



parallax | perə laks |

noun

The effect whereby the position or direction of an object appears to differ when viewed from different positions, e.g. through the <u>viewfinder and the lens of a rangefinder camera</u>: *What you see in the viewfinder won't be quite what you get in the photograph because of parallax error*.

In panoramic photography: When the relative position of a subject changes while pivoting the camera. Parallax error occurs when objects in the image are not at the same place relative to each other.

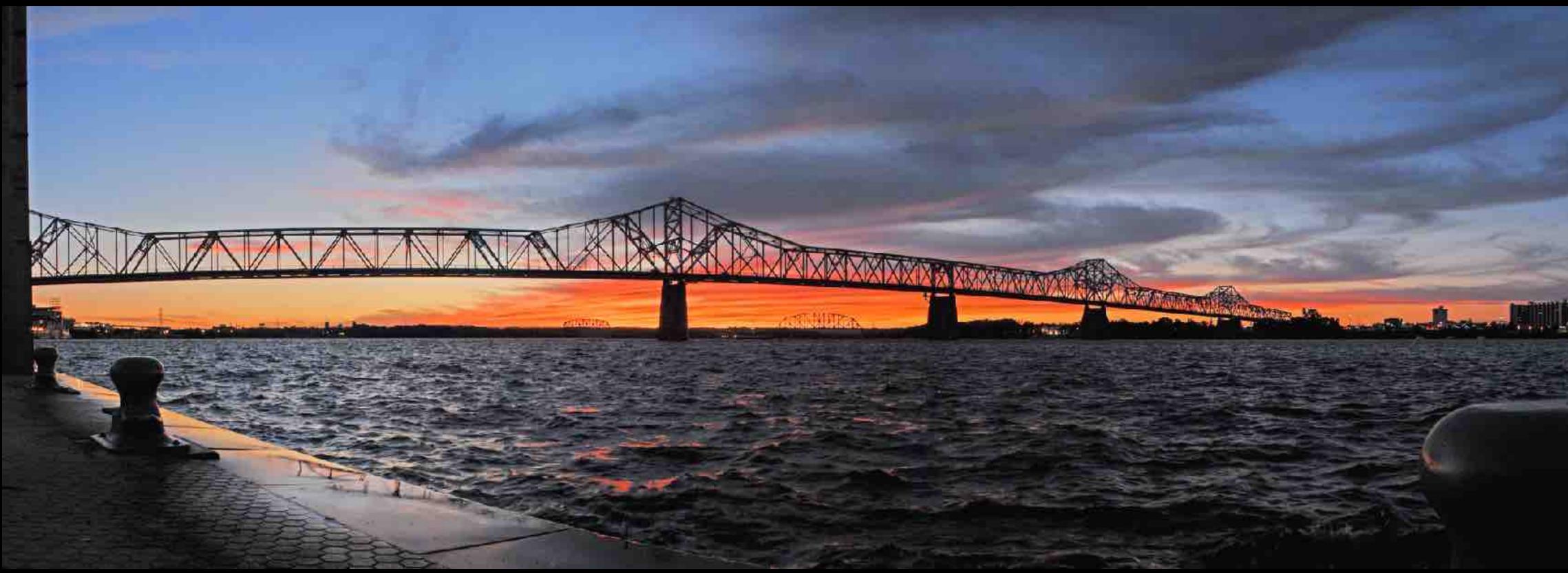


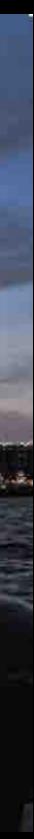




## > 360° Pano





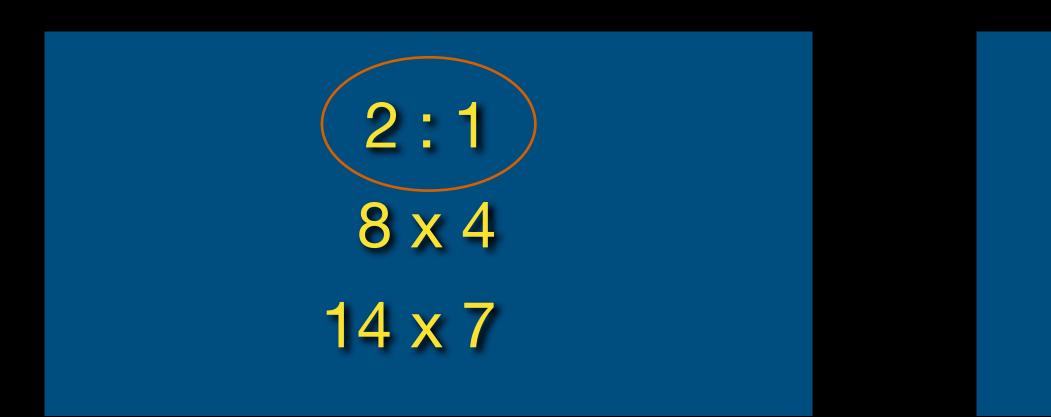


# Capturing Ima Cropping

Capturing Images for Panorama

Cropping a Single Image

## Panoramic Proportions





3:1 12 x 4 21 x 7

5:1 20 x 4 35 x 7

Nikon D810 12-24 Zoom @ 70mm 1/30 sec, *f* 10, ISO 64



### ~3:1

Nikon D810 12-24 Zoom @ 24mm 1sec, *f*7.1, ISO 64

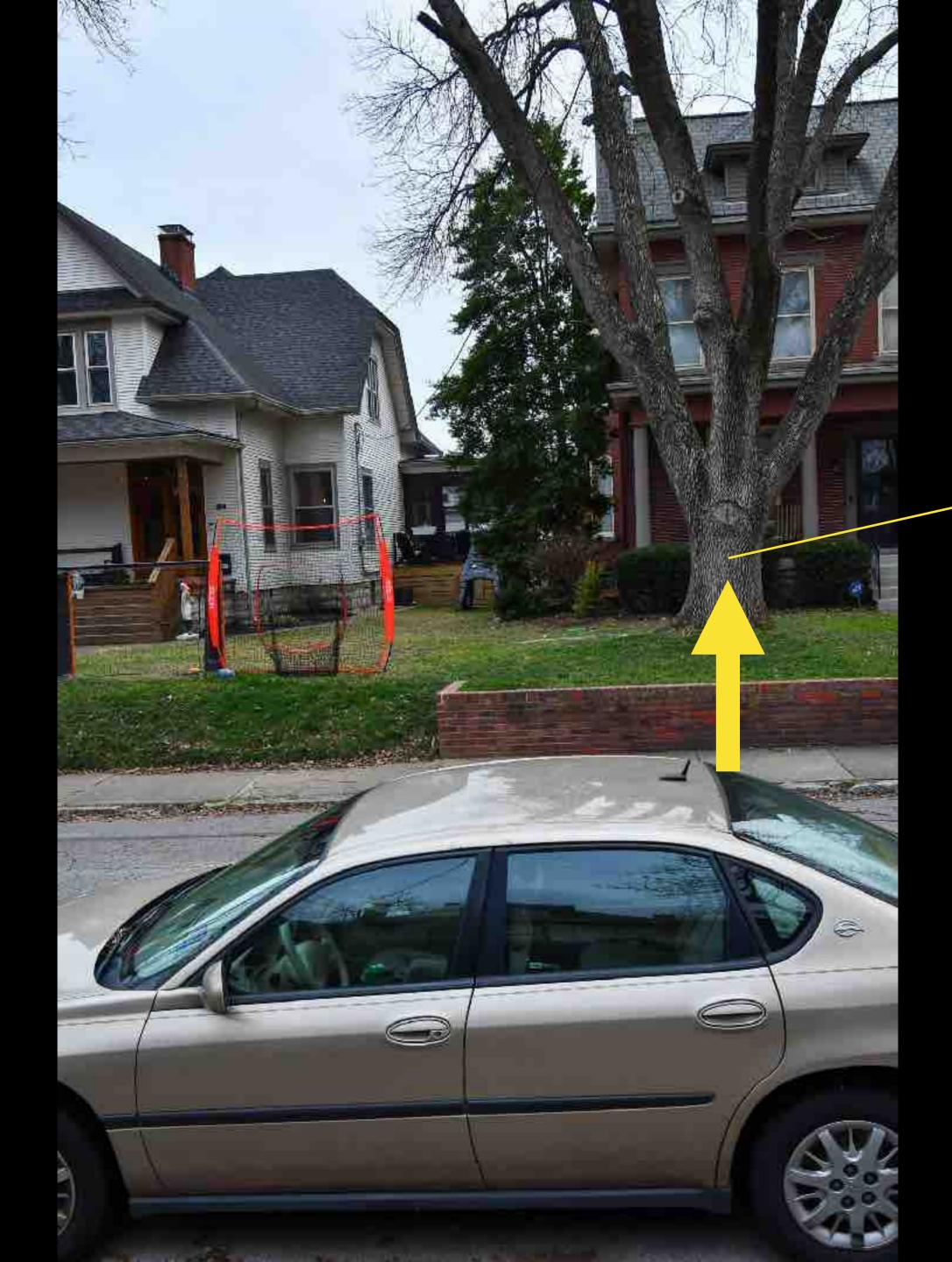




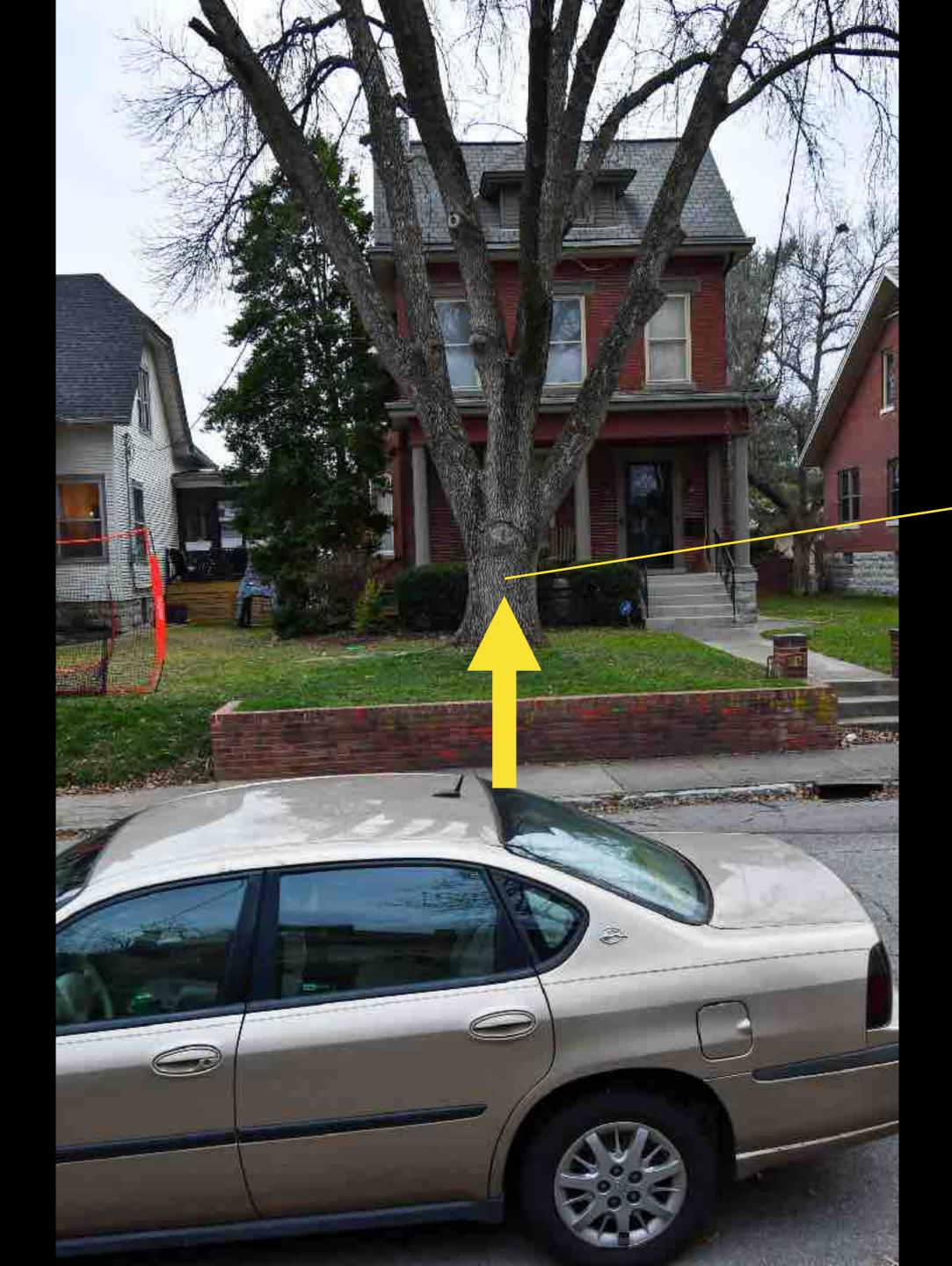
Capturing Images for Panorama

Hand Held

# Overlapping Images. 30%



## Visual reference point.



## Visual reference point.



## Visual reference point.

### New reference point.

# int. nt.



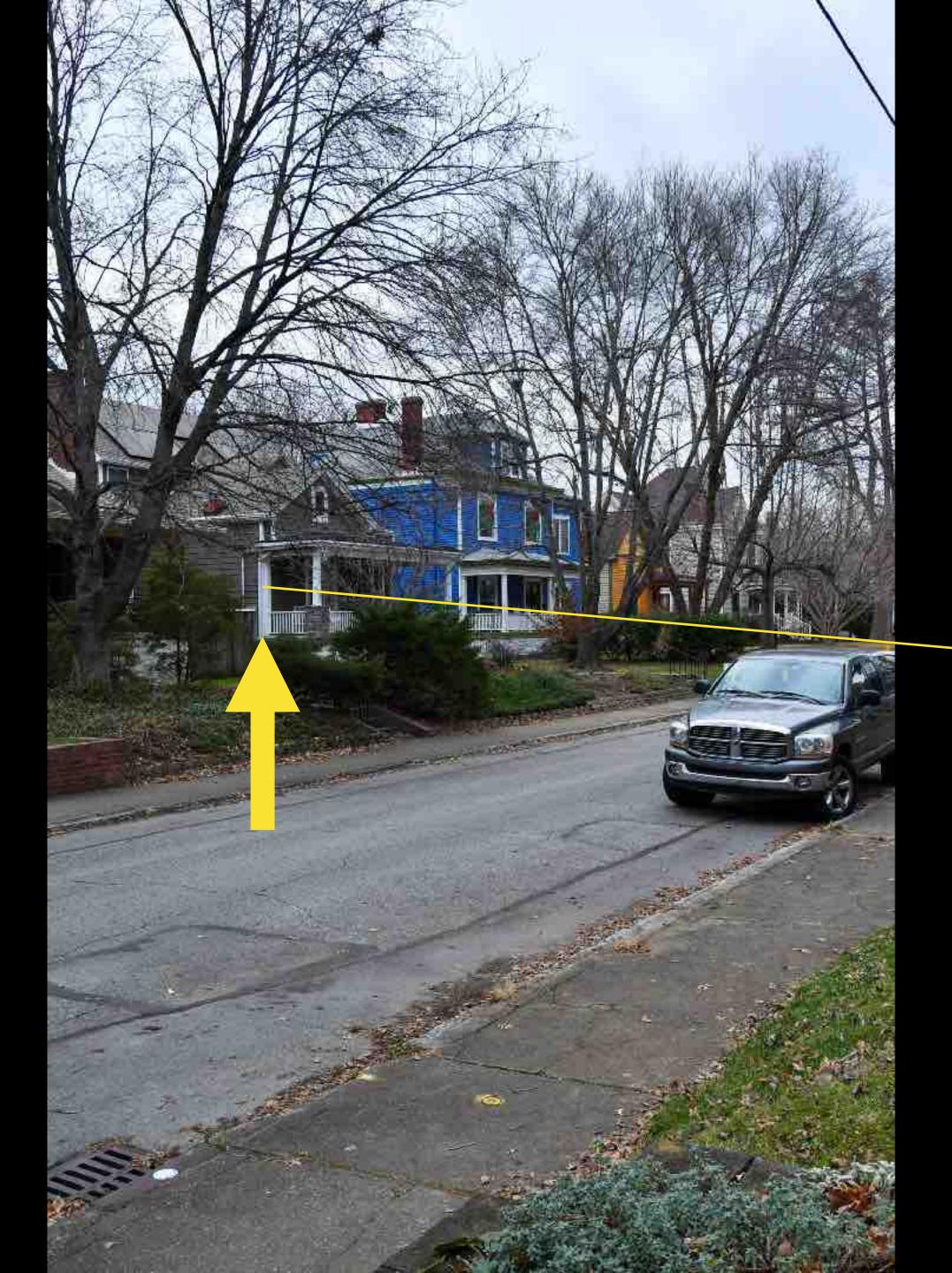














# Pivoting at Sensor creates parallax.





In panoramic photography: When the relative position of a subject changes while pivoting the camera. Parallax error occurs when objects in the image are not at the same place relative to each other.

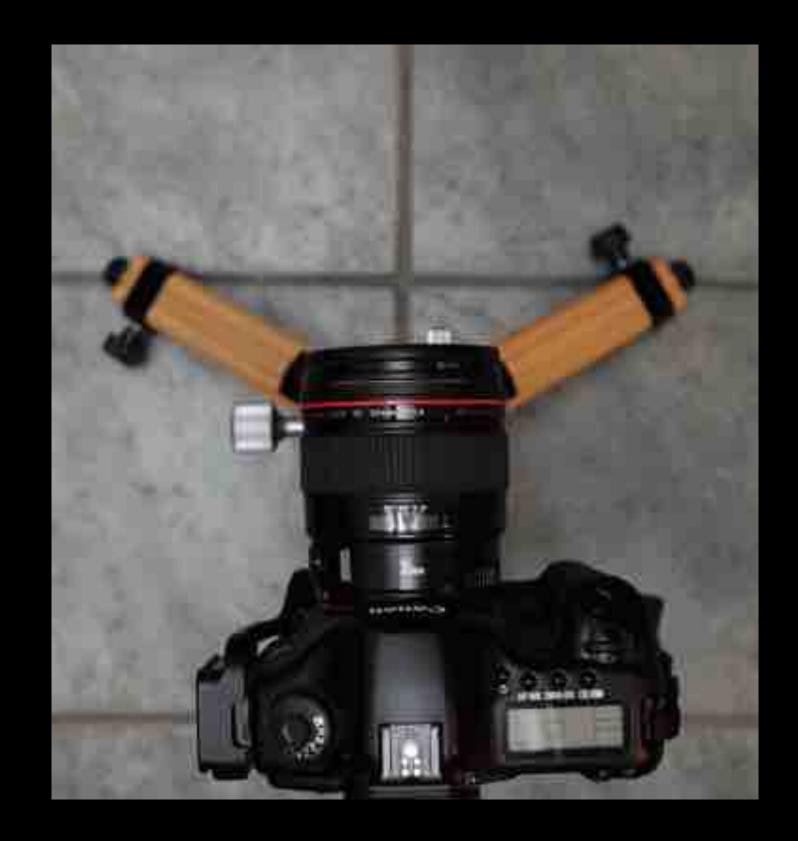
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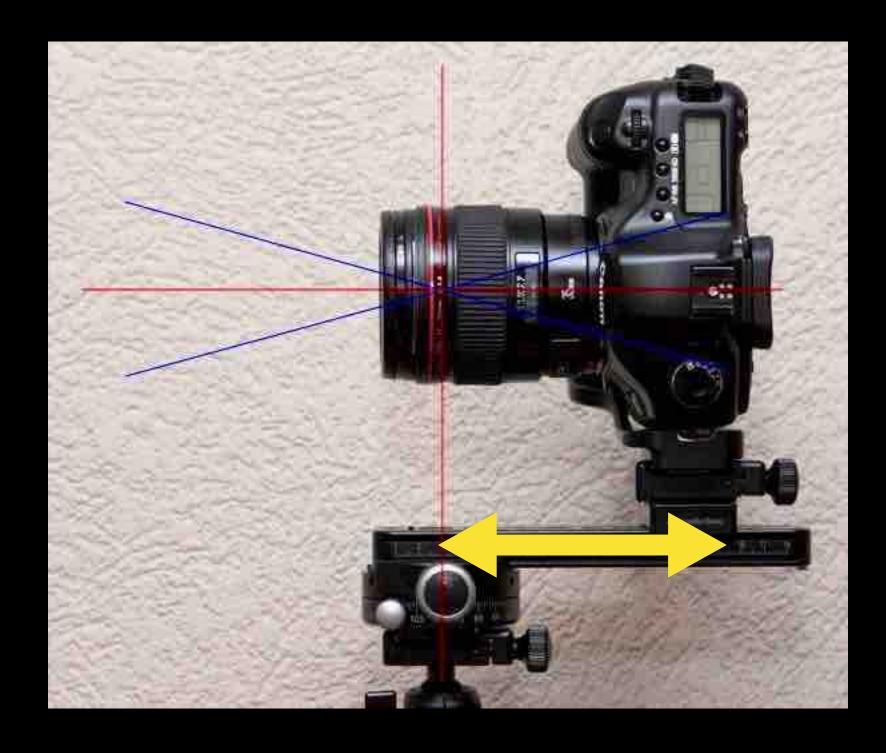
## Finding the Nodal Point **Center Alignment**



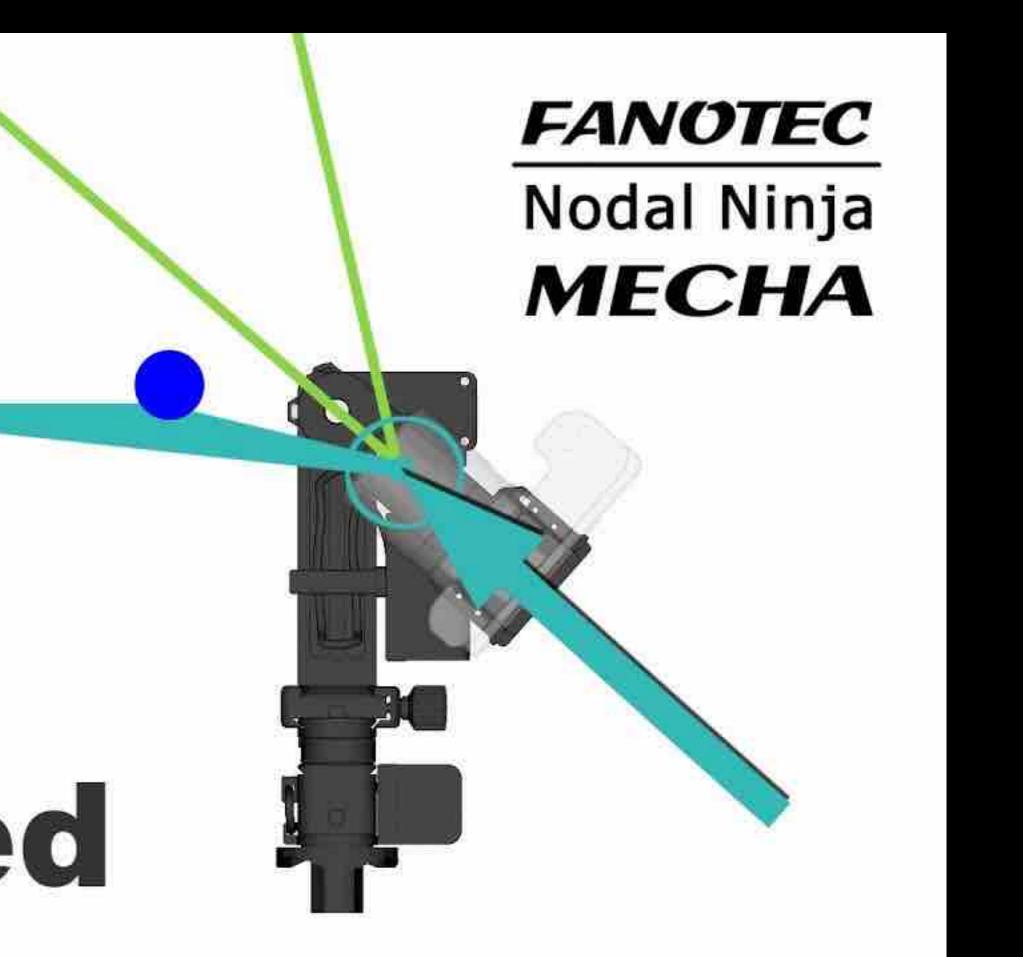
# Pivoting at Pupil prevents parallax.







