SAMURAI SHARPEN
FOR VIDEO

Sharpening Made Simple for HD, 4K, and Film

Digital Anarchy
Smart tools for creative minds.
www.digitalanarchy.com

Samurai Sharpen for Video: Table of Contents

About This Manual

Samurai Sharpen for Video supports many host applications. The controls for Samurai are the same in every application. So throughout the manual we will show examples (and the UI) from different host apps. If a particular graphic doesn't look exactly like what you see, please focus on the name of the controls which are all the same.

There are one or two exceptions, which will pointed out as needed. In those cases you will see examples from each host application.

Installation and Serial Numbers

You can always download the most up-to-date version of Samurai Sharpen from our Demo page. Your serial number will activate the demo.

Mac Demo Page:
https://digitalanarchy.com/demos/psd_mac.html

Download the .dmg file and run the Installer that's on the dmg.

Windows Demo Page:
https://digitalanarchy.com/demos/psd_win.html

Download the .zip file, open it, and run the Samurai_Sharpen.exe file.

The installers should put the plugins where they need to go for whatever host application you're installing for. After running the installer, you'll need to restart your host application.

You can find videos on installing our plugins here:

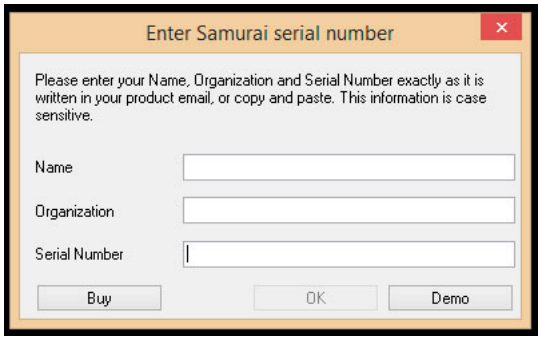
https://digitalanarchy.com/support/install.html

Your Serial Number

After purchasing your plugin, you should see an email with the Subject: Your Serial Numbers for Order #XXXXXX

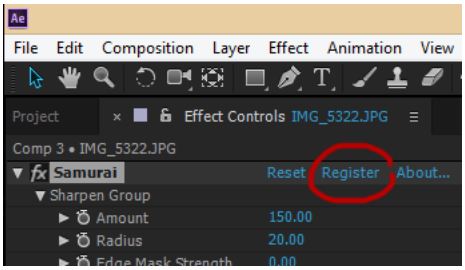
Look for the pink highlighted text in the email and that will have your serial number.

To enter in the serial number and register Samurai Sharpen, you'll need to open your Host Application and apply the plugin to a video clip. You can then register the plugin. The process of registration is the same in all applications, click on Authorize, then enter the serial number. The method for calling up these dialogs is different in each host app.



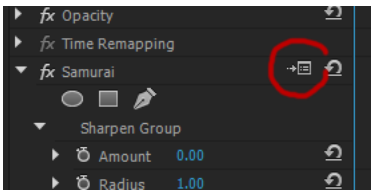
After Effects:

Simply apply the plugin to a video clip. The dialogs will automatically appear. You can also click on the Register button to bring them up if you're in demo mode.

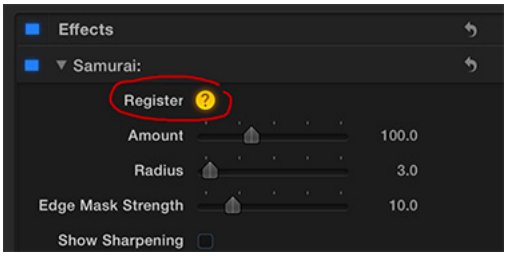


Premiere and Final Cut Pro:

You'll need to apply the plugin and then click on the Setup or Register button:



Premiere Pro



Final Cut Pro

Video Cards, GPUs and Host Applications

The speed of Samurai relies on the GPU of your machine.

GPU stands for Graphics Processing Unit which is a dedicated chip, usually on your video card, that allows the CPU to offload all graphics rendering to it. Thus a fast GPU/Video Card will make many graphics, not just Beauty Box, sing and dance. Ok, actually it'll just make your renders faster which will make you sing and dance.

Not All GPUs Are Made Equal

Samurai is optimized for CUDA, which is a technology on Nvidia cards. So we recommend Nvidia cards. On newer cards (as of this writing) like the GTX 980 or Titan you should see real time rendering speeds in Adobe Premiere and possibly in other applications.

We also support OpenCL, which is a technology used by all GPU manufacturers. However, we've only optimized OpenCL for AMD video cards, such as those in the MacPros. On the more powerful AMD GPUs, you will get real time or near real time performance out of most host applications.

