

CrispImage Advanced Help

Capabilities

The CrispImage Advanced plug-in provides state-of-the-art image sharpening for Adobe Photoshop users using Windows 98/Me/2000/XP. It fully supports 16 bits per channel images in gray scale, RGB, LAB and CMYK.

Licensing

When CrispImage Advanced is first installed, it will operate on a temporary license for 14 days. During this period the plug-in is fully functional. A permanent license can be purchased by visiting www.softwhile.com. A purchased license key can be entered by clicking the License button.

Image Sharpening Approach

Photographic image sharpening can be viewed as a corrective action. Images are not sharp because the camera, scanner or printer blurs the image for various reasons, and so does the photographer by resizing the image, not focusing properly, etc. Because the reasons images require sharpening are multiple, it makes sense to break image sharpening into multiple steps, each tailored as well as possible to what causes the unsharpness. Sharpening can be broken into three general steps:

1. Capture Sharpening
2. Corrective or Creative Sharpening
3. Display Sharpening

Capture Sharpening

The goal of capture sharpening is to correct for the unsharpness that results from the way the image is digitized. Anti-aliasing filters, imperfect lenses, undersampling and other things cause the digital image straight from the camera or scanner to require sharpening. Of course all digital cameras and most scanners provide 'built-in' sharpening which can do a reasonable job of capture sharpening. The user can choose to leave this step to the camera or scanner, but for more control and a more effective sharpening, the Capture Sharpening, or Proprietary algorithms in CrispImage Advanced should be used.

