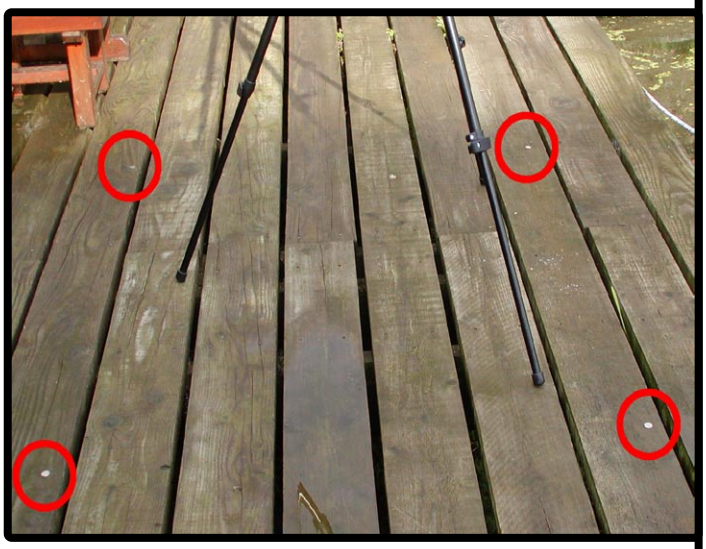
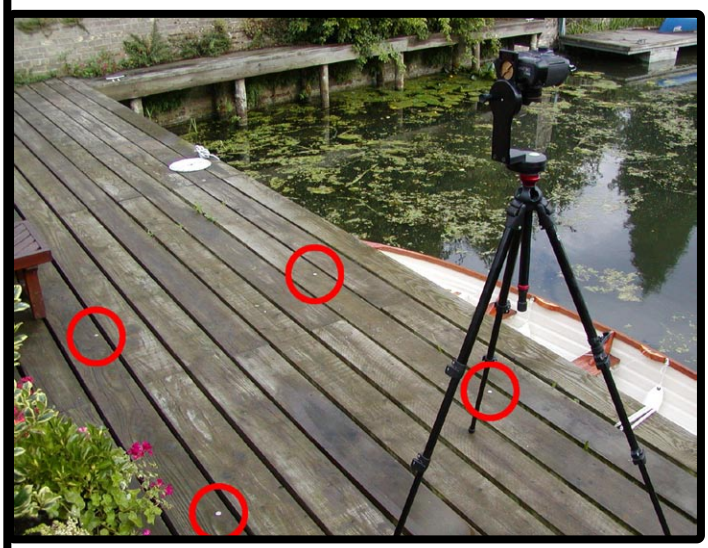
360Precision
PRECISION PANORAMIC HEADS

GUIDE TO INSERTING A NADIR SHOT FROM TRIPOD

This procedure will guide you through inserting a nadir shot into a panorama without removing the camera from the tripod head. This technique is applicable when working on a flat floor/surface (This is because it is effectively based on a large lens shift, and if the surface is not flat, parralax errors will be introduced).

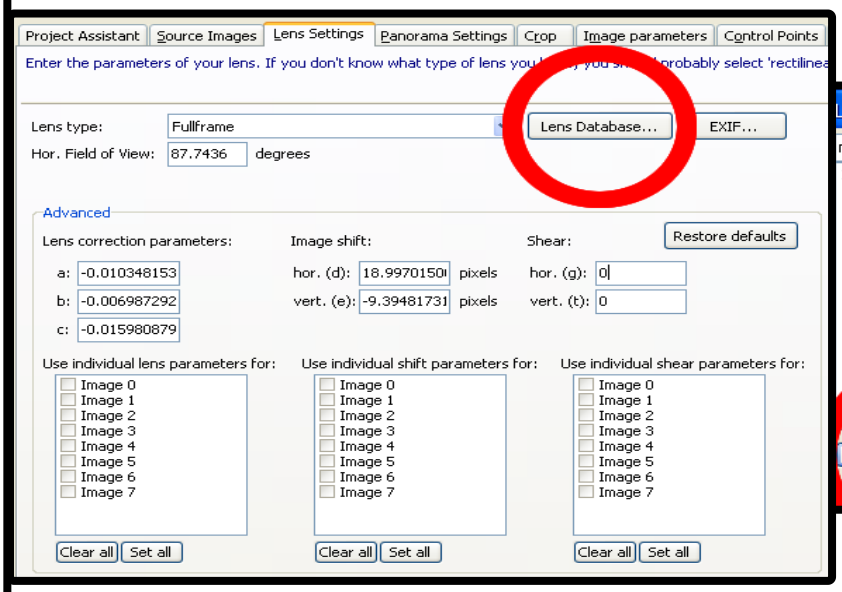
Set your tripod as usual to start the photography. Before starting to shoot place 4 small markers (I use coins, highlighted red) in a square around the tripod as shown in the image to the right. These markers must be visible from within the panorama (Look through the lens and ensure they are visible in shot) as they will be used to align the nadir in later steps. Shoot the pano as normal.

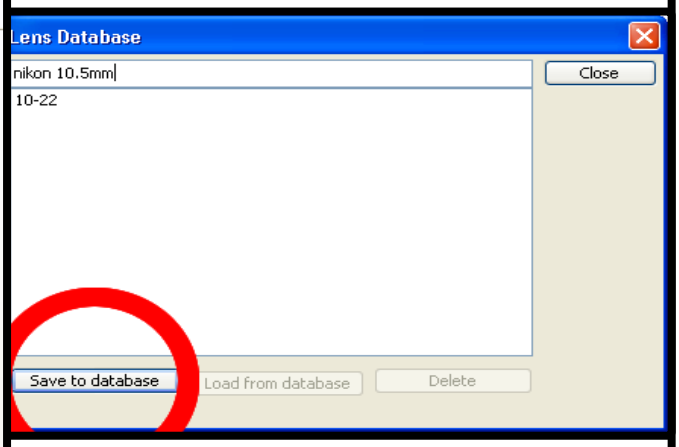




After shooting the panorama, offset your tripod by a distance such that you can see all 4 markers on the floor within one shot (see image to left). I choose to align my camera to -90 deg on my panohead, and look through the lens to eyeball the 4 markers on the floor. Try not to move too far away, otherwise you will be using a softer area of your lens.