If your computer only has a video card from Intel or an older AMD or Nvidia card, rendering may be relatively slow. Samurai Sharpen really takes advantage of the newer, more powerful cards and the older or lower end video cards don't support CUDA or OpenCL well enough to get near real time speeds.

UseGPU Checkbox and TroubleShooting

The power of the GPU comes at a price. Since it's so beneficial for graphics, every piece of software would like to use it. This can cause render problems or crashes if too many plugins or host applications are trying to access it at the same time.

The UseGPU checkbox is an important tool for troubleshooting and will often solve a problem by turning it off. This will dramatically slow down renders, but if you don't have time to troubleshoot, it can be a quick way of solving the problem and finishing a job.

Host Applications

The initial release of Samurai Sharpen for Video was only optimized for Adobe After Effects, Adobe Premiere Pro, and Apple Final Cut Pro. We do intend to optimize for Davinci Resolve, Avid, and Assimilate Scratch shortly after the first release.

Due to the nature of achieving real time performance we have to tweak the software for each host application. As you can imagine this is time consuming, so please be patient. However, gentle requests/encouragement to get it done for your host app are welcome if you'd like to email us at sales@digitalanarchy.com. We appreciate the feedback as it lets us know what host applications our customers are using.

Overview of Sharpening

This manual will give you some guidance on what sharpening is, when best to use it, and how to use Samurai Sharpen for Video to do so. As there are entire books available on Sharpening this is not meant to be an exhaustive study on the subject. It's an overview of some key topics and some tips and tricks regarding those topics. It will certainly give you a better understanding of sharpening but to really grasp all the nuances of sharpening we recommend the excellent book Real World Image Sharpening by Bruce Fraser and Jeff Schewe (it focuses on sharpening photos for print but most of the info is relevant to video as well)

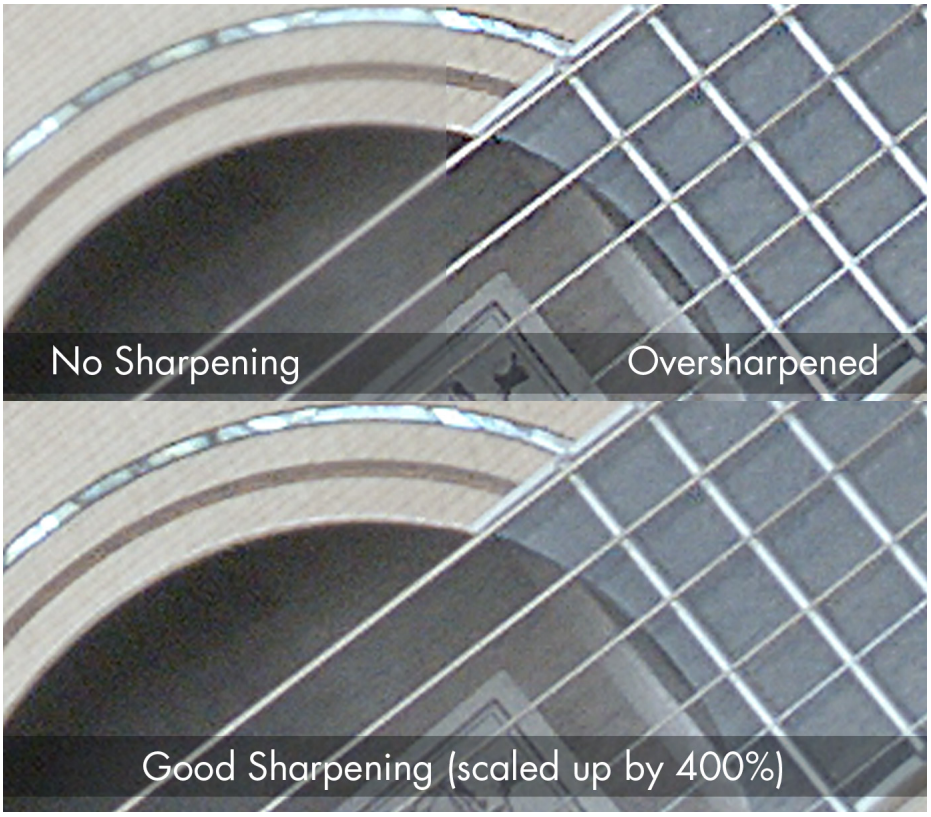
What is Sharpening

Sharpening is a contrast enhancement around certain edges.

This is accomplished by brightening one side of the edge and darkening the other side. The result, especially when oversharpened, are known as halos. Properly done, you don't notice the halos. You just perceive an increase in contrast around the edges, which makes them appear sharper.

Over-sharpening occurs when the halos become noticeable either because of their size or intensity. They can become very visible and can also get aliased, neither of which is usually desirable. You generally don't want bright white or black halos.