# Parallax error explained

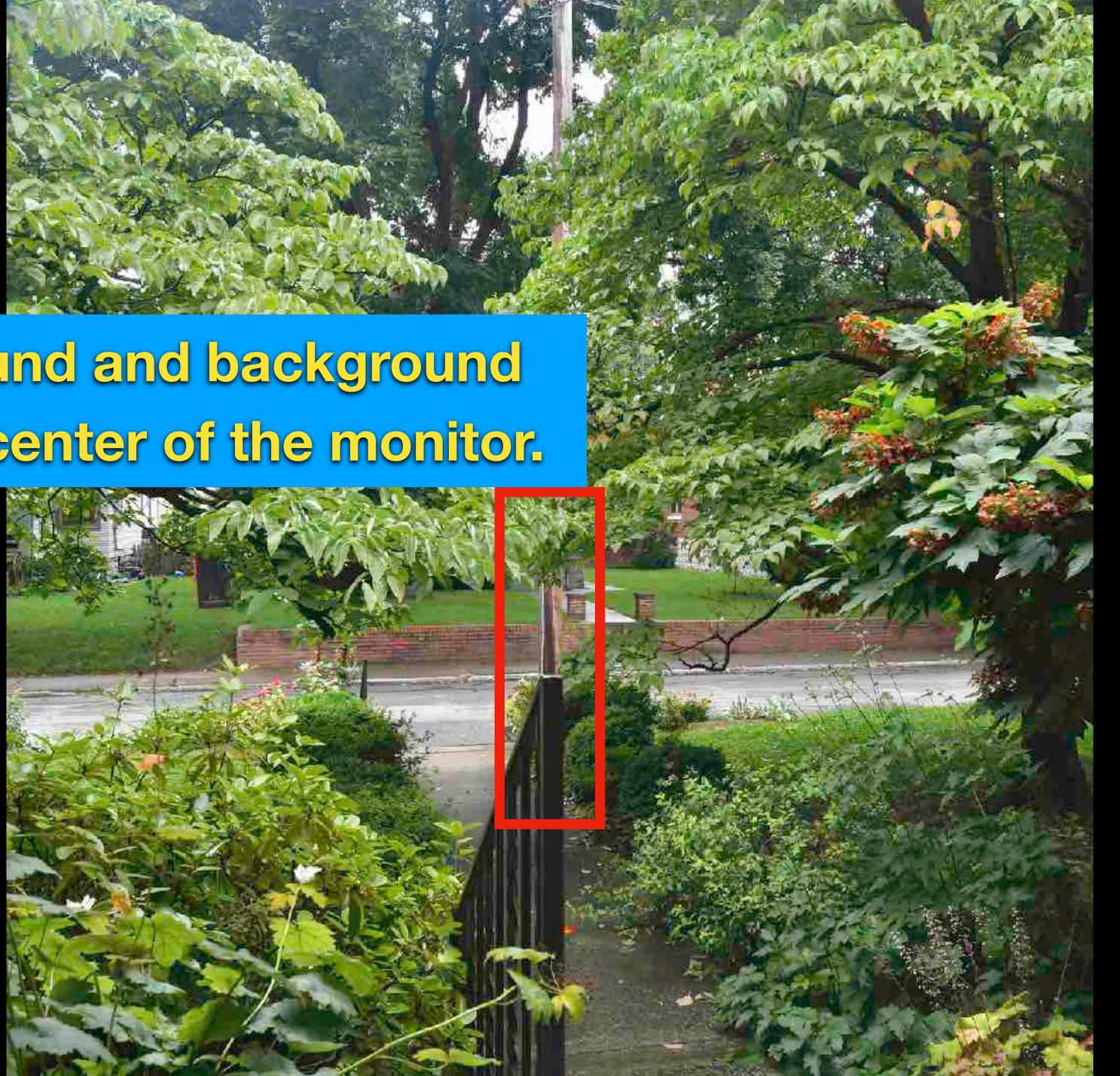


Capturing Images for Panorama

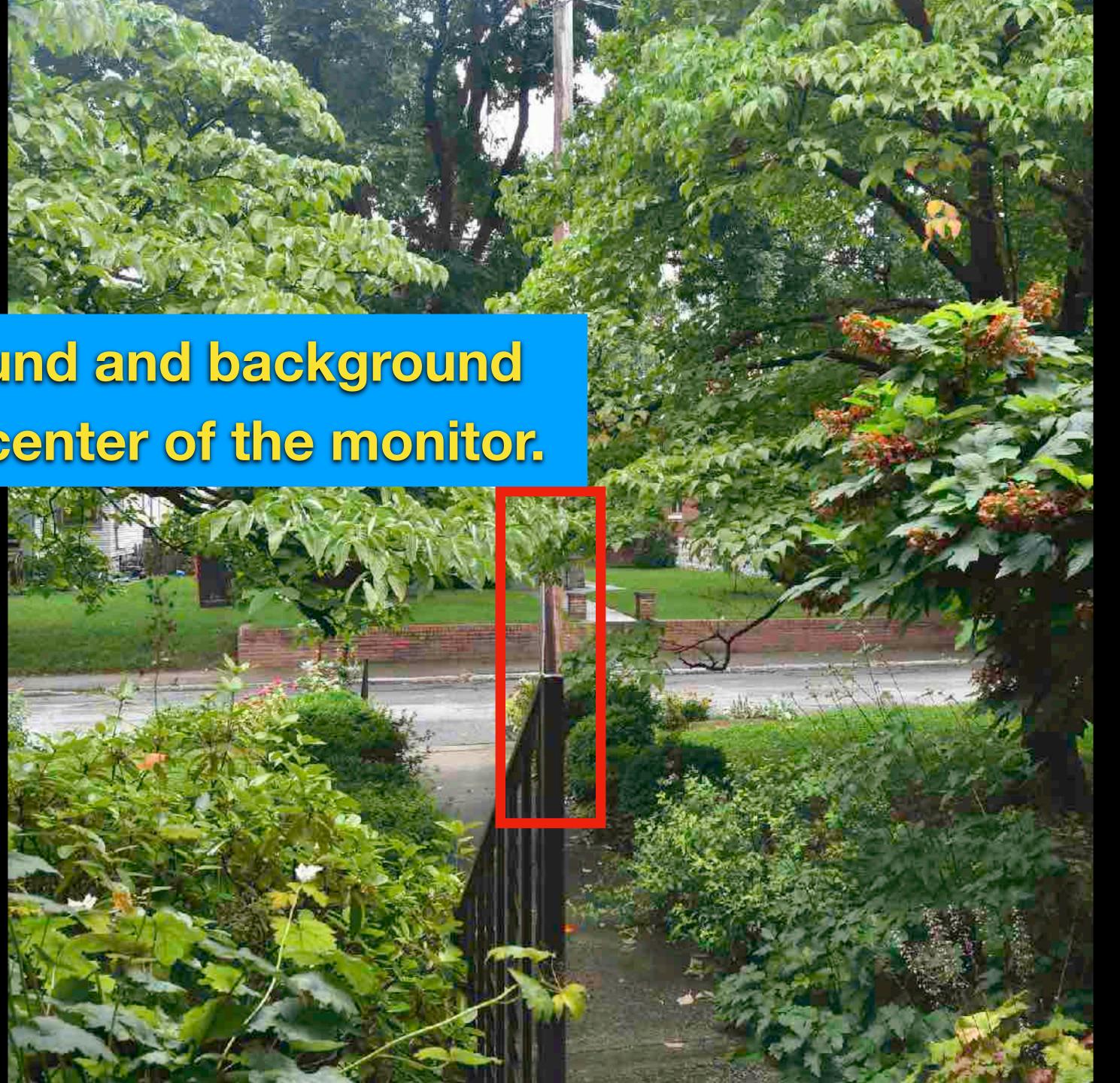
Pano Bracket

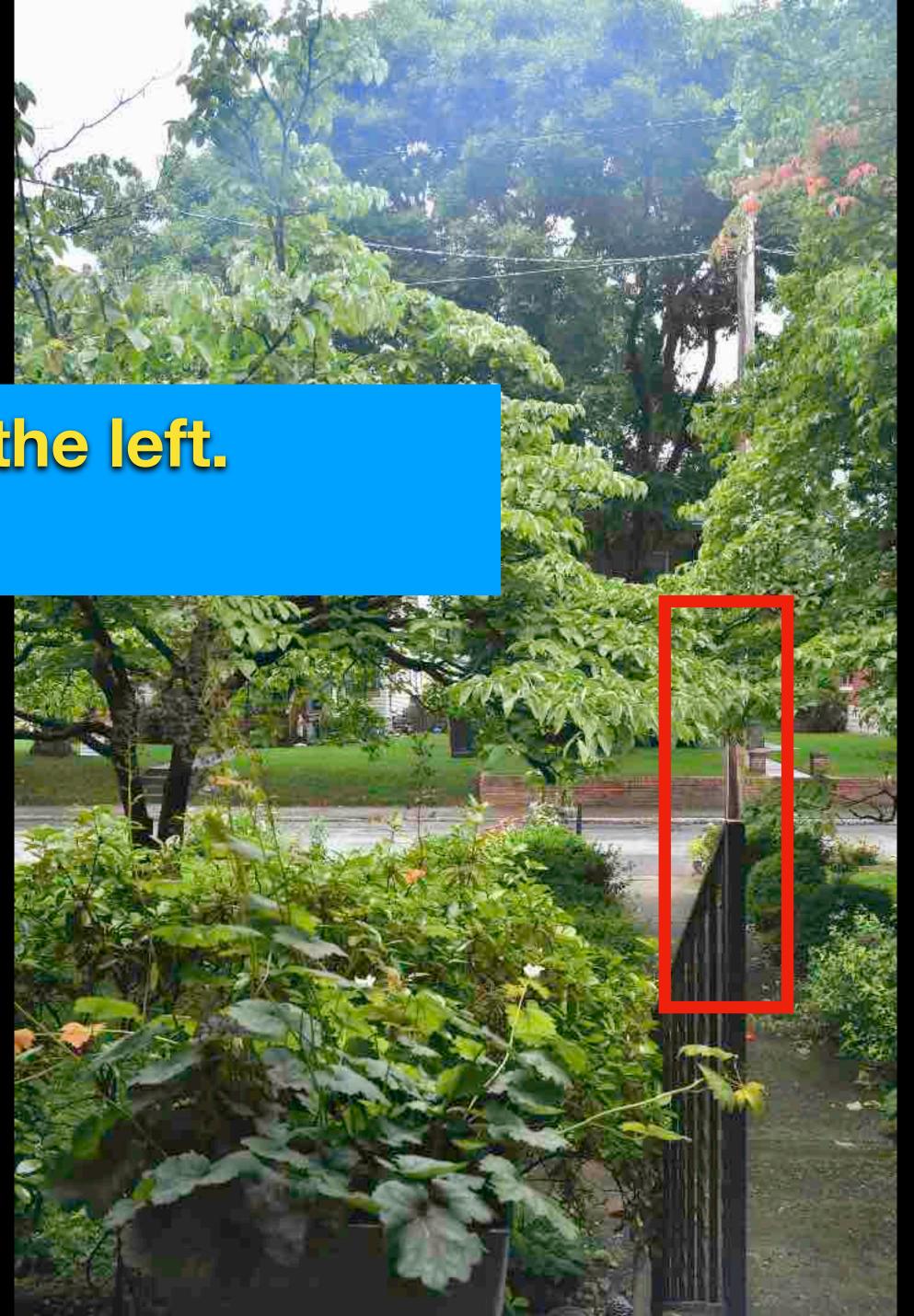
# Finding the Nodal Point with Live View