Stitch the panorama as usual (leaving the nadir shot out of the project). From this project file, save your lens parameters. Lens parameters are saved by selecting the 'Lens Settings' tab, 'Lens Database', insert a suitable name, and click 'Save to Database'. See next page;





Now insert the nadir shot into a new project file. Apply the saved lens parameters by loading the lens that you just saved (same process but select 'load from database' from the popup window). You can now export this shot as a corrected rectilinear image, which you will use to overlay on the nadir section of the panorama;

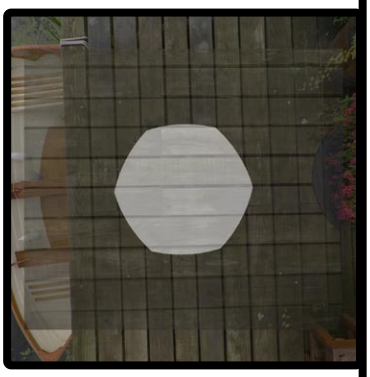
In PTgui select 'panorama settings'

-Projection rectilinear
-HFoV 120
-VFoV 70

Go to the preview tab and make a preview. You will need to repeat this step a few times, whilst adjusting the HFoV and VFoV to try to get all 4 markers in the image, but not having too larger a FoV as this is not as efficient (as shown below). Once you have found a set of numbers that work, output the view at quite a large size (e.g. 2K x 6K) as you will be cropping most of it away. This corrected nadir and the panorama will be fused in the final PShop stage. Note, there are no need for any control points, just output the image.

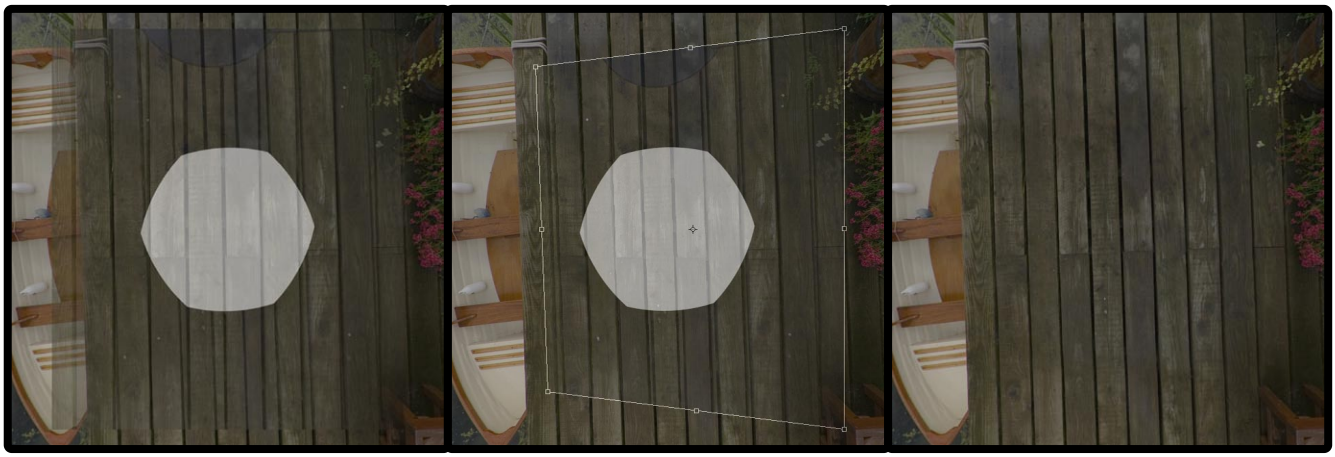
You should now have both a fully stitched pano from earlier, and the corrected nadir to patch from. It is easiest to merge the two images in photoshop if you first extract the nadir cube face from the panorama and work from that. I recommend using Pano2QTVR on a PC to perform this transform, and Cubic Convertor on the mac.

Load the equirectangular image into Pano2QTVR and select 'convert to cubic'. After a couple of minutes the operation should be complete, and you should find 6 cube faces in your specified directory.



Open up both the nadir cubeface and the corrected nadir shot in photoshop. Roughly crop the corrected nadir shot to keep the region of interest (around the 4 markers), and overlay it ontop of the nadir cubeface as a new layer with a 50% opacity. It will not look normally look too promising at this stage, see right image.

Now rotate the corrected nadir to roughly line up with your cubeface orientation (see below left), before using the 'Distort' tool to line up the markers (edit->transform->distort). As the top layer is semi-transparent, you should be able to use the distort tool to accurately line up your 4 markers on the floor by adjusting the individual corners (see below centre). When you have completed this, confirm the transformation, and use a brush to blend the two layers together before flattening the image. When flattened, use the stamp tool to clone out the origional 4 markers (below right).



Save this image, and you can now use it and the 5 other cubefaces to recreate the full panorama. In Pano2QTVR just click the 'Convert to Equirectangular' button and it will complete the action for you (as it remembers the filenames of the extrated cubefaces).

You can now use this file to create your panoramic movie with a perfectly stitched nadir. Advanced users could even use enblend at the last blending stage, if the images are difficult to blend realisitcally with a feather brush in Photoshop. Good Luck!