It's important to understand this concept as it'll give you much greater control over the sharpening. Samurai Sharpen even has controls for adjusting the light and dark halos independently.



Why Sharpen?

With the increasing resolutions of TVs, monitors and other output screens, soft video footage is more noticeable than ever. It can be a huge distraction for viewers used to seeing razor sharp, 4K footage of football games and nature documentaries.

Softness can come from a variety of sources: Mixing 4K and HD footage, mixing footage from different cameras, poor quality lenses, the camera sensor, focusing errors (particularly a problem in 'run and gun' or Reality TV situations), etc. 4K that is downsampled may appear sharper than something shot natively at HD. HD that's been upscaled will almost certainly look softer than native 4K.

4K at the native resolution (top, left) has about the same sharpness as the HD Sharpened image. However, if you downres 4k, becuase it has so much more data, it will appear sharper than HD no matter how much sharpening you apply to the HD clip.

'Softness' here is meant to refer to shots that are mildly soft or soft relative to other video footage being shown. Footage that if viewed by itself would probably look OK to most people, but you, as the videographer/editor, know that the footage should have a bit more 'punch' to it. This is really the situation where Samurai Sharpen shines.

If something is really out of focus there's not much you can do about it.

Softening occurs when the light goes through the lens, when it is processed by the sensor, and when it is compressed into a digital file. Part of the reason for shooting RAW is that you avoid the last step and this gives you more control over the final image. The camera has to make a bunch of decisions when it saves a compressed file and these may or may not be the decisions you would have made. It's best to shoot RAW whenever possible. This allows you to focus on correcting any softness introduced due to the lens, the low pass filter or the debayering of the sensor.

Samurai Sharpen can definitely help with these situations as well as footage that the point of focus was a little off or HD footage that doesn't look quite as sharp as your downres'd 4K footage.

What Problems Can Sharpening Create?

Noise

All footage has some amount of noise. Sharpening can easily accentuate the noise as well as your edges, making your footage more grainy. While you can get away with some amount of grain in a photo, the fact it changes on every frame of video makes it particularly annoying with video footage.

Samurai has some novel ways of combating this problem, which includes masking out darker areas of the image. Dark areas tend to have little detail but show the noise more prominently than mid-range or bright areas. So protecting the dark areas of your image from sharpening is important.

Oversharpening

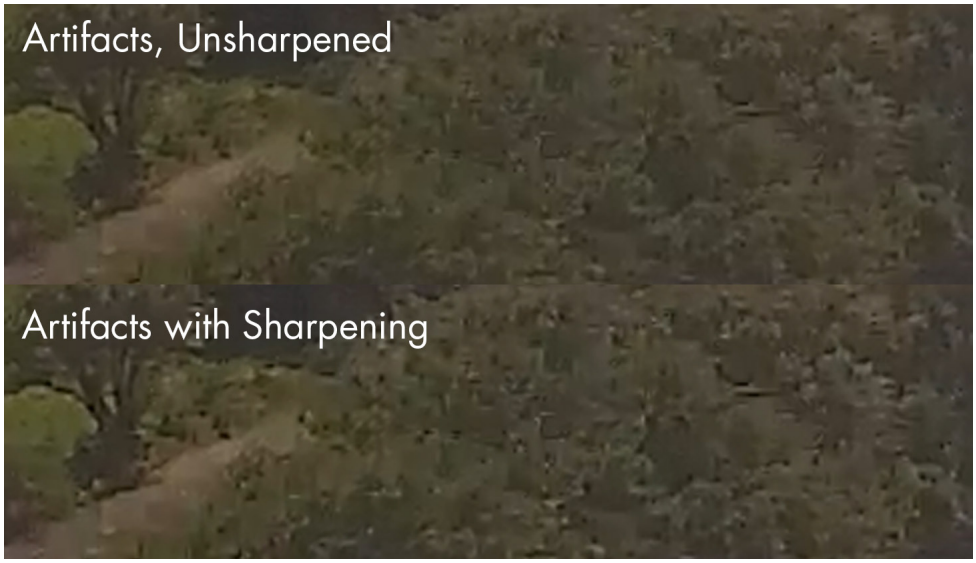
As mentioned, oversharpening results in noticeable halos. At best this makes your video look extremely contrasty, at worst it creates artifacts and moire patterns. Halos are always created when sharpening, but with proper sharpening, they're subtle and aren't an obvious image manipulation.

Also, if you oversharpen video footage with a lot of small details, for example a landscape shot with lots of leaves blowing in the wind, you can create motion artifacts that will be very distracting to your viewer.

Compression Artifacts

Most video footage has some amount of compression. If you're not shooting RAW, you're probably shooting compressed. This can be slight, as when shooting using ProRes 444, or massive as with many consumer camcorders or devices like a GoPro or DJI Drone shooting 4K.