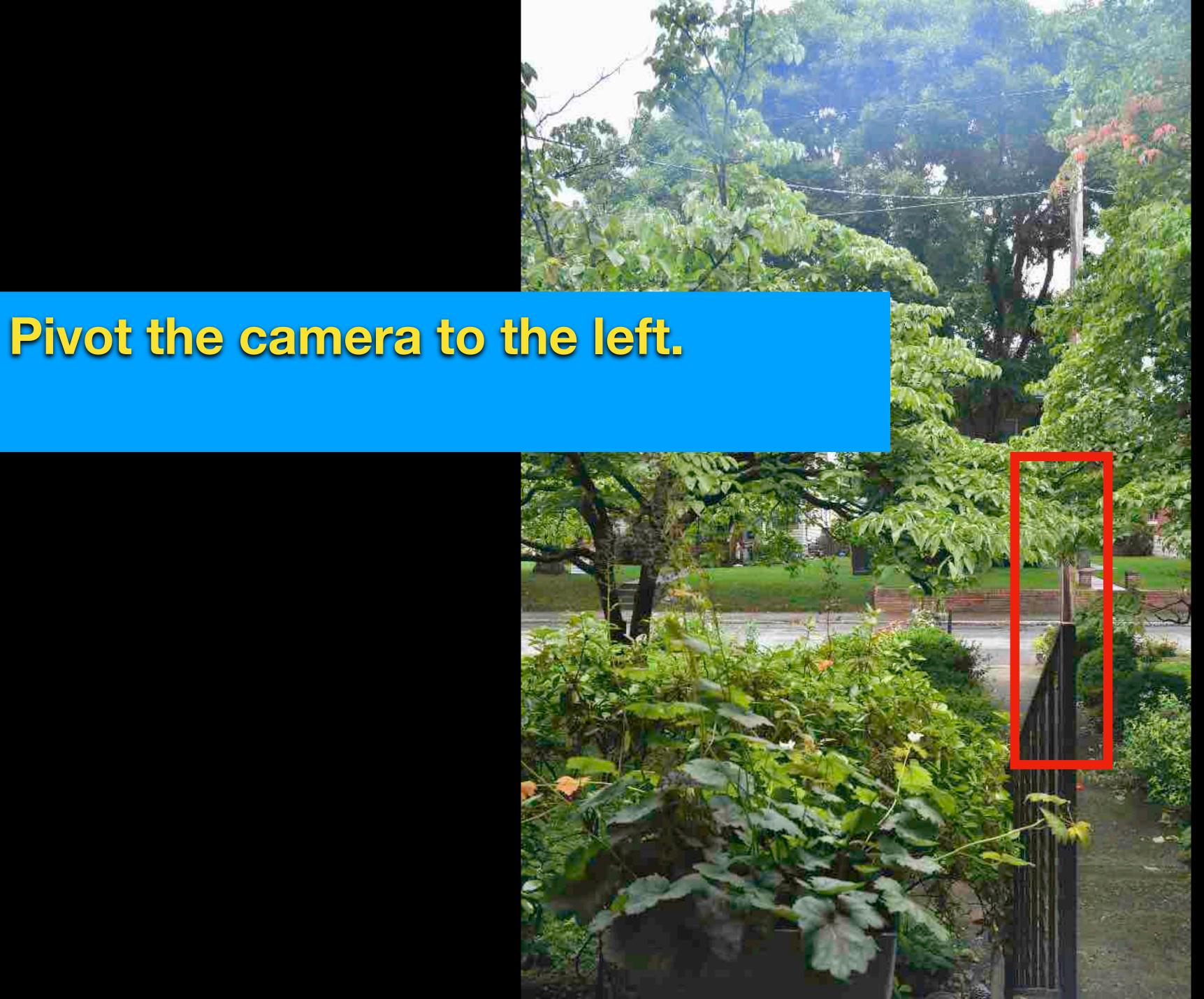


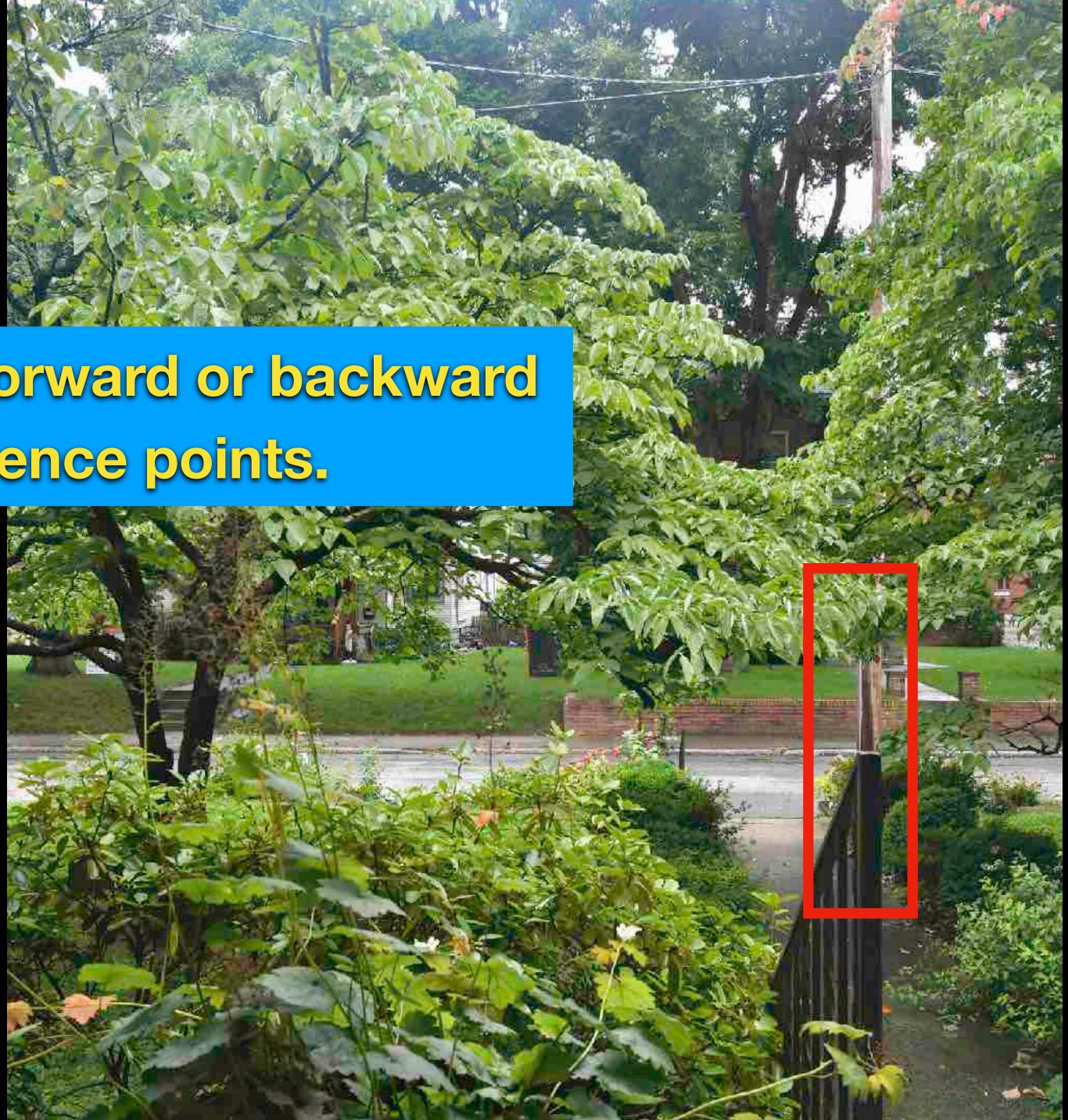


## Align foreground and background points in the center of the monitor.

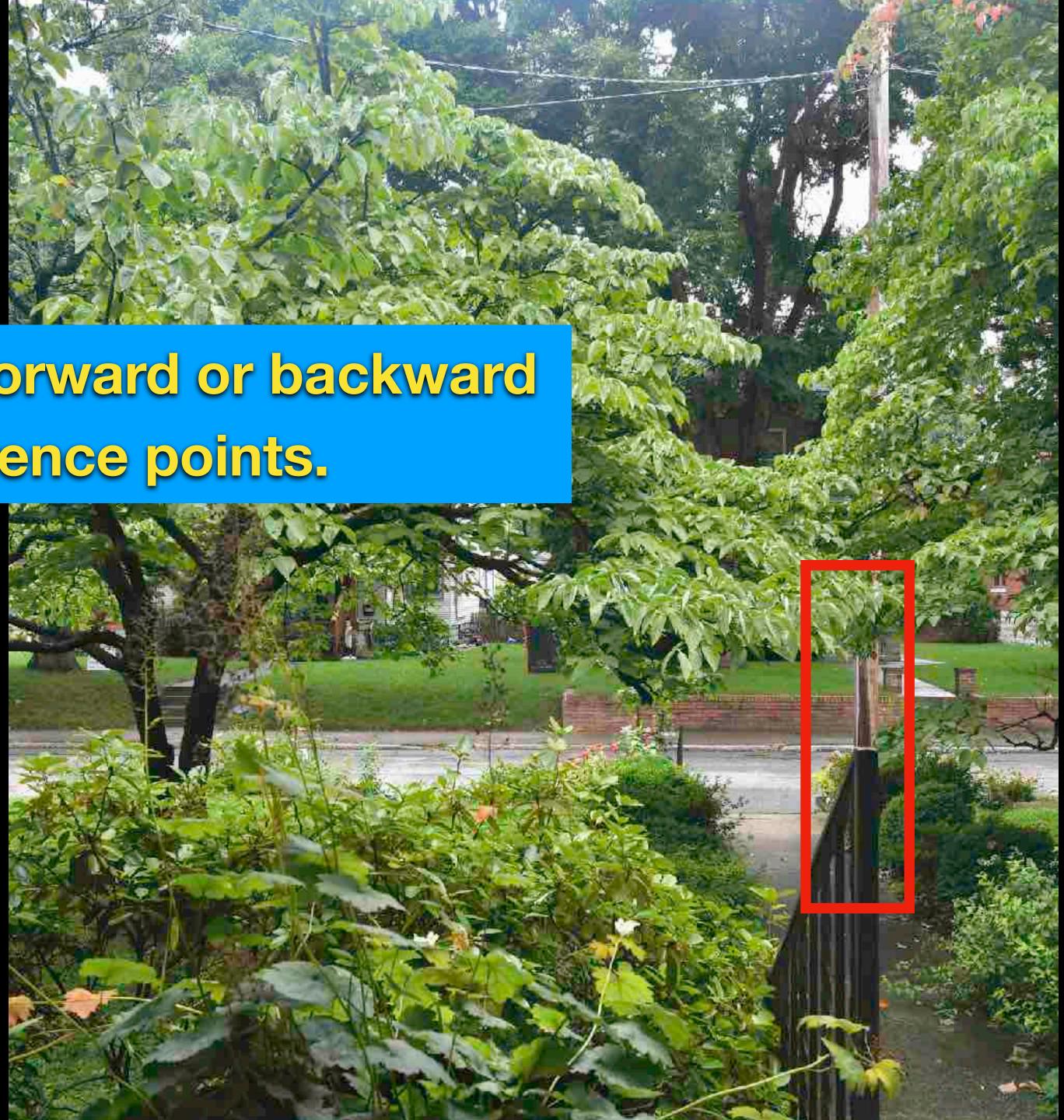




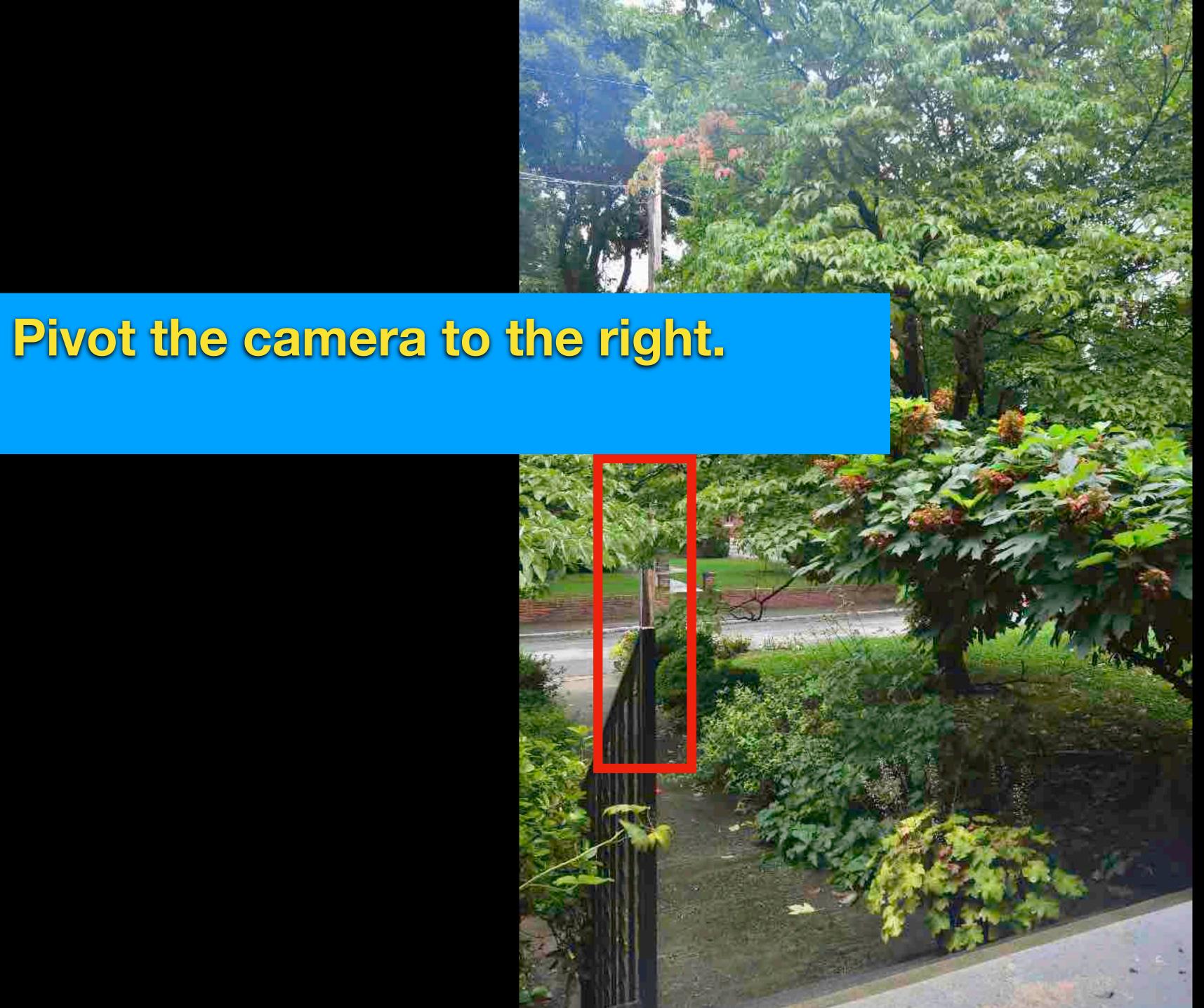


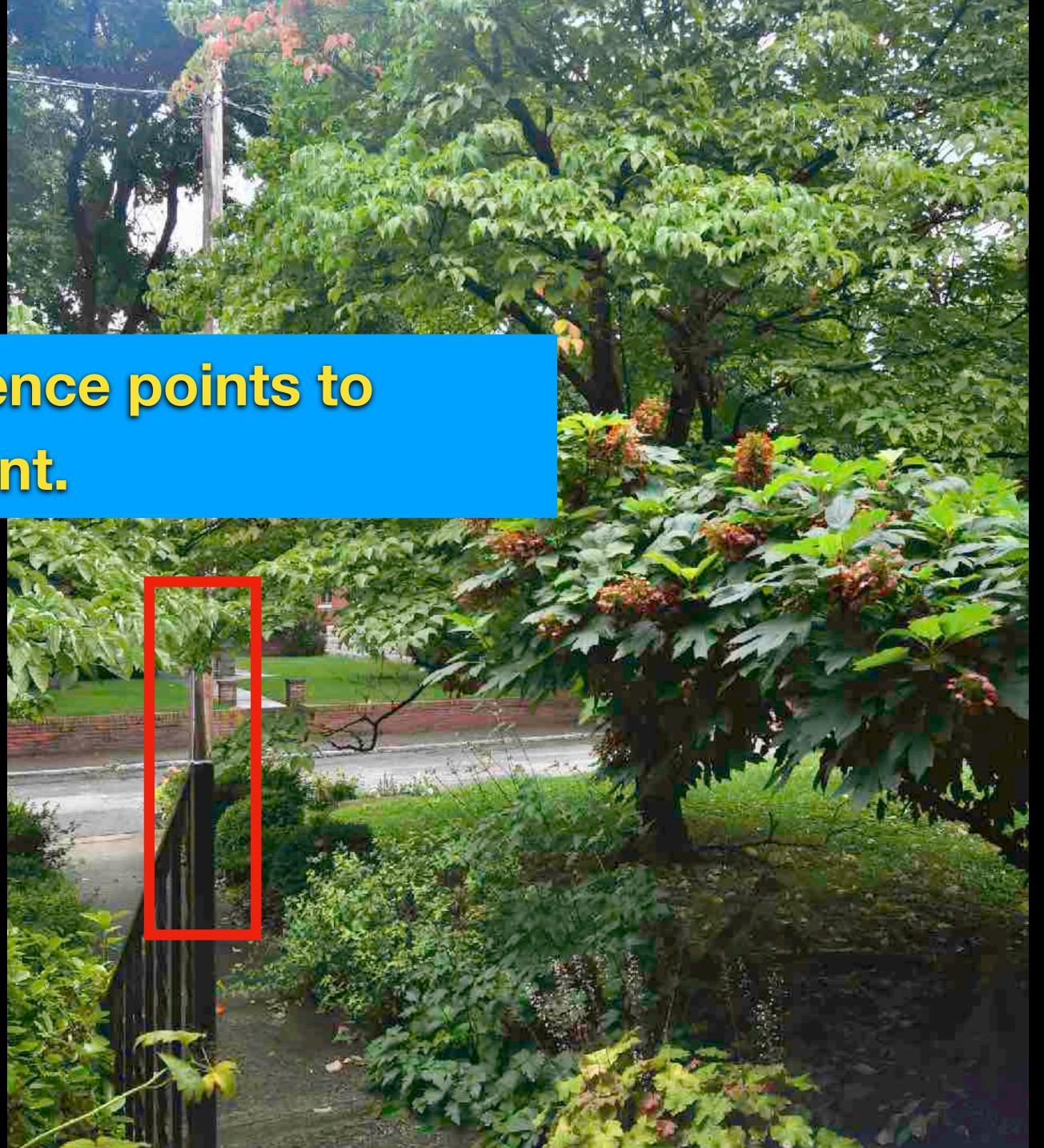


# Slide camera forward or backward to realign reference points.

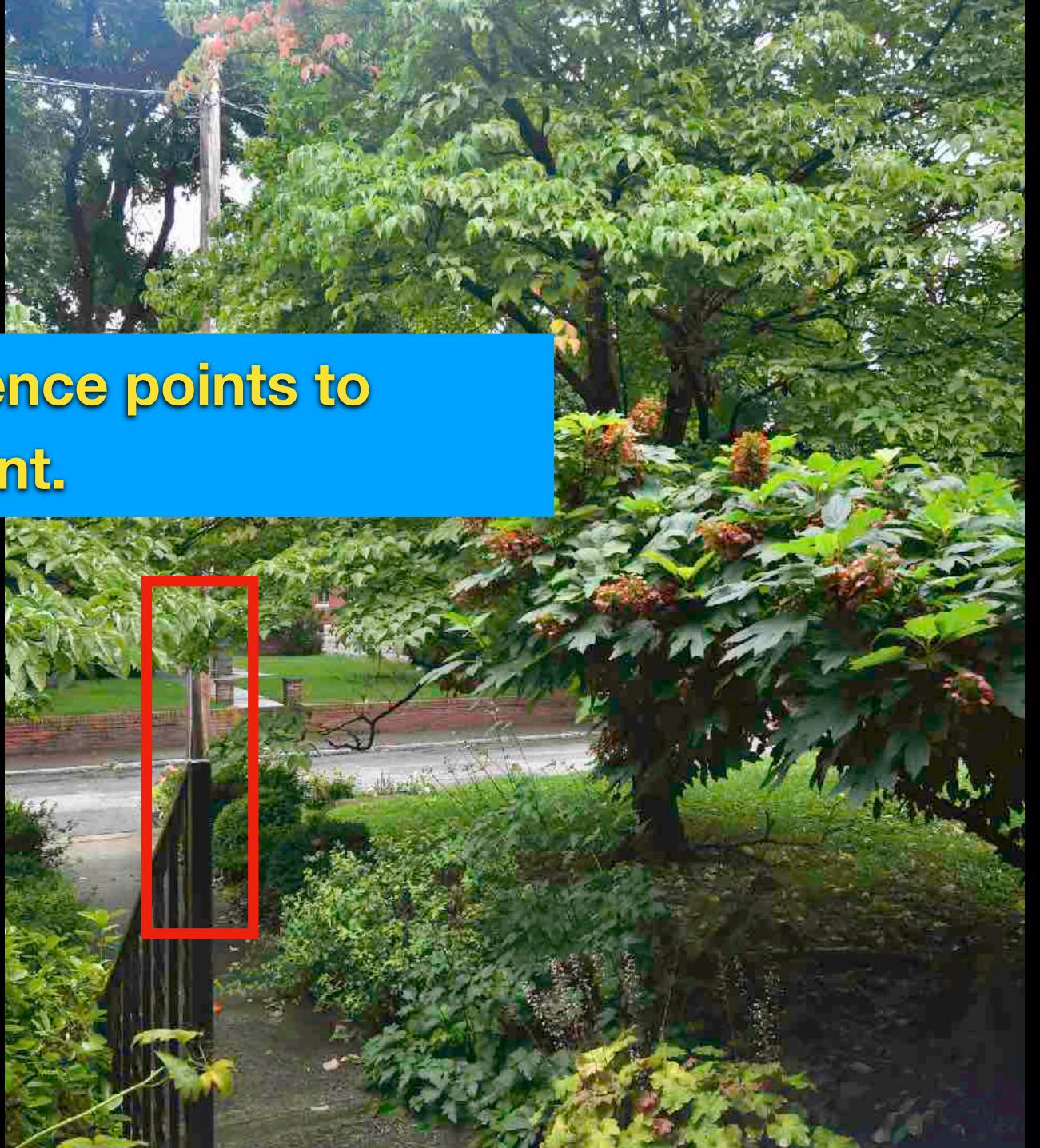


