

FANOTECH

Nodal Ninja



MECHA

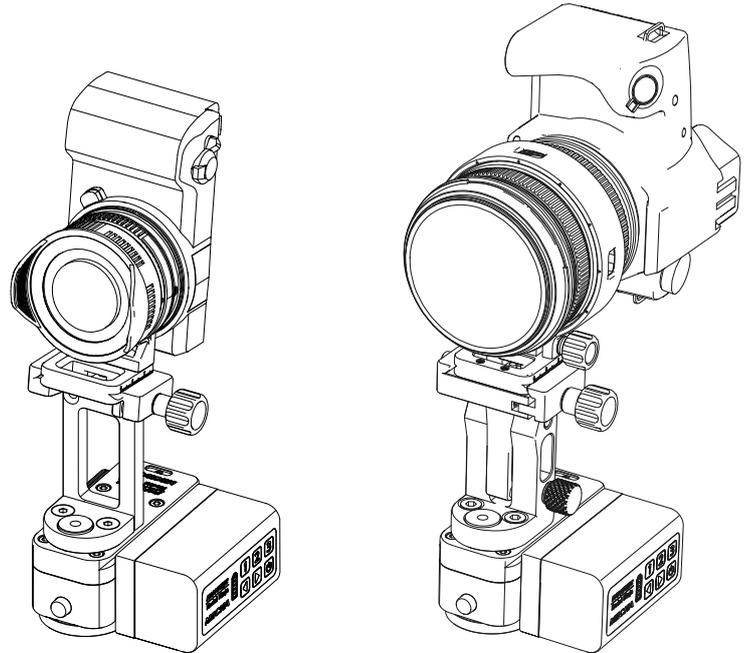
Controller C1

Feature Highlights

EN Version 0.1 (July 2019)

*Finding No-Parallax Point Using **Live NPP** function*

(Firmware B_E_01381 or later)



Finding the No-Parallax Point

What is the No-Parallax Point?

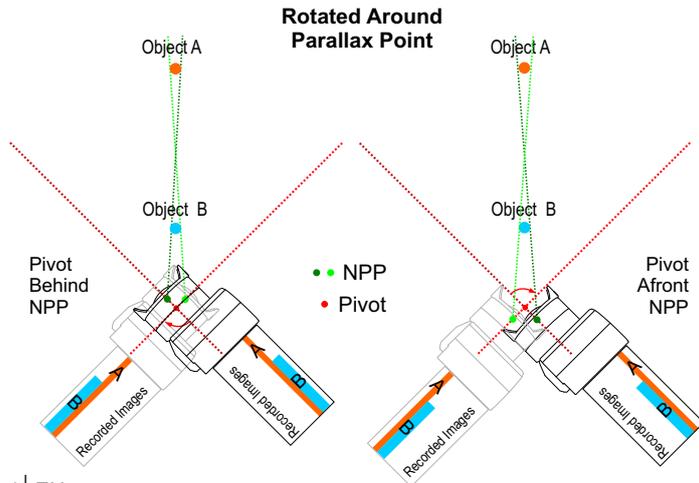
If you rotate your camera around some random point, your images may show parallax, that is the foreground and background objects do not line up perfectly in overlapping region. Images with large parallax will be difficult or impossible to stitch.

With most lenses, there is one special point around which you can rotate your camera and get no parallax. This is the "no-parallax point" (NPP), which is the center of the lens's entrance pupil and the center of perspective.

Notes

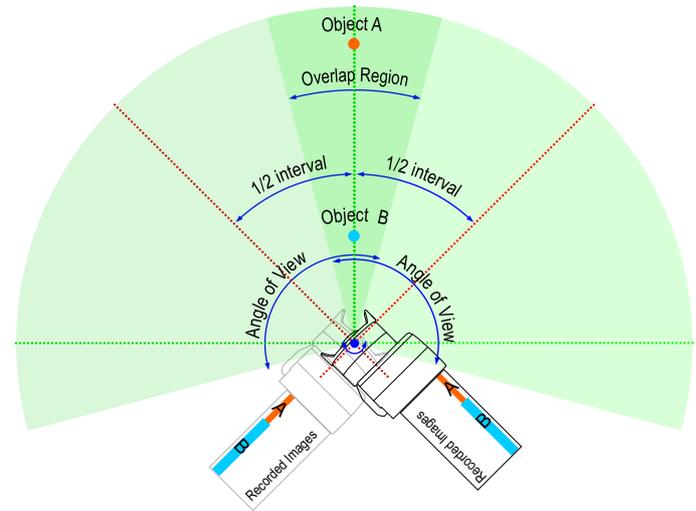
Some lenses, notably fisheyes, do not have a single NPP. Instead, they have a range of what might be called "least-parallax points" (LPP) that depend on the angle away from the lens axis. So NPP or LPP should be calibrated with the desired shooting interval.

NPP may shift with focal length in zoom lenses and also with focus distances. Database on the internet typically assumes focus at infinity. Calibrate at desired focal length and focus distance for best result.



Notice the relative positions of near and far objects in the images are reversed when camera is rotated to the left or the right. Besides, the shift is opposite when the pivot is moved from behind NPP to afront.