You can usually see compression artifacts as 'blocks' or angular lines in the image. Sharpening detects the edges of the blocks and will sharpen them accordingly. It's very difficult, if not impossible, to successfully sharpen this type of footage. The sharpened artifacts will make the footage look worse.



The above image is from a 4K video shot with a DJI drone. This type of heavy compression is common with consumer or prosumer video cameras.

Sharpening Skin

The last thing you usually want to do is sharpen someone's skin. You don't want your talent's skin looking like a dried-up lizard. (well, unless your talent is a lizard. Not uncommon these days with all the ridiculous 3D company mascots)

Especially with 4K and HD, video is already showing more skin detail than most people want (hence the reason for our Beauty Box Video plugin for digital makeup and skin smoothing). The Edge Mask parameter in Samurai is a good way of protecting the skin from sharpening. The skin area tends to be fairly flat contrast-wise and the Edge Mask generally does a good job of masking the skin areas out. But it is something to watch out for.

In the image above Edge Mask is set to 10 and does a good job of preventing the skin from being sharpened. See the section on Edge Mask Strength for more info on how it works.

Oversharpened Brain

This has nothing to do with the image and everything to do with your Brain on Sharpening. There is sometimes the tendency to zoom into 800% and inspect every pixel.

It's true... someone, somewhere may watch your footage of clowns in 8K on a 120 inch TV and stand a foot away from it because they are an aficionado of clown makeup. However, it's worth considering if your time is best spent zoomed in to 800% preparing for that day of extreme clown makeup viewing. These are the things we worry about here at Digital Anarchy.

Typically you want to have the zoom level set to 100%. You'll see exactly how the sharpening looks. Definitely don't have it less than 100%. At 25 or 50% you won't see what effect the sharpening is really having.

200% is fine... given that you can't control where your footage will be displayed, it's not unlikely it'll get displayed on something larger than your monitor. So seeing what effect the sharpening is having at this level can be helpful.

Once you get beyond 200% it's questionable how much of what you see will actually be seen by your viewers. You can spend a lot of time tweaking the sharpening as Samurai does give you a great deal of control for making subtle adjustments. However, at some point you're just making adjustments that only the clown makeup inspectors are going to see. That, perhaps, is not that critical of a viewer demographic and your time may be better spent elsewhere.

Sharpen well, my friends.

Sharpening Concepts and Workflow

The two key parameters in Samurai Sharpen are Amount and Radius. These work in conjunction with each other. Amount sets the intensity and Radius determines how big the halos are going to be. One thing that will determine what values you set these to is detail frequency.

Level of Detail

Low Frequency Detail: This is what you see in large, flatter areas of the image. Skin, blue sky, the side of a house, etc. There may be some detail but it's more of a flat area of color (solid or gradient). If you're sharpening these areas you can use a higher value, perhaps 1.0 - 2.0.

High Frequency Detail: This is something that has a lot of detail. The leaves on a tree, a closeup of cloth texture, an explosion of sea foam, etc. Lots of small details and lots of small edges to sharpen. These usually respond better to lower values: .5 - 1.0. You want to be VERY careful about applying too much sharpening to these areas with video footage. Small details can create a visual 'buzzing' or other motion artifacts when sharpened. So be very conservative with the Amount on these areas.

Low Frequency Image

High Frequency Image

In addition to the Amount and Radius, you can adjust the blending of the light and dark halos individually. This is a rather subtle adjustment and is not something you'll want to do on everything. However, it does give you advanced control for fine tuning the look of the sharpening. Since sharpening video is more prone to artifacts than sharpening photos, subtle controls like this can make a big difference.

Masking

Once you've identified what you want sharpened and gotten the right look for it, you'll want to tell Samurai what NOT to sharpen.

