fences etc so editing will be needed to remove them.
    - Stitched images have very large digital files and to be successful a computer with 16 Gb plus RAM is best. The lower the number of photos in the stitch the easier the computer workload and similarly using lower resolution cameras.

Tripod:

Additional thoughts

Using a tripod has benefits but requires particular attention to set up. It allows photos to be taken in low light including astro, at low shutter speed and multi row with accuracy

Important stuff to be done to achieve good results, assuming a variable focal length lens:

- It is essential to have the tripod on firm ground, free of vibration and be perfectly level. If not level- the stitch will not be as successful as you may hope as anchoring points the software uses will not be on the same plane. This is because as the camera rotates successive photos will be sloping up or down
- Each photo sequence needs to be taken quickly to cope with changing light and moving clouds. The same as hand held.
- As per comments under “hand held”- once focused, put camera on manual- focus, focal length, set depth of field and ISO stay the same. No polarizing filters.
- If taking scenes with close in foreground elements “parallax error” is something to be aware of. In photography, parallax describes the perceived shift in the position of a subject relative to its background when the camera’s viewpoint changes, causing misalignment between frames in stitched images. It’s seen as ghosting in the stitched image e.g. trees or edge of structures. Its effect can be lessened or close to eliminated if the camera’s nodal point (the point inside the lens where light converges) rotates on the same axis as the centre of the tripod. It is not an issue for landscapes without close in prominent foreground elements.
- Set up can take longer but particularly the making of adjustments to eliminate / reduce to minimum parallax error can be done pre shoot. This is done by a 2 step process- rotating the camera to an angle on a couple of markers and secondly moving the nodal rail back and forwards to the point where the markers line up. This needs to be done for each of the focal

lengths used for a lens so is best done at home and the nodal rail measurements noted. For shots without close foreground elements, parallax is not an issue. Getting the tripod level takes time so for a fleeting light situation hand held, assuming enough light for a higher shutter speed, may be preferable.

- Shoot left to right or right to left. I prefer left to right as this avoids the chance the rotator may unwind on the tripod and thus cause sloppiness.

Gear:

No different to other forms of photography. A DSLR / mirrorless with a standard zoom say 24-70mm or 24-105 or 24-120mm will do a good job. The longer the focal length the more photos are required for a given width of the finished stitched image. Super wide-angle lenses e.g. 14-30 mm, 16-35mm etc are not considered suitable for pano photos due to edge distortion.

For hand held- just the camera and lens

For tripod use- depends on how much gear you want. Here is what I think about it:

- Tripod must be level so you could:
  - Use a standard tripod and ball head strong enough to hold the camera gear and swivel to make the photo sequence. Not as good as a pano head (this term can be used for a multi adjustable head show in photo 6 or a tilt adjustment hybrid device shown in photos 3 & 4)
  - Preferably a tripod with levelling device built in (photo 1) or alternatively a standard tripod and attach a levelling device such as the Benro LBA2 (Photo2).
  - Cheap mini spirit level to test if levelling plate on the tripod is completely level
- Going up a level either a:
  - Specialist panorama head (photo 6). This allows the camera to be set up so the lens rotates around the centre point of the tripod and secondary back or forward adjustment so the nodal point in the lens also rotates around the tripod axis to ensure no or minimal parallax error. Disadvantage – these can be expensive and bulky. Wind can cause vibration and adds additional weight you may be wanting to avoid. Several alternative gear set-ups will do the same job.
  - Made up head like Barry has (Photos 3 & 4). Comprises a Gemtune DH-55 rotator (adjustment to suit lens focal length / FoV and thus achieve overlap. Clicks, so can do the photo sequence with the correct overlap for the focal length set by listening for the clicks), a Desmond DMH-2 & 50mm DAC-X1 clamp tripod tilt head and the third part for dealing with parallax is a nodal rail (mine is 125mm Puluz. Photo 5). This unit is less bulky and much easier to set up than a dedicated panorama head.
  - Cheap spirit level. Mine is 23cm long and available at local hardware stores. This is a better than relying on the built in mini circular bubble levels in photographic gear.

Software:

The writer uses the on-line Adobe Lightroom Classic (predominately) and sometimes Photoshop. These will be demonstrated today. I don't have knowledge of how other software brands work so can't comment on these.

Steps:

(a) Lightroom Classic

Pre-merge

Make any preliminary edits on first of the sequence, highlight the balance of the set and hit "Sync" to carryover the edits to all photos.

Merging

- With the set of images still highlighted, proceed with the merge
- In photo menu drop down to photo merge, click on that and then on Panorama
- LR proceeds with the action and shows the merge preview. There are 3 selection options- Spherical, Cylindrical and Perspective (I use Spherical as the default for landscapes. AI overview describes the 3 as- "Spherical" projects images onto a sphere and is useful for wide or multi-row panoramas, "Cylindrical" projects images onto a cylinder and useful where you want to keep vertical lines straight and "Perspective" projects the images onto a flat surface and suggested for smaller panoramas or architectural shots where straight lines are important).
  In some cases one or more of the 3 options won't work so leaving the 3rd one and in some cases due to lack of overlap, lack of distinguishing points none of the options work.
- On the preview screen – if there are missing parts around the edges of the merged image, click the box "Fill Edges" (this will be the case with hand held shots and to a very limited extend with tripod shots, the latter assuming the tripod is absolutely level. LR does a great job of filling in the missed edge parts and retains the full composition). Of the other boxes, I leave "Auto Settings" ticked and sometimes may apply the "Boundary Warp".
- If you are happy with the preview (show on full screen), click "Merge". This completes the process, ready for editing. If there are dust spots etc it's preferable to remove these after the merge and then proceed with the final edits.