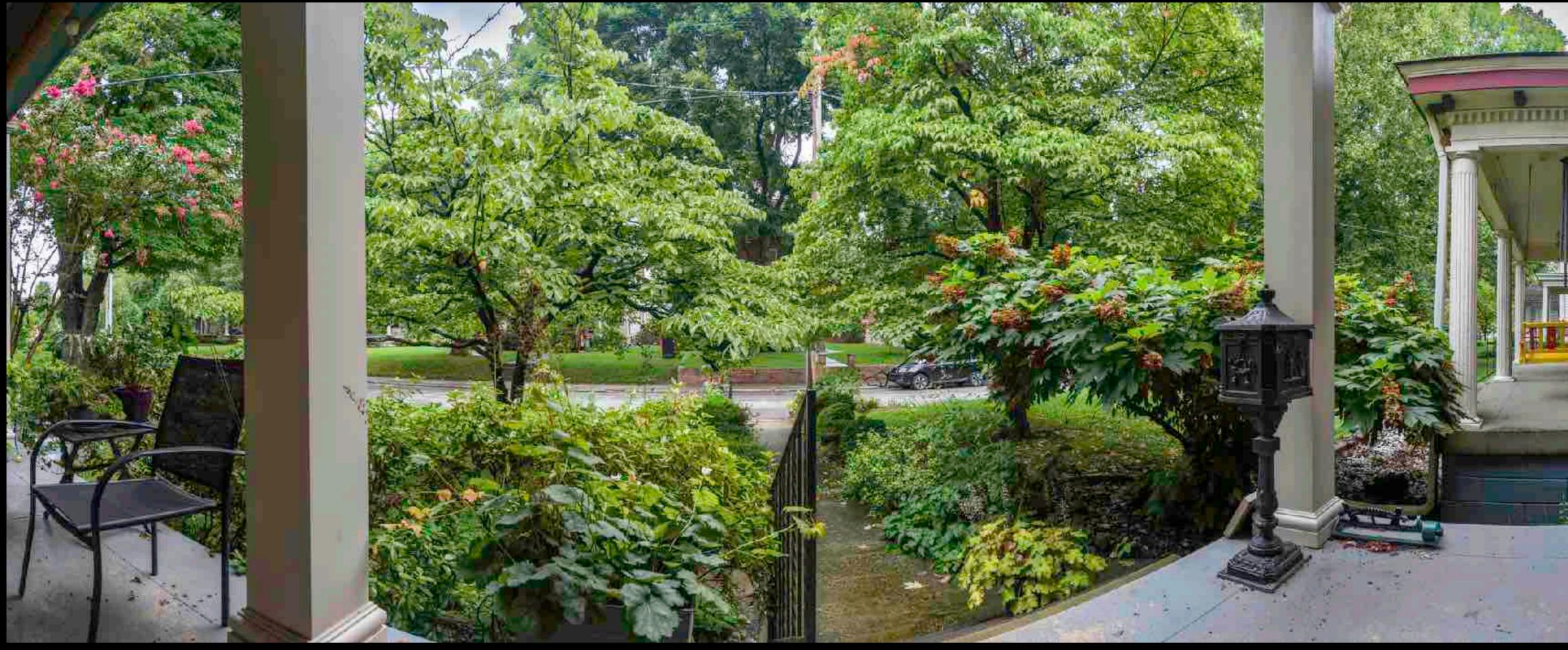






# Check the reference points to confirm alignment.



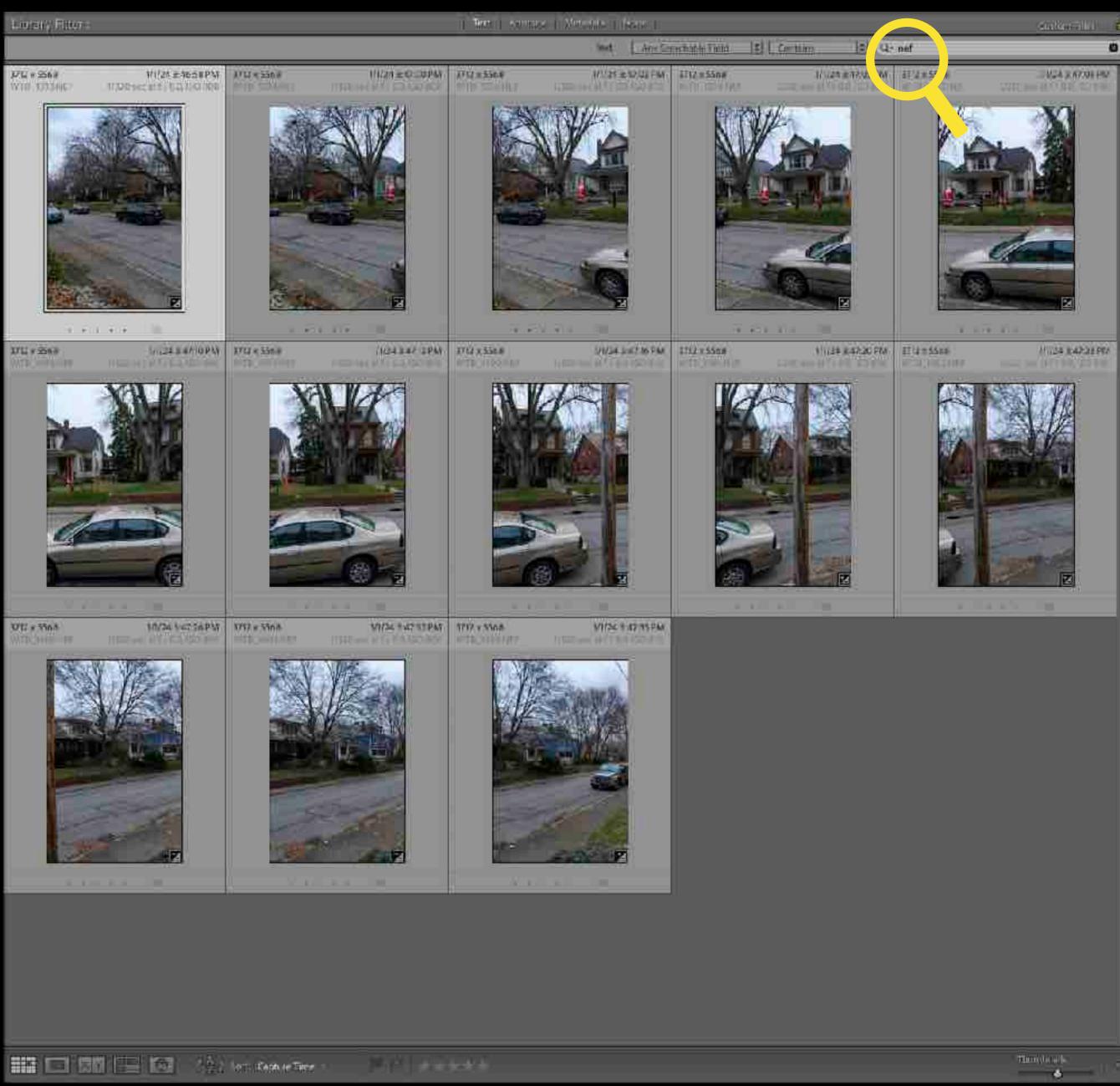




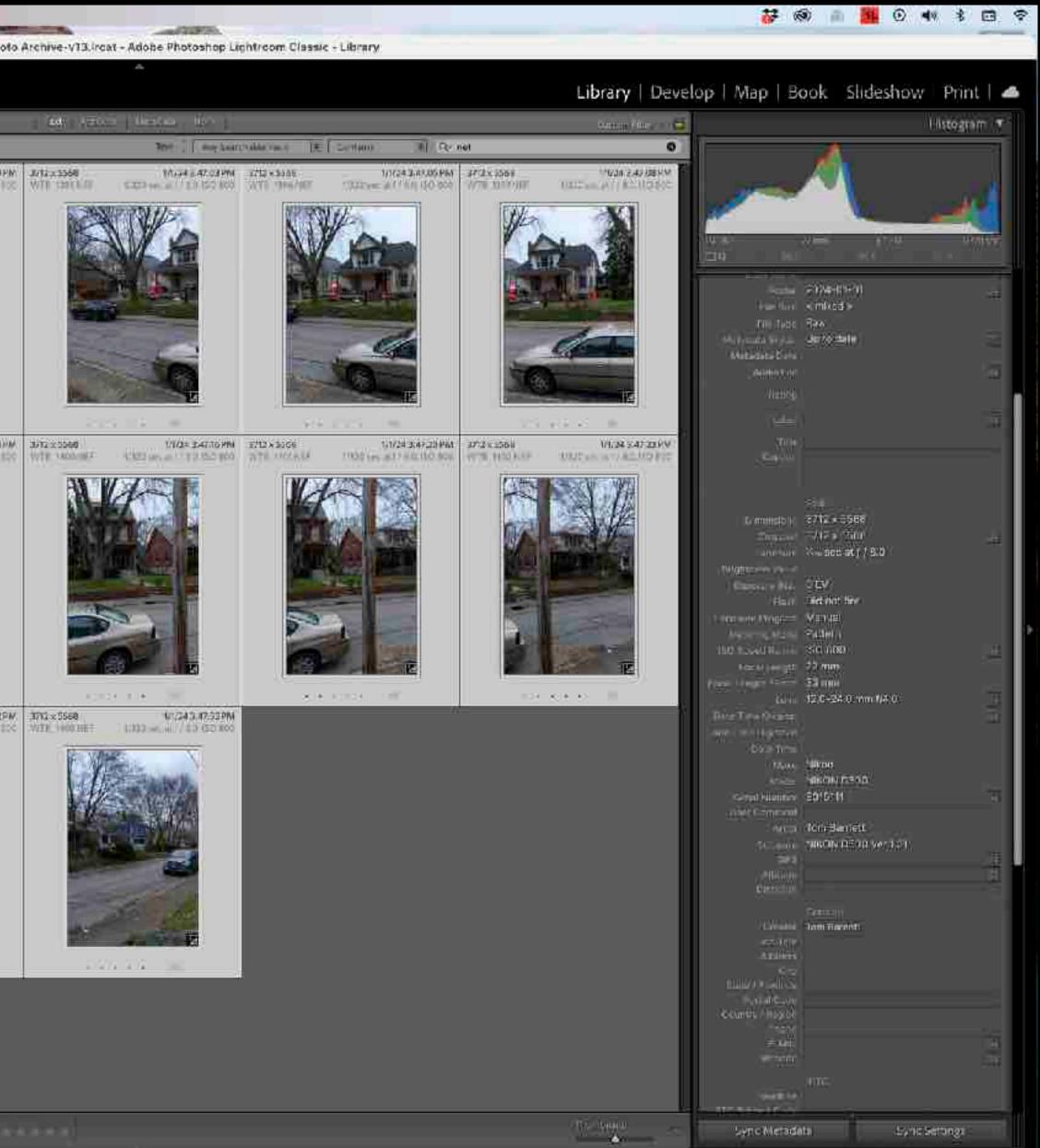
Merging Images in Lightroom

### Photo Merge

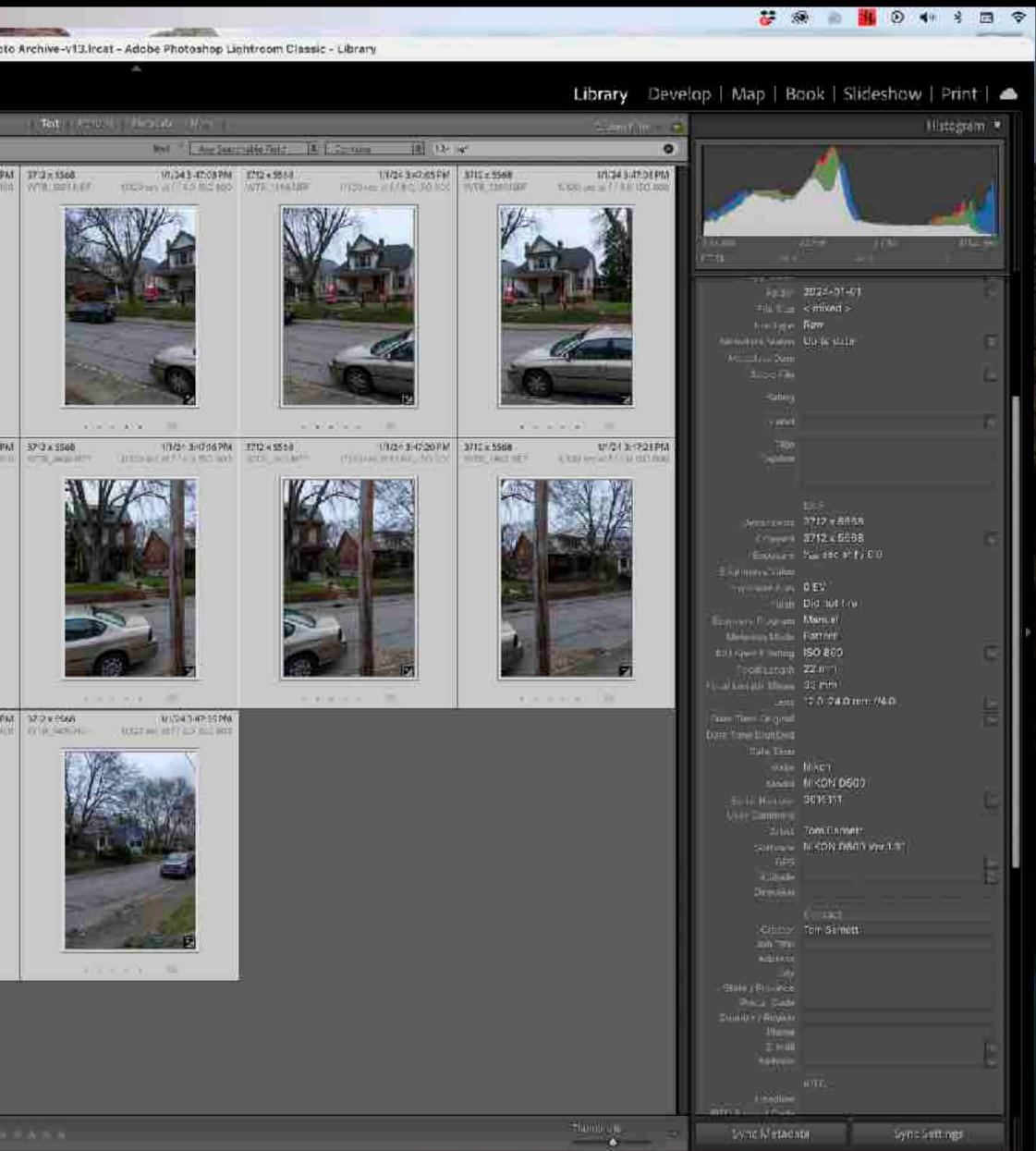
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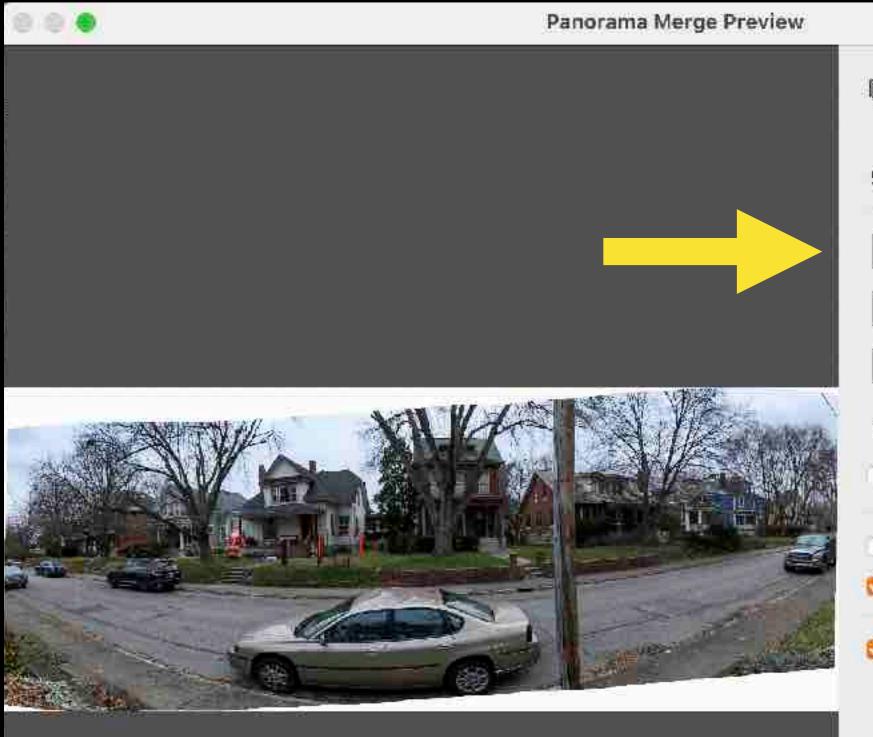