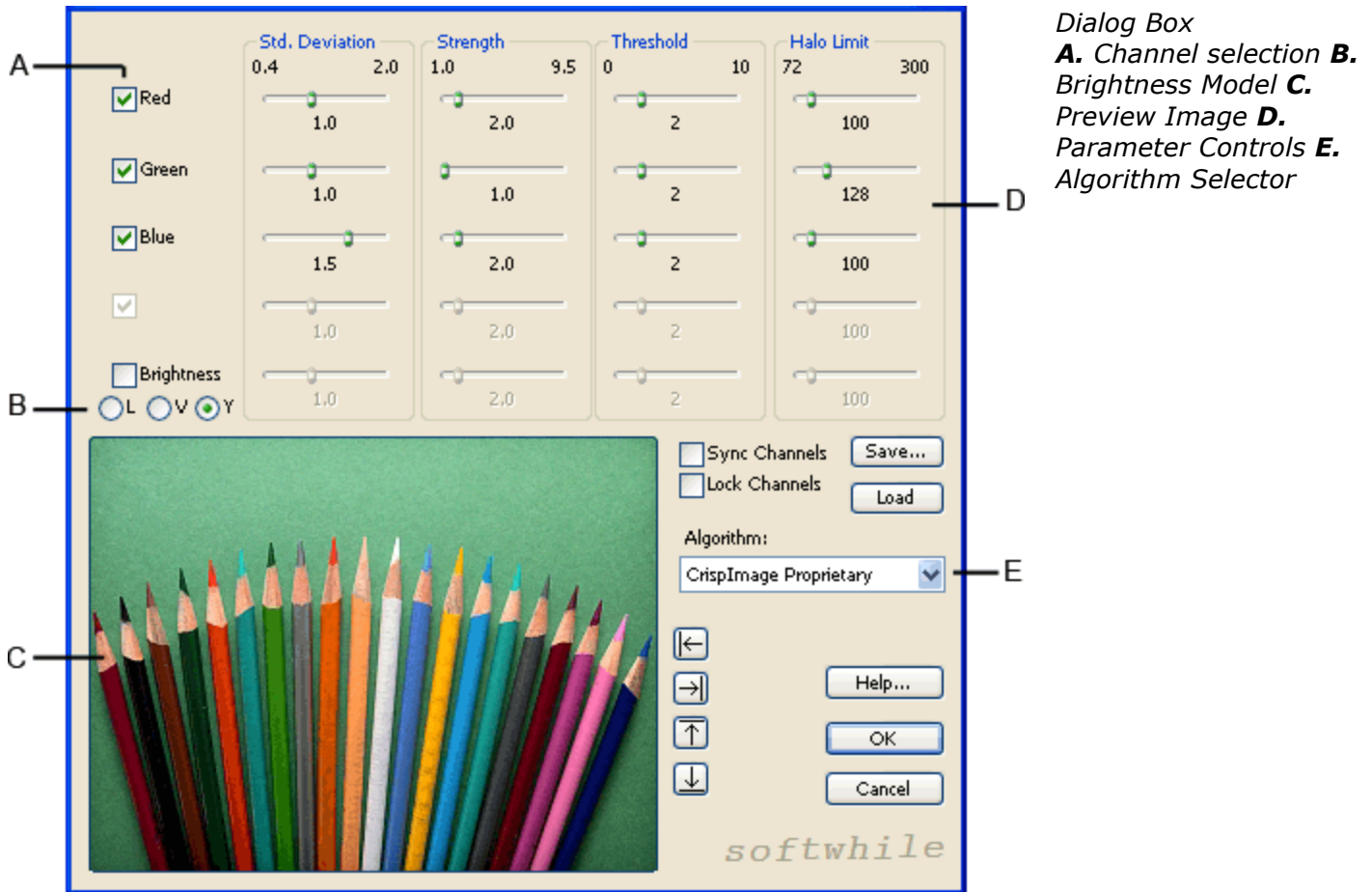
Corrective or Creative Sharpening

Corrective sharpening is done to correct problems caused by an unsteady camera, focus and depth-of-field problems, image resizing, etc. Corrective or creative sharpening is commonly applied to only a portion of the image. This corrects a sharpness problem with a selected area of the image without magnifying noise or over-sharpening other areas.

Display Sharpening

Displaying an image means viewing it on a computer monitor, or printing it. Both of these can reduce the sharpness of an image and should be pre-corrected. Many printer drivers contain sharpening which may or may not do a sufficient job of sharpening to correct for the printer.

The Dialog Box



Algorithm

Several sharpening methods are available through this plug-in:

CrispImage Proprietary

The best all-around sharpening algorithm. Can be used for almost type of sharpening.

Edge Sharpen

Sharpening that targets already defined edges in the image.

Capture Sharpen

Use this method to replace the built-in sharpening found in digital cameras and scanners.

Ripple Mask

Can be used as display sharpening for printed images.

LaPlacian

Use for a final sharpening for images displayed on a video monitor.

Unsharp Mask

Common sharpening method.

Blur

Performs a Gaussian blur.

Standard Deviation

If the sharpening algorithm involves a Gaussian function, the standard deviation can be modified to change the way pixels at various distances affect the change. A higher standard deviation results in a larger area affecting each pixel.

Strength

The strength setting affects the intensity of change in pixel values. 1 is the lowest strength setting and usually results in very small changes in the image.

Threshold

The threshold percentage is a level of variation, below which no change to a pixel is made. This is normally used to avoid increasing low level variation (noise) in a homogeneous area like a clear sky.

Halo Limit

Many sharpening methods have a side effect of creating a 'halo' or light area around a dark edge (or a dark area around a light edge). A small amount of halo can provide some 'apparent' sharpness, and provide some correction of dot gain in prints.

Channels

Each channel can be individually controlled, or not targeted by the plug-in at all. If the Brightness channel is selected, the brightness of each pixel is used to perform the sharpening. Three brightness models are available:

- **L** the L channel of the HSL color model is used.
 - **V** the V channel of the HSV color model is used.
 - **Y** the Y channel of the YCbCr color model is used.
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How to...

How to Sharpen for Printing

1. Do noise reduction, if necessary.
2. **Capture sharpen** if sharpening was not done by camera/scanner.
3. Do any editing desired.
4. Apply **corrective sharpening** as needed. This may affect only selected areas of the image.
5. Resize for printing. If the resizing was significant enough to affect sharpness, then apply **corrective sharpening** to the whole image.
6. **Sharpen for printer** using the Ripple Mask sharpening method.

How to Sharpen for Web Display

1. Do noise reduction, if necessary.
2. **Capture sharpen** if sharpening was not done by camera/scanner.
3. Do any editing desired.
4. Apply **corrective sharpening** as needed. This may affect only selected areas of the image.
5. Resize for web display.
6. **Sharpen for monitor** using the LaPlacian Mask sharpening method.

Mask Details

La Placian Mask

Traditional in CrispImage

```
-1 -1 -1    -0.707 -1.000 -0.707
-1  8 -1    -1.000  6.828 -1.000
-1 -1 -1    -0.707 -1.000 -0.707
```

Unsharp Mask

standard deviation = 1

```
0.000 0.000 0.001 0.002 0.001 0.000 0.000
0.000 0.003 0.013 0.022 0.013 0.003 0.000
0.001 0.013 0.059 0.097 0.059 0.013 0.001
0.002 0.022 0.097 0.159 0.097 0.022 0.002
0.001 0.013 0.059 0.097 0.059 0.013 0.001
0.000 0.003 0.013 0.022 0.013 0.003 0.000
0.000 0.000 0.001 0.002 0.001 0.000 0.000
```

Cross Section



Ripple Mask

Mask values

```
-0.107 -0.153 -0.223 -0.252 -0.223 -0.153 -0.107
-0.153 -0.284 -0.348 -0.320 -0.348 -0.284 -0.153
-0.223 -0.348 0.152  1.536  0.152 -0.348 -0.223
-0.252 -0.320 1.536  2.886  1.536 -0.320 -0.252
-0.223 -0.348 0.152  1.536  0.152 -0.348 -0.223
-0.153 -0.284 -0.348 -0.320 -0.348 -0.284 -0.153
-0.107 -0.153 -0.223 -0.252 -0.223 -0.153 -0.107
```

Cross Section