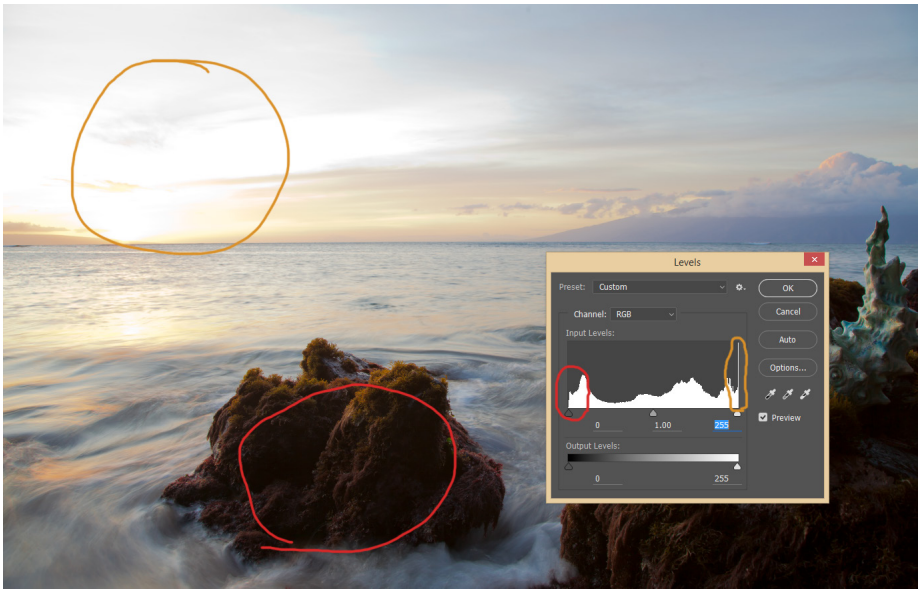
This is accomplished with the Edge Mask, Layer As Mask, and Shadow/Highlight Masks.

Increasing the Edge Mask will turn Samurai into a 'smart' or more edge-aware sharpening filter. The higher the value the more it focuses on significant edges and the less flatter areas (like Skin) are affected. It's similar to Threshold in Unsharp Mask but usually works much more effectively.

The Shadow/Highlight Masks protect dark or light areas from sharpening.

You don't usually want to sharpen dark or shadow areas. There isn't a lot of detail but there is a lot of noise. So you generally end up sharpening only noise, which will make your footage look worse. Noise is the enemy of sharpening and it shows up most prominently in the darker areas of the image.

Bright areas also don't have a lot of detail but they contain very little noise. Sharpening these areas result in increased contrast that can blow out the few details that ARE in the bright areas (See the thin, white clouds in front of the sun in the image below). So protecting these areas preserves the detail in the very bright highlights.



You can also use a different layer as a mask. So if you've used other filters or techniques to mask off a specific area of your image that you want to apply sharpening to, you can use that instead of the built-in masks. The built-in Shadow/Highlight masks are designed to be a fast and easy of masking off areas that commonly have problems. They are not

the be-all-end-all of mask tools, however. So it you want to restrict the sharpening to just a specific area (i.e. sharpening only a subject's eyes) you'll probably want to use other tools.

Our goal with Samurai was to help you get great results as quickly as possible. Sometimes that means using the built-in masking, sometimes using other tools in conjunction with Samurai is the way to go.

Workflow

Most people recommend a multi-pass workflow for sharpening photos. To our knowledge, it was first explained in great detail in Real World Image Sharpening by Bruce Fraser and Jeff Schewe, which is the book we mentioned earlier and refer you to again for a very in-depth discussion of this technique. However, in short, this usually refers to:

Capture Sharpening: a gentle sharpening pass affecting the entire image, usually applied in your RAW processor.
Creative Sharpening: Applying additional sharpening to specific areas or using sharpening to create an effect… like faux-HDR.
Output Sharpening: Applying additional sharpening for whatever the photos will be printed/displayed on.

Does this technique apply to video? For the most part… Yes! However, it's a bit different.

A few things to consider here.

1- Sharpening is as much art as science, perhaps moreso. There's no exact guide on how much sharpening to use or where to apply it. Between 'just a little' and 'wow, is that oversharpened!' it's more of a personal preference. It'll depend on the image, the subject, what look you're going for and so on.

You then have to consider what it's going to be viewed on. How's it going to look on a tablet? How about an 80" TV? What if the tablet is 12" from the viewers face and the 80" TV is 7' from the viewer? Since you have absolutely no control over what the viewer will be looking at, do you even care? Enquiring minds want to know. (we don't have the answer)

2- Most photo applications apply filters destructively. Meaning once the filter has been applied you can't change it. Part of the reason this technique is described as 'three passes' is because of this destructive nature. This is not usually the case with video applications. Video filters are usually applied non-destructively meaning you can change or even remove them at any time. So the method of application is somewhat different between photo and video… resulting in something that is better described as 'three layers of sharpening' with video. With photos, it's a more linear process because each

step modifies the image permanently. With video, you can apply all three steps at once (if you want) and then tweak and make changes easily. Generally speaking. There are exceptions and caveats to both sides of the photo/video equation.

For example, if you do Capture sharpening on a photo in RAW, this can be modified later. However, if you apply a sharpening filter on top of that, those RAW settings are then baked in and can't be changed at that point. Unless you're in Photoshop and applied the sharpening filter as a Smart Filter. And so on. Lots of different workflows.

3- Nothing is being printed, so the output sharpening is much less critical. However, depending on whether the footage is being scaled up or down for final delivery you may want to pay attention to this step.