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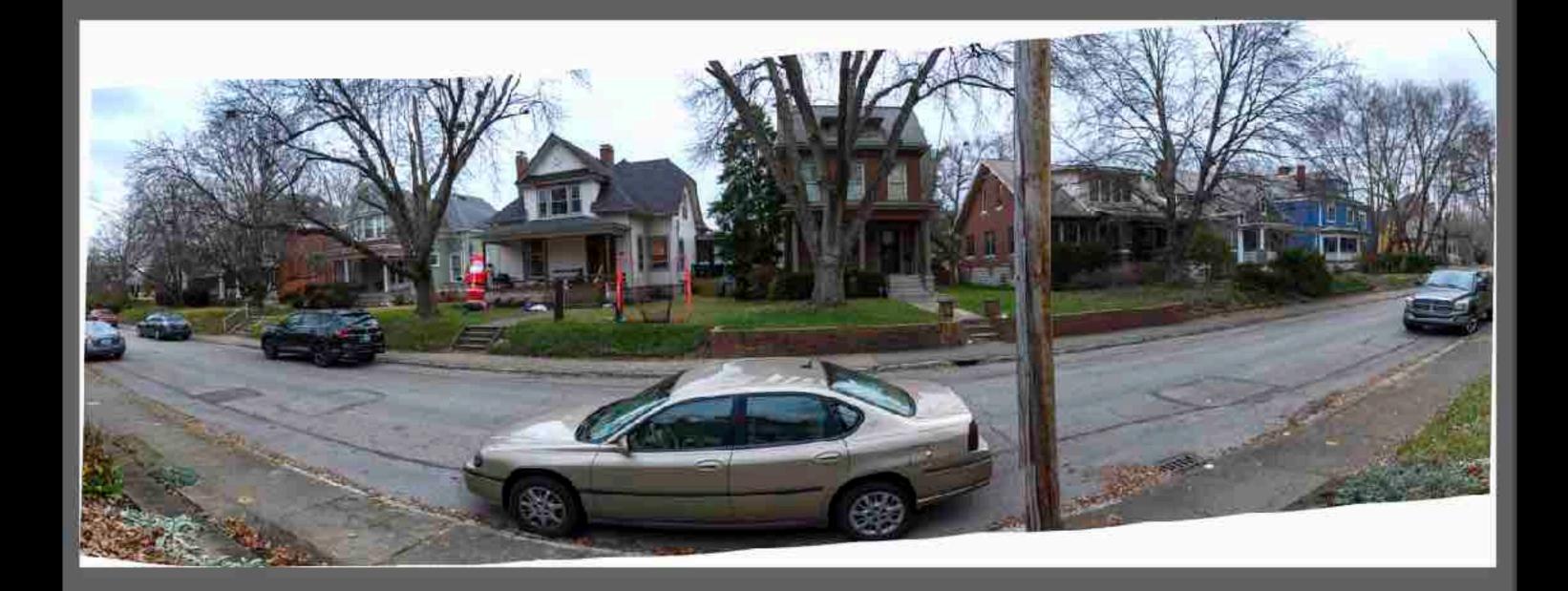


