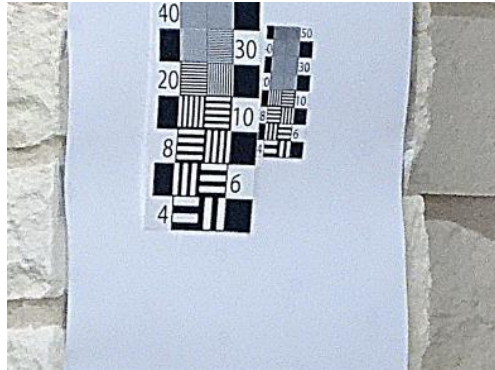


“Edge Only Sharpening” strategy at 12,000 mm on a Nikon P1000

Michael P.C. Watts

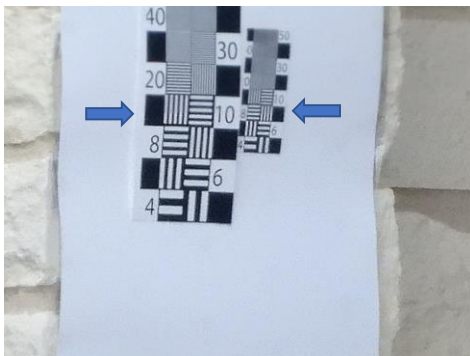
Edge sharpening is a popular trick for improving the look of photographs that are at the resolution limit. The problems are that it is easy to “oversharpen” images, with noise in untextured areas and exaggerated ringing of edges, that make them look unrealistic. Both of these can be seen in the image below that was deliberately over sharpened. Particularly notice the noise in the blank paper, and the rings around the numbers.



There is a process developed by Jeff Schewe of PixelGenius to only sharpen the edge areas of the image, reduces the noise and artifacts. The process involves creating an Edge Mask, broadening the Edge Mask and then only sharpening the image within Edge Mask.

The instructions in <http://www.pixelgenius.com/tips/schewe-sharpening.pdf> assume a pretty sophisticated knowledge of Photoshop, so I have created a step by step process that is available on my web site www.impattern.com.

The “edge only sharpening” is really effective. Below is the resolution target at 12,000 mm with the bottom half processed using the edge only sharpening, the blue arrows mark the line between images. Along with a close up of the resolution target below shows the effect of sharpening. It is important to realize that we are not resolving any smaller features, we are just sharpening the edges of the features that are close to the resolution limit.



A 12,000 mm photo using a telescope mount and a 3 sec delay is shown below, with the bottom half (marked by the arrows) that has been processed with “Edge only sharpening”. A close up view is also shown



Detailed sequence

DDM stands for the Drop Down Menu at top of PS window.

USM stands for Un-Sharp Masking.

- 1) Load new image – File/Open – click on image to be sharpened
- 2) Duplicate image – CNTRL J
- 3) Select green Channel. Go to Layers Window – Channel Tab, click the eye off for all but Green – image should be B&W.
- 4) Find Edge – DDM/Filter/Stylize/Find Edge
- 5) Median Filter – DDM/Filter/Noise/Median – set Radius to image resolution, use the number from the resolution vs. focal length graph.
- 6) Levels adjust – DDM/Image/Adjustment/Levels – normalizes the edge strength, adjust to till the hardest edges appear black. OR DDM/Image/Adjustment/Curves – create a sharp transition using top and bottom limits – the image should consist of a relatively few dark or black edges.
- 7) Gaussian blur – DDM/Filter/Blur/Gaussian - set Radius to 1.5x image resolution, sets the width around the edge that gets sharpened.
- 8) Invert image to create Edge Mask – DDM/Image/Adjustment/Invert – you should see the image colors through the Edge Mask.
- 9) Duplicate source image – Layers window – click on Background – CNTRL J – creates a new layer with a copy.
- 10) Set duplicate image to Luminosity – Layers window - change blending mode from Normal to Luminosity.
- 11) Adjust opacity – Layers window – Opacity slider set to 50% - sets how much of sharpening gets applied.
- 12) Hide the original image or Background - Layers window – click off the Background eye.
- 13) Make Edge Mask current - Layers window – click on layer 1 Edge mask .

- 14) Load selection mask - Layers window – make layer 1 Edge mask current – DDM/Select/Load Selection.
- 15) Make the image (duplicate of original) to be sharpened current - Layers window – click on duplicate image .
- 16) Sharpen Image – DDM/Filter/Sharpen/Unsharp Mask – set radius to match blurred edge 1.5x image resolution, adjust Amount to where image looks best and you can be aggressive 150-200%, the mask prevents artifacts in the large non edge areas.
- 17) Enlarge the image, and switch the corrected image on and off to see the effect.
- 18) Save as JPEG to merge the layers.

Key variables.

Real time adjust

USM – Amount – sets amount of sharpening

USM – Threshold – minimizes noise and artifacts

Opacity – sets amount of sharpened image that gets added

Set up variables

Gaussian Blur – sets width of sharpened edge

Level – Normalizes edge strength

Median Filter – reduces noise from the find edge step.