Intial/RAW Sharpening

If you've turned off in-camera sharpening on your video camera (which we recommend you consider, see Tips & Tricks section), this is where you compensate for that. Applying gentle sharpening to the entire image.. You can either apply some sharpening in your RAW processor when you import the footage or, more likely, since video filters are non-destructive, you could apply Samurai Sharpen twice… once for the entire image as a Capture Sharpening pass and then again to increase sharpening in the Image Sharpening pass. This would also allow you to apply a noise reduction filter prior to sharpening.

Creative or Area Sharpening

The second step of sharpening, where you apply a second instance of Samurai. This is where you'll use the Mask features of Samurai as you sharpen specific areas and leave other areas untouched. This can be subtle, basic image sharpening which enhances certain areas of the footage or more of a creative sharpen, giving the footage a 'look' using the halos as an effect instead of just doing a basic sharpen.

Post Sharpening

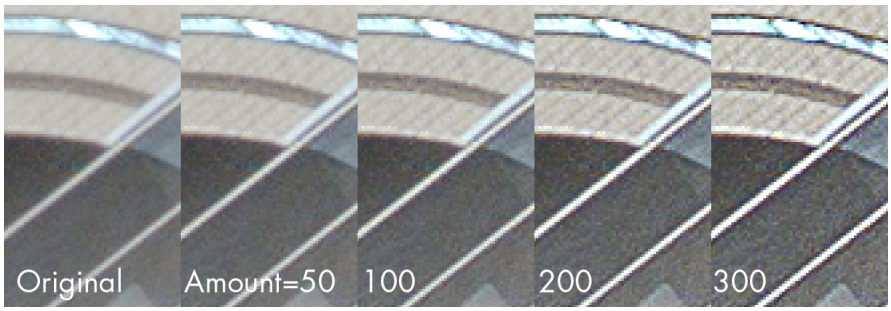
A third pass of sharpening if needed. Usually with video you probably don't need a third pass. For print this is necessary because printed ink tends to be less sharp than a computer monitor. Since we're going from a computer monitor to a another computer monitor or TV screen, this step is less critical with video. Especially if you don't know exactly where it'll be displayed. However, you might have HD footage that's being upscaled to 4K or vice versa or you might know it'll be displayed on a 70" screen in a retail store. In this case you'd use a third layer of sharpening to ensure that it kept the same look you had in Step 2: Area Sharpening. You could also dial up or down the sharpening from step 2, since video filters are non-destructive. Perhaps create different projects or sequences for the different final deliverables.

Samurai Sharpen: Parameters

In this section we explain the different parameters in Samurai Sharpen and how they intereact with one another. Some parameters may be self-explanatory, but they often work in conjunction with other parameters which may not be so obvious. If you want to understand exactly what Samurai is doing, this is the place!

Amount

This parameter sets the intensity of the effect. If you want more 'cow bell', this is the parameter to increase. It's essentially affecting the contrast of the halos. The higher the value of Amount, the higher the contrast. You want to be REALLY careful about increasing this too much as it can result in artifacts or visible halos pretty easily.



You can see the changes as the Amount is increased. (Radius of 1.5) The halos around the significant edges become much more contrasty. (enlarged by 400%)

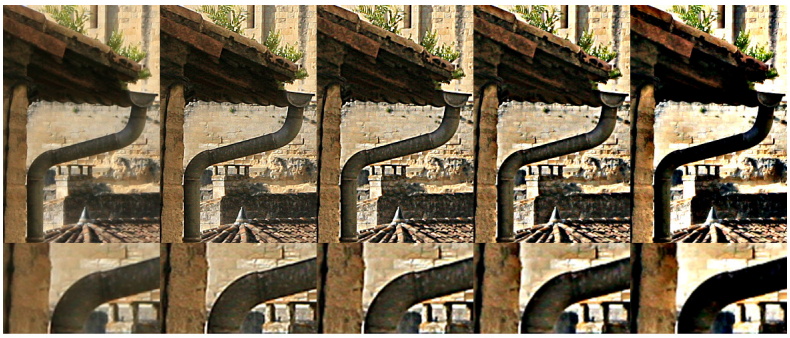
This works in conjunction with the Radius. It will have a somewhat different effect with different radius values. At very small Radius values (.5), a large Amount will have less effect than with larger Radius values (1.5 or 15).

Radius

This sets the size of the halos. Larger Radius, larger halo around any given edge.

For normal sharpening, this is where the idea of low/high frequency plays a part. If you have a lot of small edges (high frequency) you're trying to enhance, then a smaller Radius and higher Amount may be what you want. If you have a few, significant edges then a larger Radius (1.5-2) usually works better.

You can also use this to get very creative, using a very large Radius. You'll end up with more of an overall contrast adjustment to the mid-tones. This can create some very interesting and cool looks but it's not exactly 'sharpening' in the normal sense. It ends up being very similar to the Clarity slider in Adobe Camera Raw.