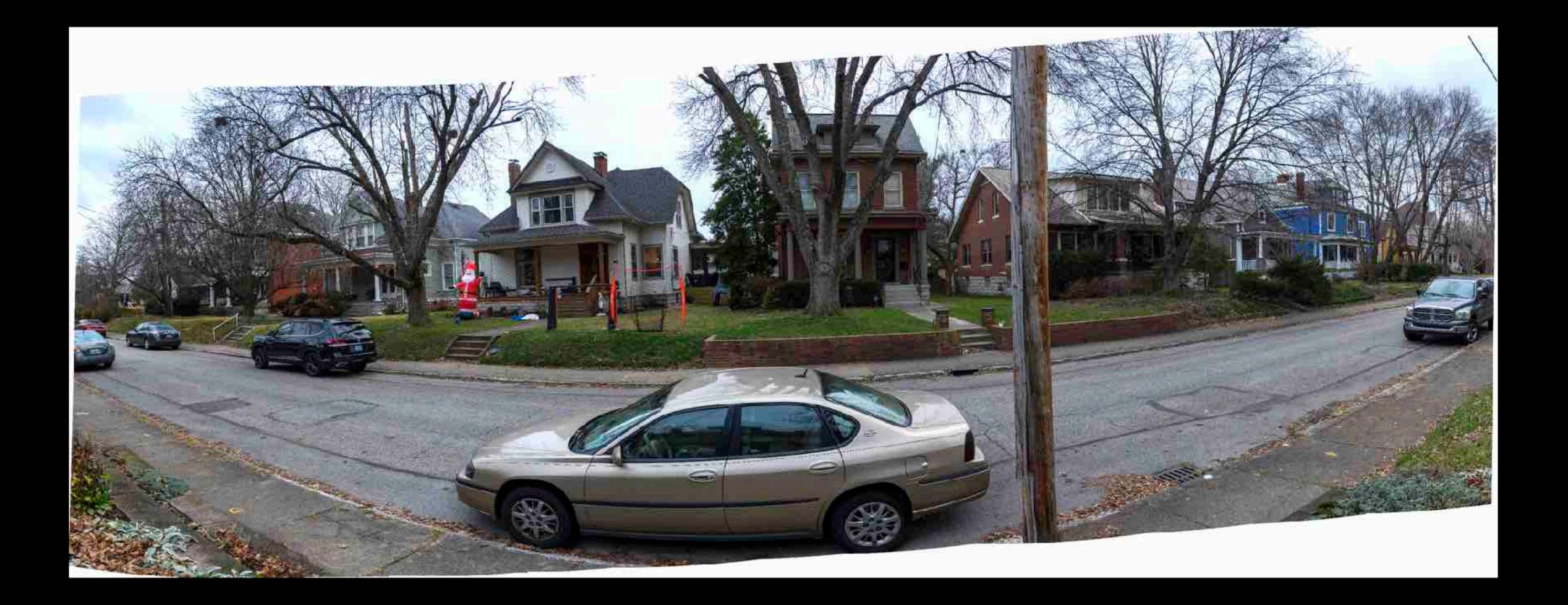


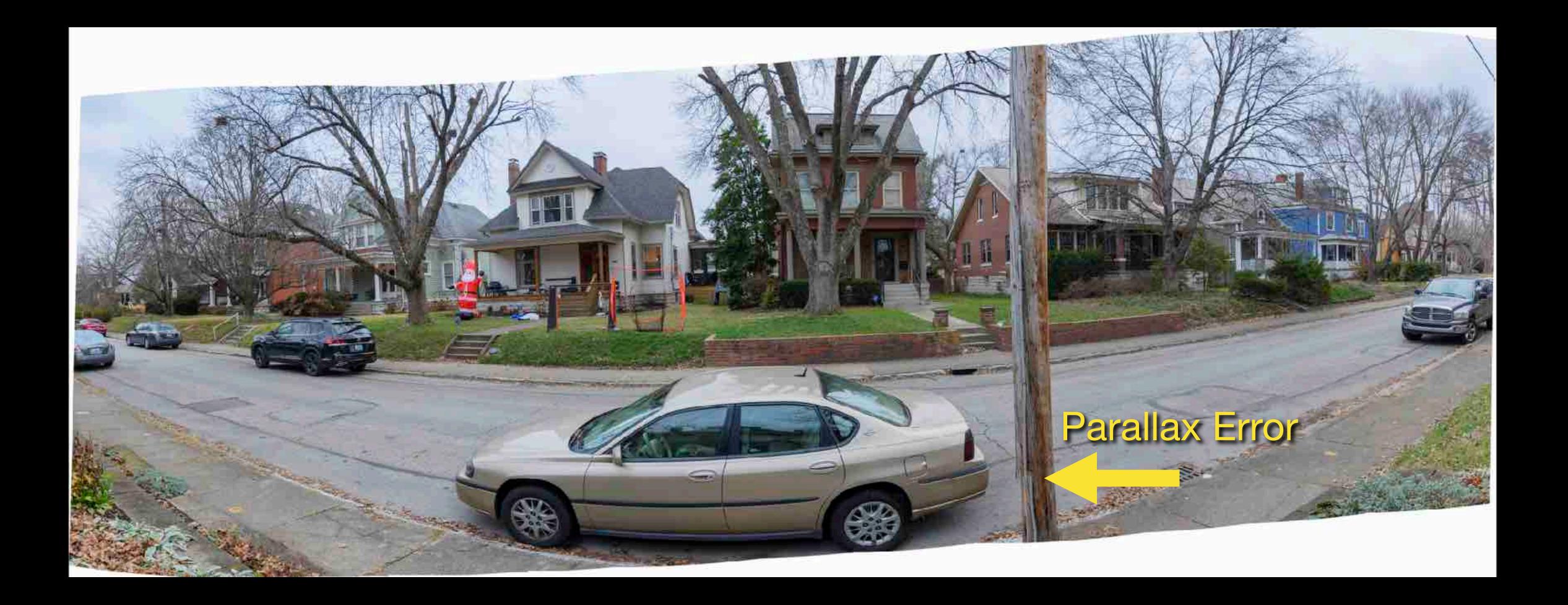


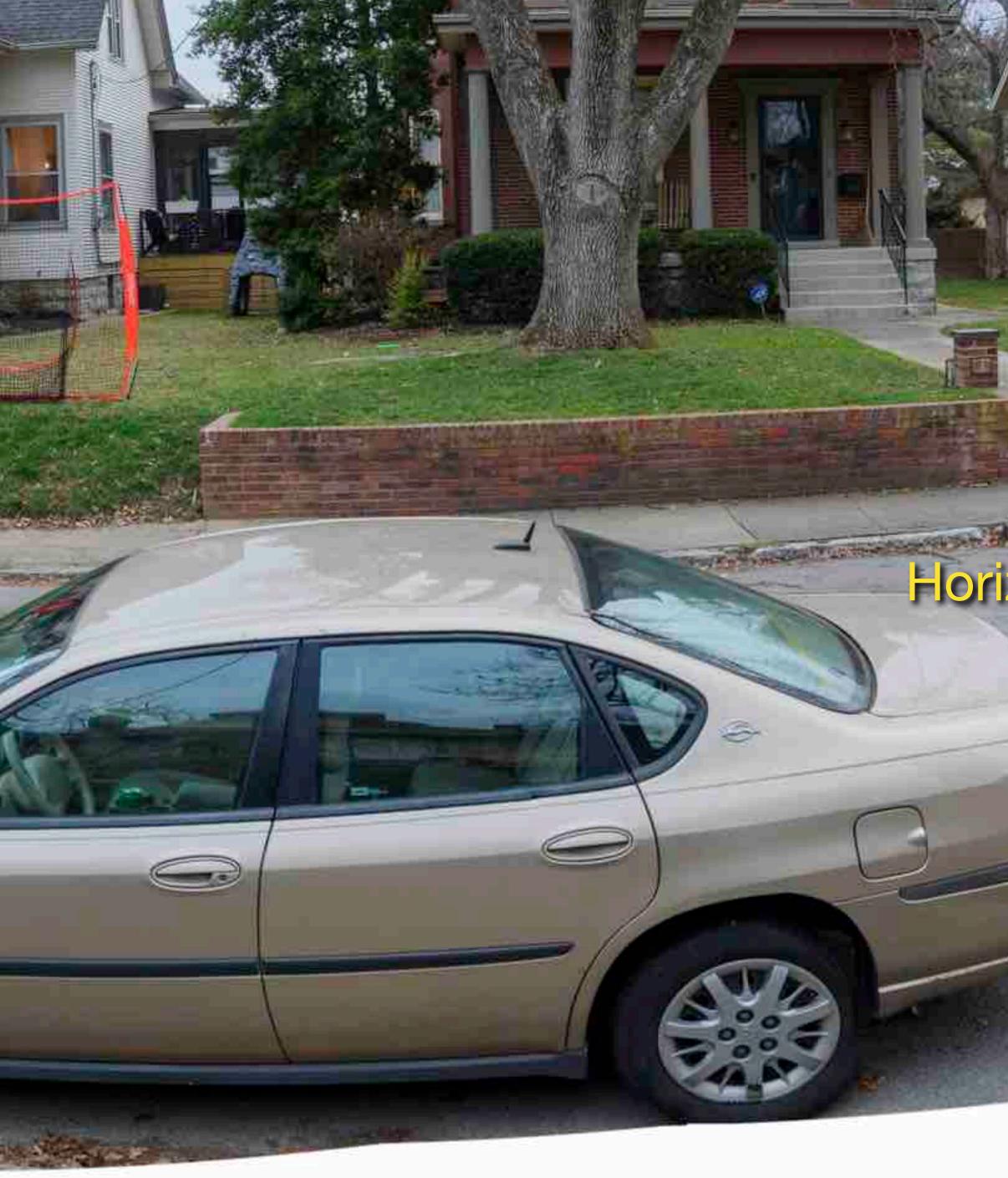
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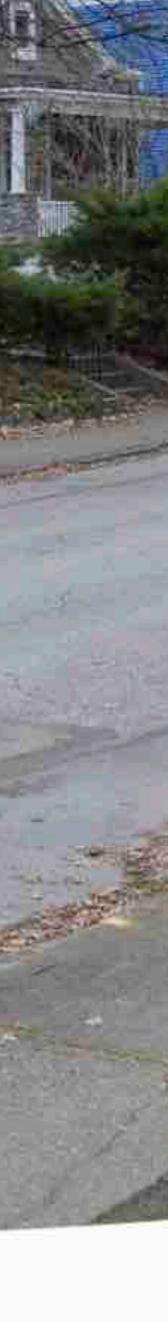
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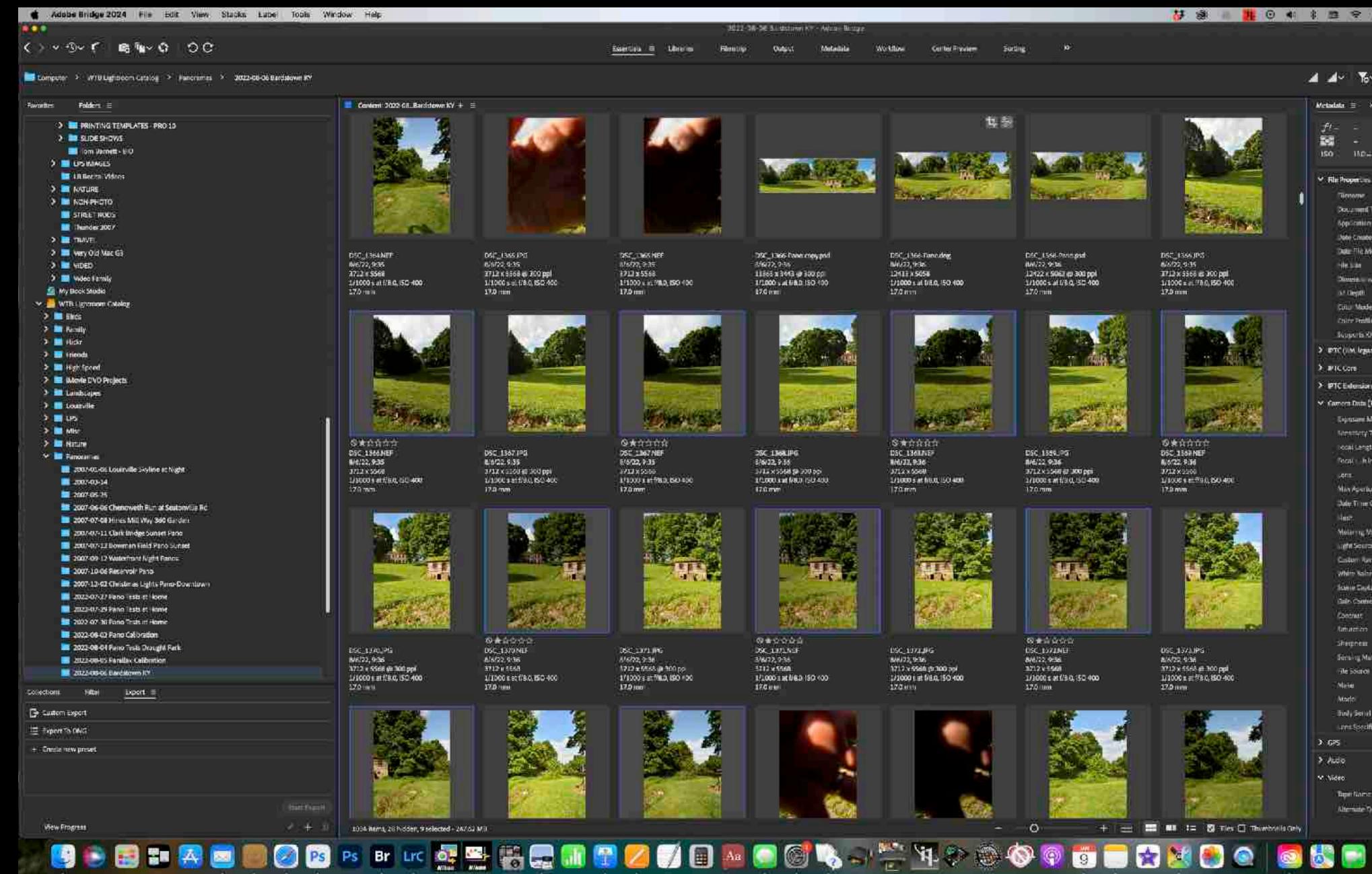
## Parallax Errors

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# Vertical offset



Merging Images in Photoshop



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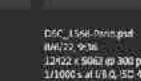
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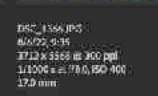