Rotated Around No-Parallax Point



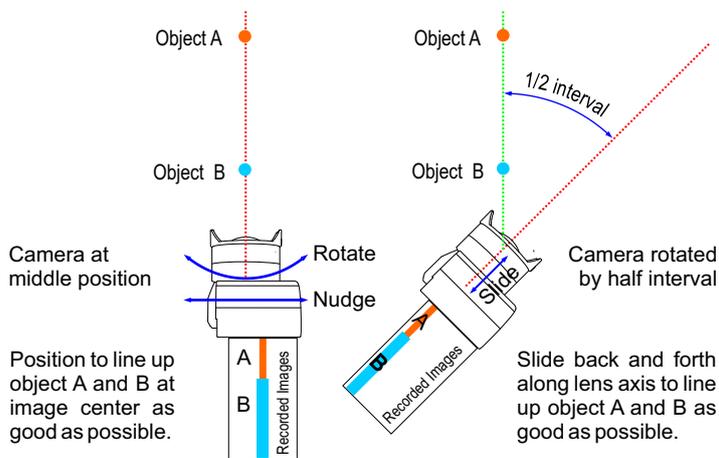
Near and far objects in the overlapping region are perfectly lined up. These images will stitch seamlessly.

Notes

Image stitching software requires a generous overlap of adjacent images in order to work out lens parameters, match up and align the images. Typically, an overlap of at least 30% should be used. If lens parameters are supplied to the stitching software, a smaller overlap such as 20% can be used. Use the desired % overlap and angle of view of the lens to determine the rotation interval. Calibrate NPP at this interval for best result.

Using Live NPP function to find No-Parallax Point for a Lens Ring Mount

1 Use two vertical reference points with one behind the other. The near reference point (foreground) should be about 1.5 ft (0.45m) for a fisheye lens and the far reference point (background) should be at least 10 ft (3m) away. Use 1/2 hyperfocal distance for foreground for other lenses. You can use near objects such as a wall edge, door jam and light stand, while the far objects could be a building, light pole, or tree trunk. Use Manual Focus and set the focus distance to about 1.5 ft (0.45m) or hyperfocal distance. Set aperture to f/8 or smaller. Turn on live view mode. Position tripod so the two reference points would line up at image center. Use grid and magnified view for greater accuracy. Press the DOF preview button (required for some cameras) to bring the reference points into focus.



Notes

A lens ring mount pano head such as R1/R10/R20 effectively places the lens axis on the rotation axis. There is no left and right movement to set, only back and forth adjustment needed.

For a dual axis pano head, a lower rail adjustment is needed to position the lens axis on the rotation axis.

<http://johnhpanos.com/epcalib.htm>

2 MECHA rotated to the right by 1/2 shooting interval. In magnified view, scroll left to see the reference points. Slide the lens back or forth to line up the reference points. Be careful not to move the tripod!

Tips

Some cameras can only magnify the center portion of image in live view. The reference points may not be viewable in magnified view. In that case, rotate the camera to landscape mode. Alternatively, record the image and review in magnified view.

3 MECHA rotated to left by 1 shooting interval. In magnified view, scroll right to see the reference points. Check if they are perfectly lined up. Carefully slide the lens back or forth to line up if needed.

4 MECHA rotated back to middle position. Check if the reference points are still perfectly lined up at the image center. Nudge tripod to line up if needed.

5 MECHA rotated to right by 1/2 shooting interval. Check if the reference points are perfectly lined up. If there is some misalignment, carefully adjust to reduce misalignment by half. There can be some residual misalignment due to other geometric errors.

6 MECHA rotated to left by 1 shooting interval. Check if the reference points are lined up to same extent as in last step. Carefully adjust to achieve similar alignment.

End of Live NPP determination. Repeat the process to confirm alignment if needed.

Tips

You can have your camera at perfect NPP and still have stitching errors. This can be due to poor correction of lens distortions or badly placed matching points in stitching software. Moving objects such as clouds and tree branches can also cause problems. Stitching errors can be minimized or even hidden altogether by intelligent blending - either manually (by editing the layer masks in a layered .psd file), or automatically (by using a blender such as Smartblend).

Instructions Displayed in Live NPP Function

1. (MECHA at middle position)

For a pano head with lens axis correctly positioned above the rotator ONLY.

Use two vertical reference points with one far behind the other. Turn on live view mode. Position tripod so the two reference points would line up at image center. Use grid and magnified view for greater accuracy.

2. (MECHA rotated to the right by 1/2 shooting interval)

Scroll left to see the reference points. Slide the lens back or forth to line up the reference points. Be careful not to move the tripod!

3. (MECHA rotated to left by 1 shooting interval)

Scroll right to see the reference points. Carefully slide the lens back or forth to line up if needed.

4. (MECHA rotated back to middle position)

Check if the reference points are still perfectly lined up at the image center. Nudge tripod to line up if needed.

5. (MECHA rotated to right by 1/2 shooting interval)

Check if the reference points are perfectly lined up. If there is some misalignment, carefully adjust to reduce misalignment by half. There can be some residual misalignment due to other geometric errors.

6. (MECHA rotated to left by 1 shooting interval)

Check if the reference points are lined up to same extent as in last step. Carefully adjust to achieve similar alignment.

7. (MECHA returned to middle position)

End of Live NPP determination. Repeat the process to confirm alignment if needed.

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www.nodalninja.com



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www.nodalninja.com/forum



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