Unsharpened Radius = 1 Radius = 2.5 Radius = 5 Radius = 20

Creative sharpening for creating a look or effect

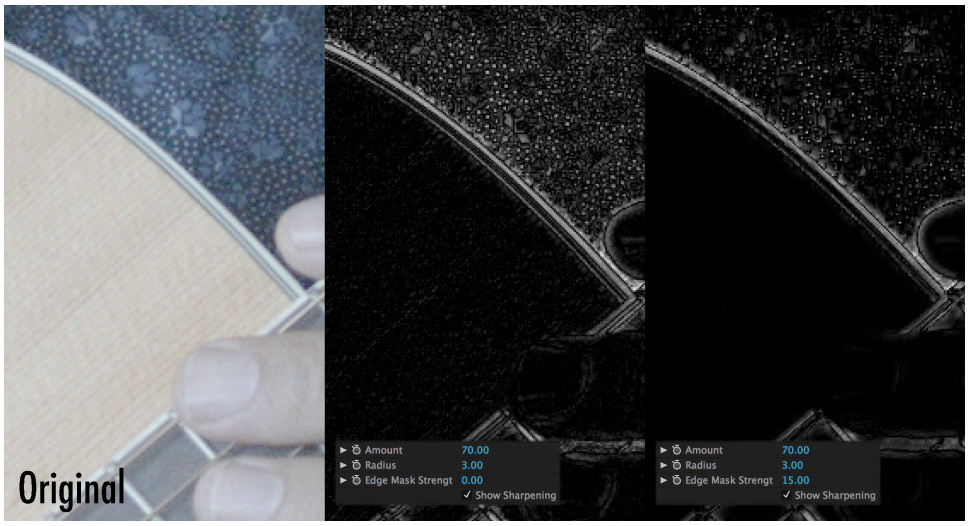
Edge Mask Strength and Show Sharpening

Samurai Sharpen is an edge aware filter, allowing it to be smarter about what gets sharpened than say something like UnSharp Mask. However, on a basic level it does perform a function similar to Threshold in Unsharp Mask (if you're familiar with that).

It identifies edges and prevents areas without significant details from being sharpened. As you increase the value it masks off portions of the image that are not edges. The higher the value, the more significant an edge has to be for it to be sharpened.

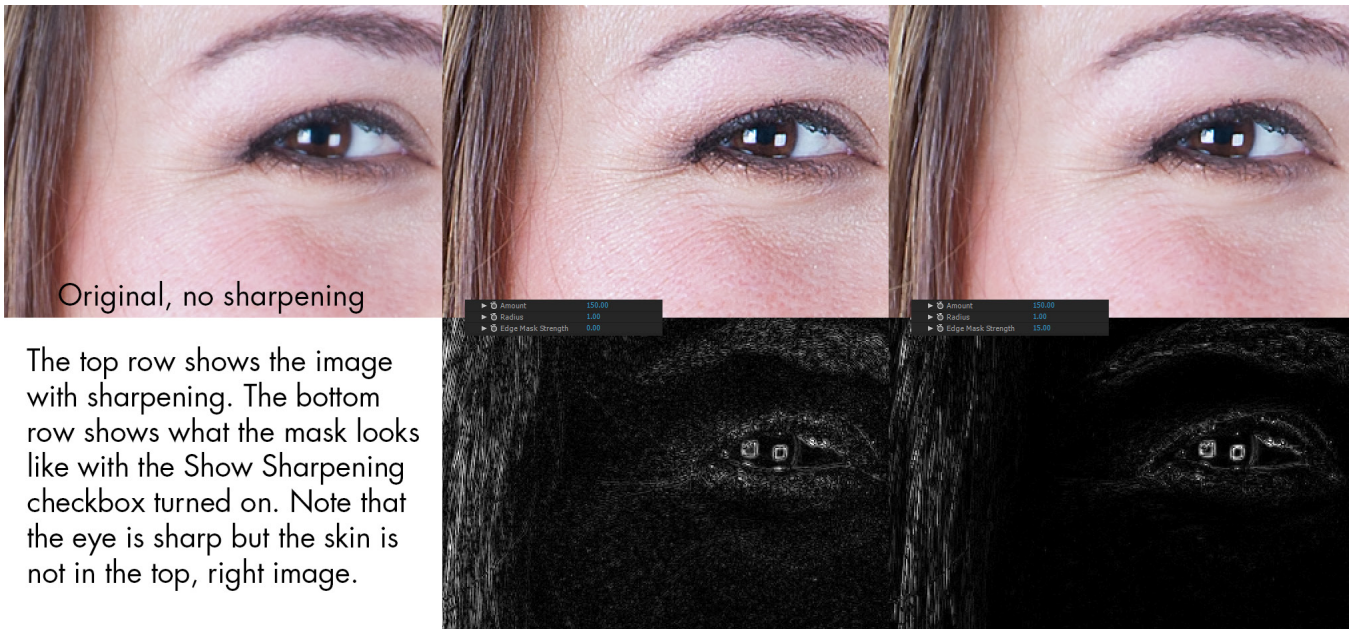
You can most easily see this in action with the Show Sharpening checkbox turned on. Show Sharpening shows you exactly what edges will be sharpened. Where it's black, no sharpening will occur. The brighter the edge, the more sharpening a given edge will receive.