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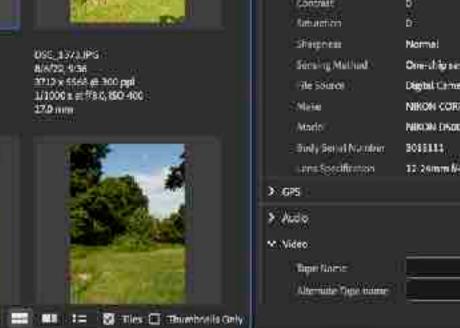
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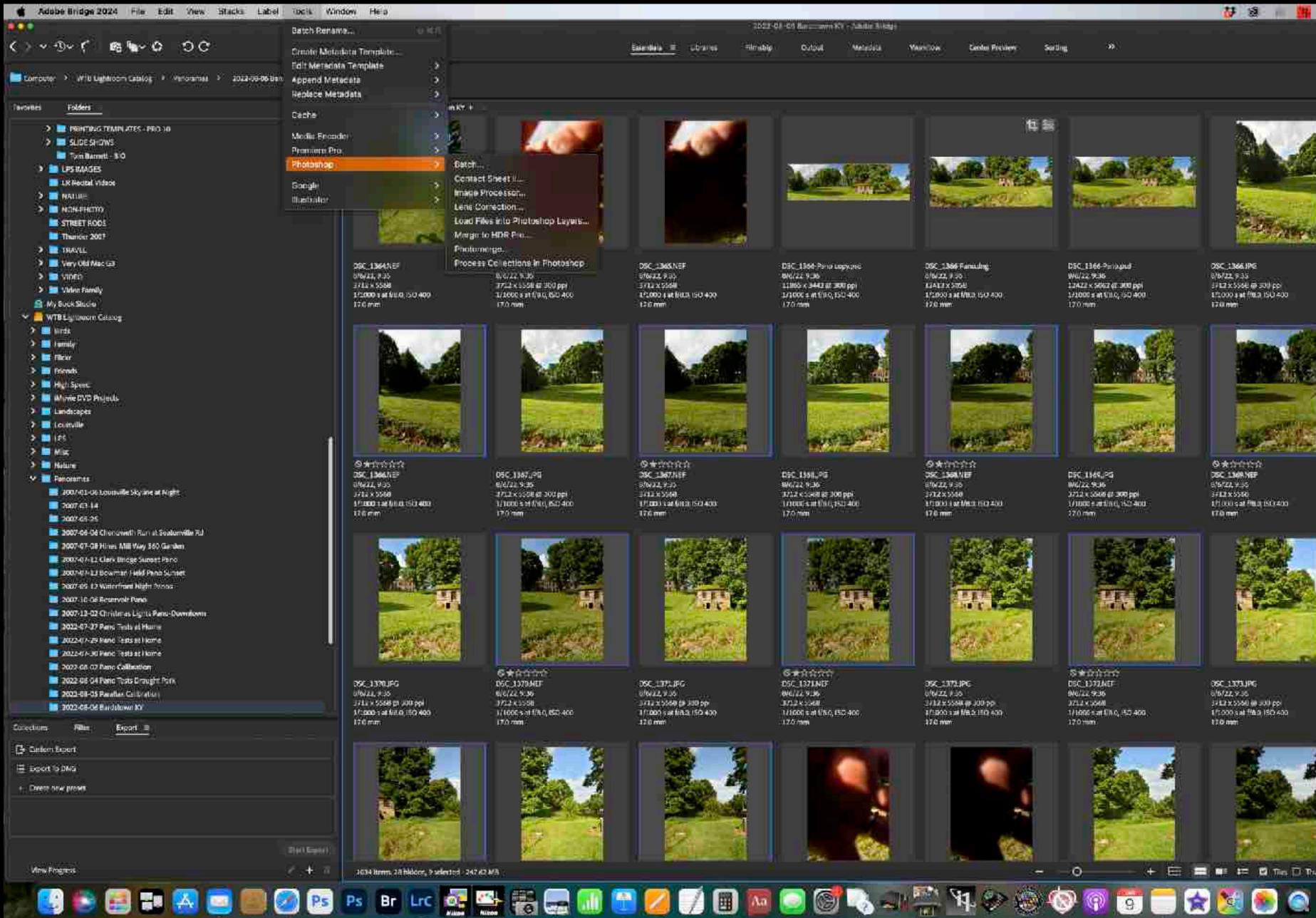
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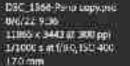
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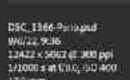
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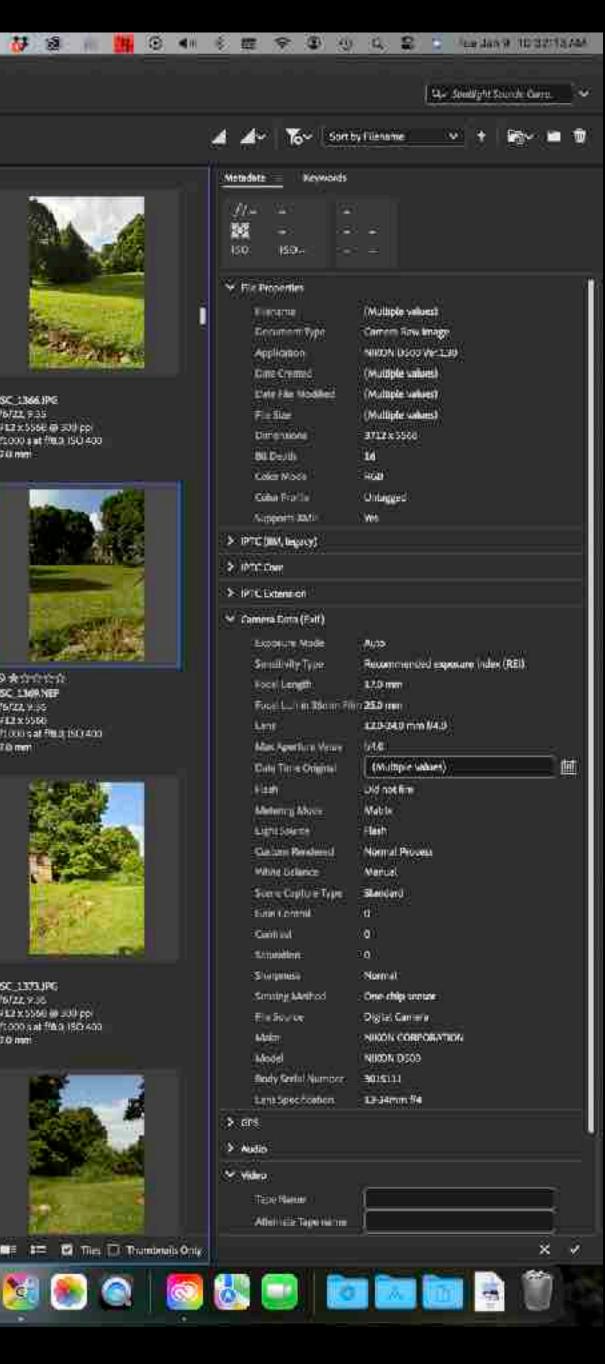
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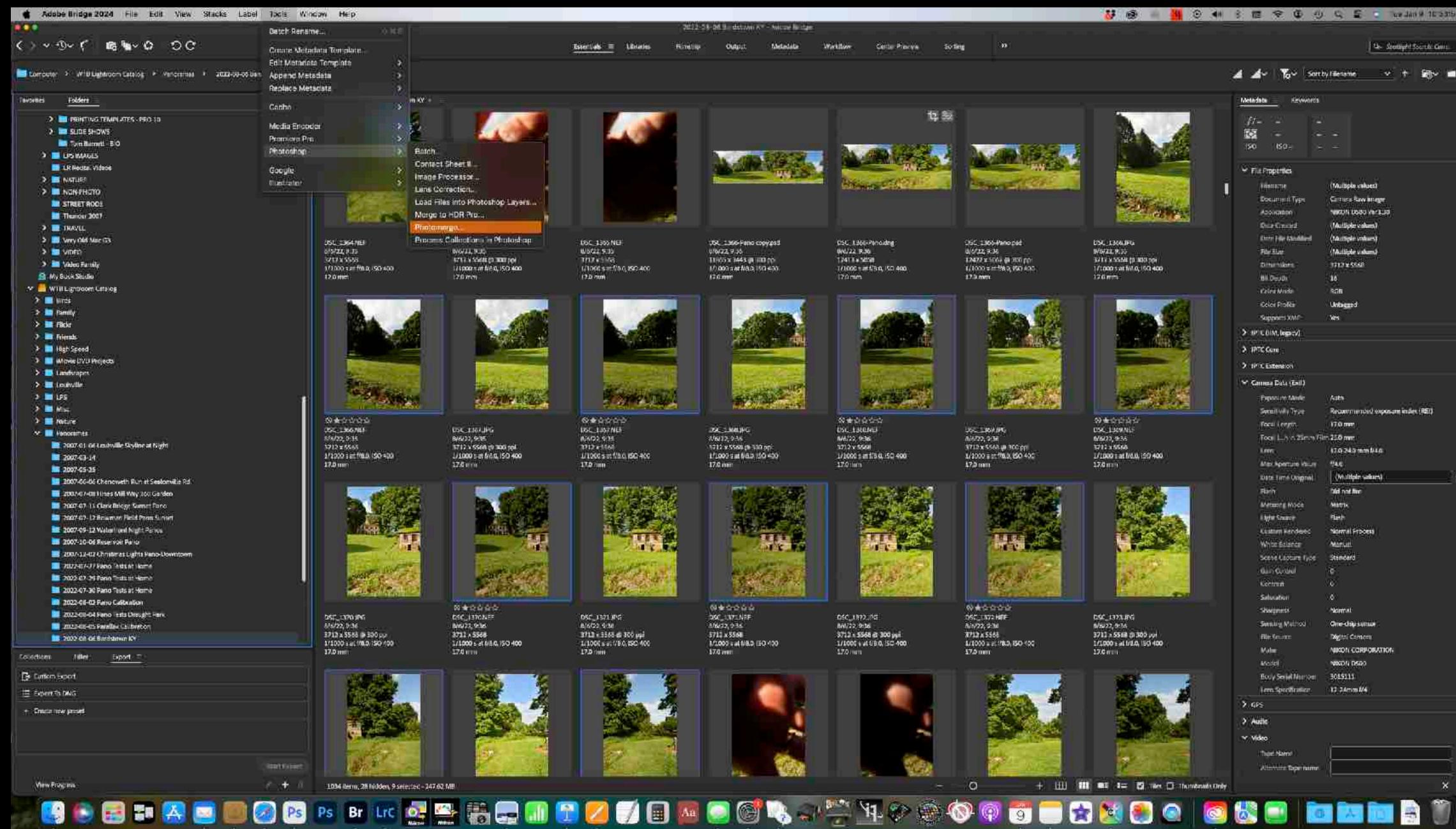