You Tube video August 2024 "Creating Panoramas in Lightroom Classic" by Julieanne Kost is an excellent guide and recommended viewing. Julieanne explains all the settings and results in detail. Link is- Creating Panoramas in Lightroom Classic

Note- Lightroom Classic is an excellent editing program and if you are happy with both the photo merge results and edit functionality, my advice is use this solely. However if you wish to use Lightroom for the merge and then Photoshop for further edits the following describes one of the methods.

(b) **Photoshop**- it has more than one method for merging photos.

Starting in Lightroom Pre-merge

- Make any preliminary edits on first of the sequence, highlight the balance of the set and hit "Sync" to carry over the edits to all photos.
- With the candidate photos still highlighted, go to "Photo" menu, then "Edit In" and drop down to "Merge to Panorama in Photoshop".

In Photoshop

- In Photomerge there are a number of options. I use "Auto" and leave ticked "Blend Images Together". If the candidate photos have a vignette tick "Vignette Removal"
- The files are already loaded per the previous step so highlight and click OK. The layers have masks attached showing the parts from each photo used in the merge. The merged photos may have parts along the edges missing. If so cropping may suffice but if not additional steps are needed (not covered here)
  You may also wish to tidy up the layer masks but if not, go to the next step
- Merge into a combined layer. Steps are – with all layers selected "Flatten" image either using a shortcut or use the layer menu- drop down to "Merge Visible" of if you are satisfied that no further Photoshop work is required on the layers, click in "Flatten Image".
- Adopting the latter the image can be saved and appears back in lightroom

Note – as mentioned under Lightroom if you are happy with the tonal and other edits in Lightroom, then the creation of a merged image is considerably easier in LR, this including the auto filling in of parts along the edges omitted in the preview and thus retain 100% of the candidate photos. This does not prevent later editing in Photoshop / Adobe Camera Raw.

Photos of gear used by the writer. Tripod and detachable levelling device is available locally and the other items on Amazon.com etc. This gear is also used for mounting an Astro Star Tracker with a swivel device between the tripod and the tracker to allow the tracker to be aligned with true south without the need to move the already levelled tripod.

1. Benro tripod (model Tortoise TTOR34CLV) with levelling base instead of a centre stem. Apart from the convenience of having a built-in levelling base for panorama shots, the tripod lowers to within 11cm of the ground at the bottom of the ball-head

2. Benro LBA2 levelling base attached to a tripod not having a built-in levelling base

3. Gemtune DH-55 rotator. This is mounted on the tripods levelling base. I don't use a quick release plate shown in the picture, rather the Desmond device is attached directly to the rotator.

4. Desmond DAC-X1 & DMH-2. This is attached to the rotator to provide tilt functionality. In the illustration the camera is either attached to the clamp using an Arca Swiss plate or alternatively on a nodal rail (the latter only used if correcting for parallax error). Note the camera mounting plate can be rotated to accommodate an L Bracket.

5. Nodal rail
   Puluz fixed clamp (Arca Swiss) nodal rail slider. These are readily available on Amazon.com under several brands, lengths and prices. For the lenses I use the 130mm rail is suitable. A consideration is to not use a short lens on a long rail as the part in front of the lens hood will appear in the photo.

   Link to video explaining reason for and setting up a nodal rail slider-
   https://www.youtube.com/watch?v=lEEBlL0g0u4

6. Panorama head- setup and use is not described in these notes but image show here for completeness. In the writer's opinion there are easier ways to swivel, tilt and adjust for parallax error and secondly take multi rows, than investing in a full-blown panorama head. In all setups it is essential all the bolts are tight and while this is not an issue for the type of gear I use, it may be an irritation for a cheaper brand panoramic heads where excessive pressure may be needed to tighten the bolts to prevent sagging.

   Panoramic head mounted on a rotator shown here

Further guidance on taking panorama photos

(a) See videos by Henry Hudson or Julieanne Kost

Links – Henry Hudson - https://www.youtube.com/watch?v=jnuexebb0bE and Julieanne Kost Creating Panoramas in Lightroom Classic

(b) There are numerous articles on Google. Barry has 4 handouts – 3 on panoramic photography and one on understanding parallax in photography. Links to these are - **https://photographypro.com/shoot-panoramic-photos/** , https://photographylife.com/panoramic-photography-howto , : HTTPS://WWW.MIKESMITHPHOTOGRAPHY.COM/VIDEOS/HOW-TO-DO-PANORAMA-PHOTOGRAPHY and https://photographyicon.com/parallax

(c) I also have available a field of view chart. This sets out the FoV for focal lengths 10mm to 800mm for full frame and crop sensor cameras. The chart does not cover micro 4 thirds cameras or fisheye lenses. Link is https://www.nikonians.org/reviews/fov-tables