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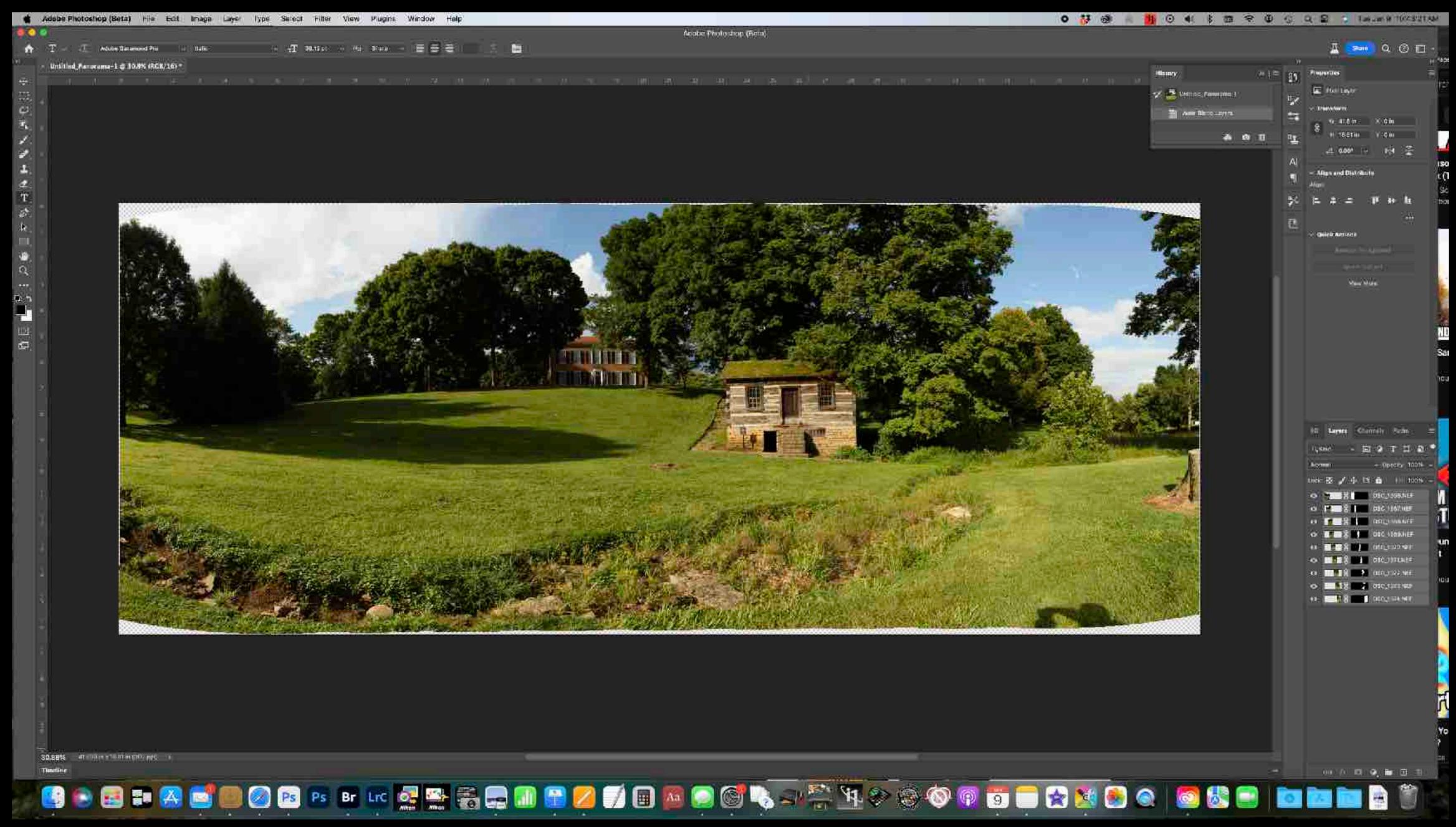


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## Focal Length and Curvilinear Lines

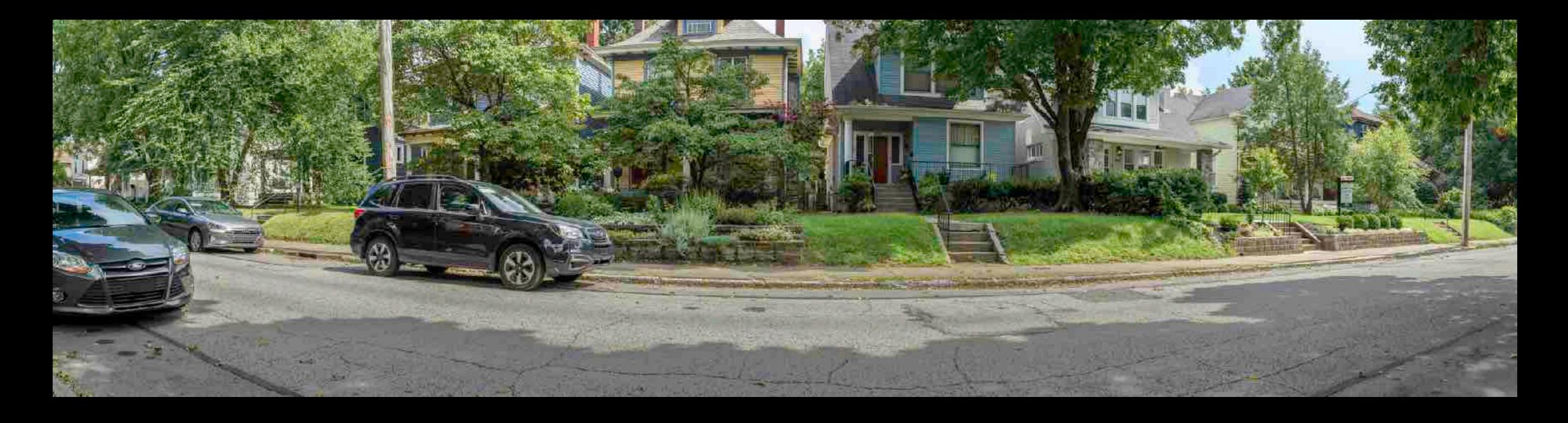
## Nikon D300s 12-24 Zoom @ 24mm 1/1000 sec, *f* 8, ISO 400



12 Angles @  $15^{\circ} = 180^{\circ}$ 13 Exposure Stitch (n + 1)



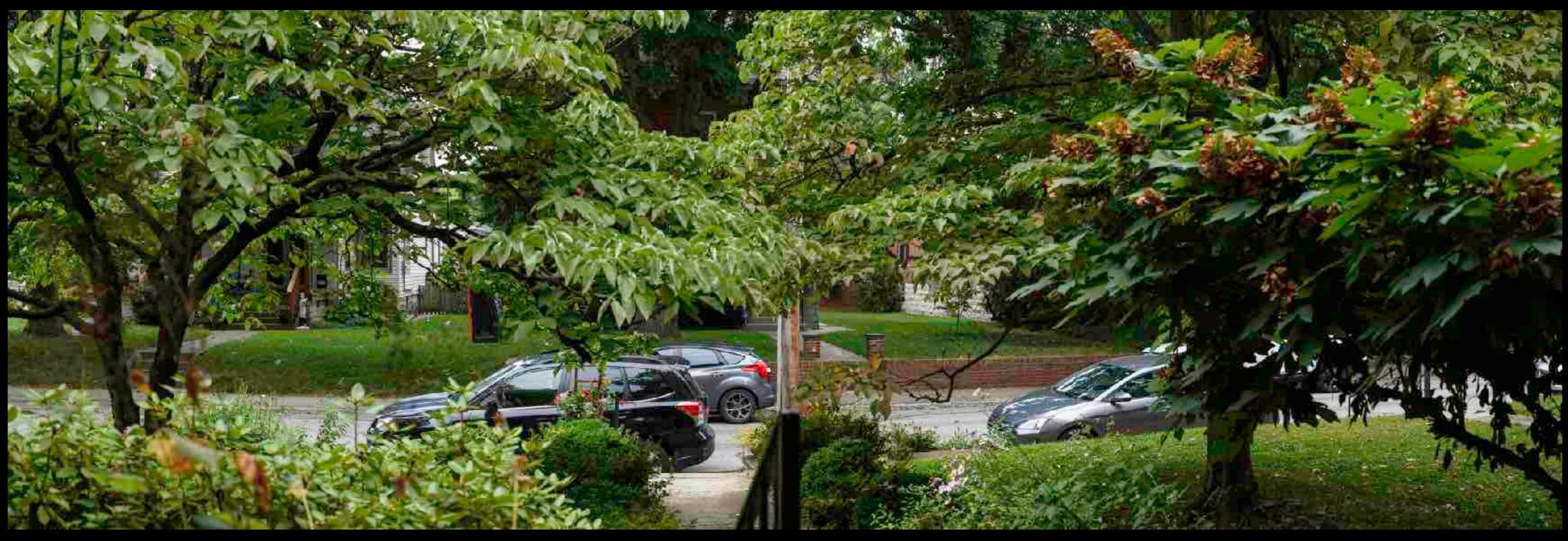
### Nikon D500 35mm *f* 2 1/200 sec, *f*8, ISO 100





16 Angles @  $7.5^{\circ} = 120^{\circ}$ 17 Exposure Stitch (n + 1)

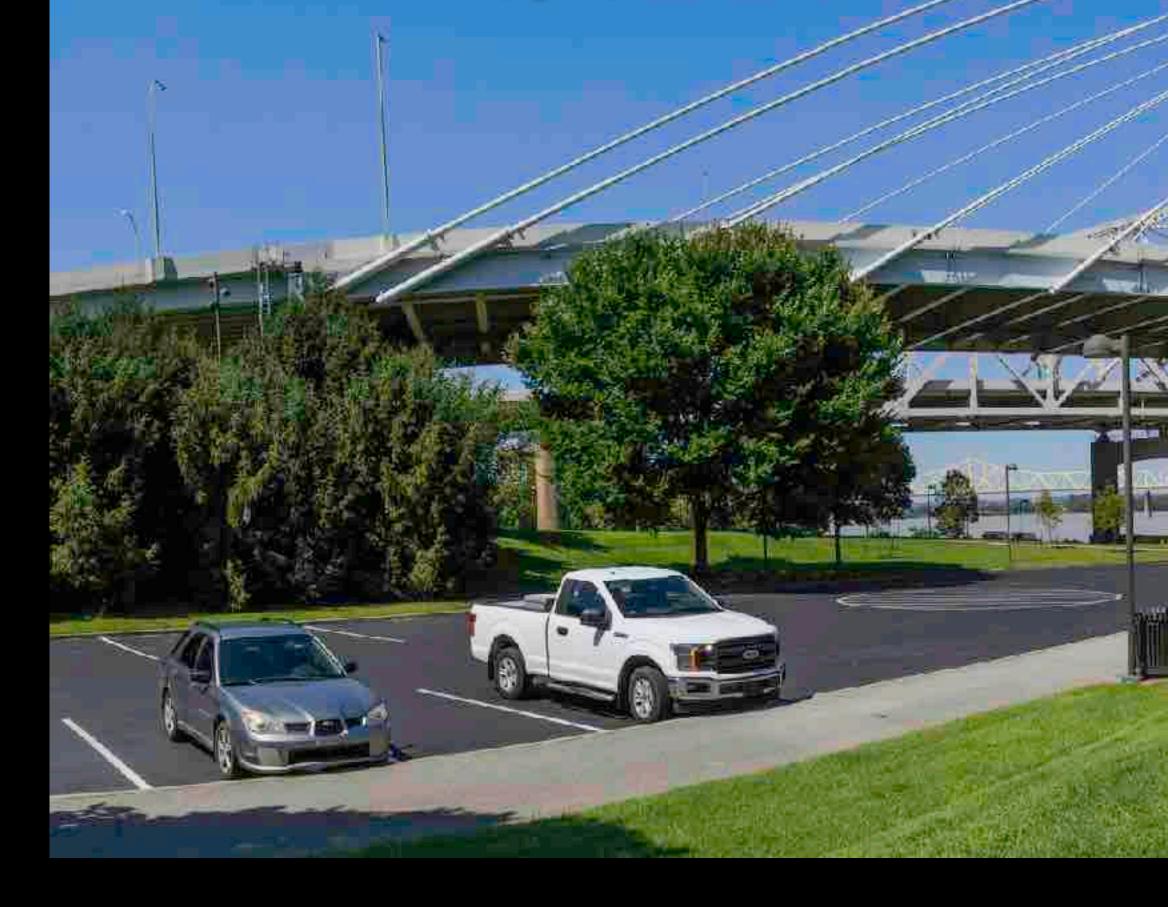
## Nikon D500 50mm *f* 1.8 1/50 sec, *f* 8, ISO 100



12 Angles @  $5^\circ = 60^\circ$ 13 Exposure Stitch (n + 1)



## Nikon D500 12-24 Zoom @ 12mm 1/1000 sec, *f* 8, ISO 100



## 4 Angles @ $15^\circ = 60^\circ$ 5 Exposure Stitch (n + 1)