With Edge Mask Strength set to zero there are areas of noise and other areas that we don't want sharpened but will get some sharpening. As you increase the value, you can see those areas turn black (image on next page), indicating that no sharpening will be applied.



Low contrast areas like the woodgrain on the guitar are not sharpened while the edges and strings are sharpened. With Edge Mask Strength set to zero, you're also seeing some of the darker, noisy areas of the shirt sharpened as well. Setting to 10 or 15 will prevent this.

This is most useful when you are only trying to sharpen the most significant edges and want to ignore everything else. For example, this can come in useful with portraits. Skin generally does not have a lot of significant edges. It's a very low frequency part of the image. So if you're trying to not sharpen the skin areas you can use Edge Mask Strength to have Samurai ignore them.



The top row shows the image with sharpening. The bottom row shows what the mask looks like with the Show Sharpening checkbox turned on. Note that the eye is sharp but the skin is not in the top, right image.

Mask section

The Mask section allows you to protect certain areas from any sharpening at all. This works on top of whatever is going on in the Sharpen section. So even if the 'Show Sharpening' checkbox shows that an edge is being sharpened, if it's masked out in this section, it will NOT be sharpened. The eyelashes from the previous image are an example of this. You may have used the Edge Mask to sharpen the eyelashes and not the skin, but if you use the Shadow Mask to mask off any dark areas, they will not be sharpened.

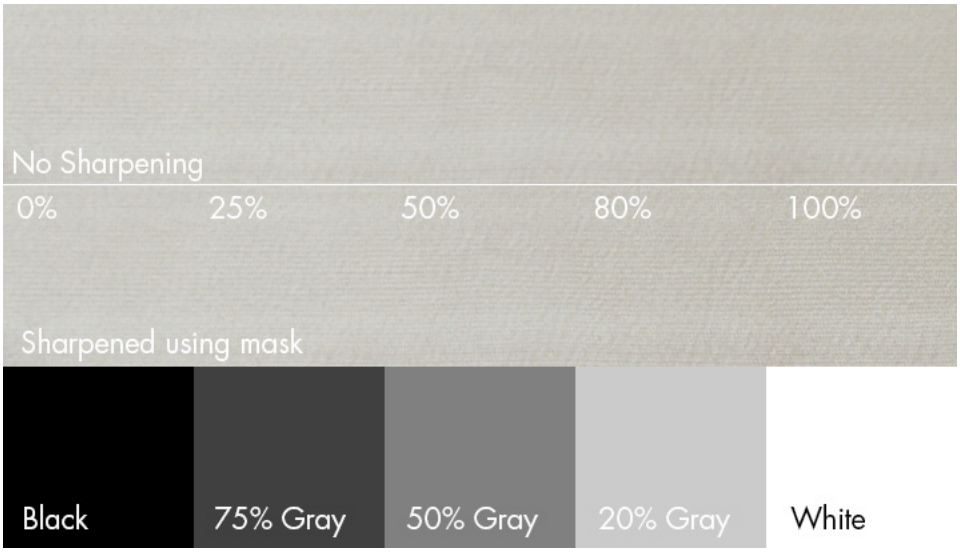
You can use either the Shadow and Highlight masks built into Samurai Sharpen or you can use your own mask (for example, you might use a keyer to create a mask). This section will primarily focus on the Shadow and Highlight Mask.

How Masking Works

Masking in Samurai Sharpen works the same as it does in your host application. Black areas receive no sharpening, White areas receive the full amount of sharpening, and Gray areas receive some sharpening. The closer to white a gray area is, the more sharpening it receives.

White: Full Sharpening
25% Gray: 75% of the Amount parameter will be applied
50% Gray: 50% of the Amount parameter will be applied
64% Gray: 36% of the Amount parameter will be applied
Black: No Sharpening

You can see this in the image on the next page:



The lighter the area of the mask, the more sharpening that area of the original image will receive. The darker the mask, the less sharpening it'll get. All masks in Samurai Sharpen behave the same way and work like this.

If you want more information on how masks work there are many tutorials online about how to use Grayscale masks. Pretty much all applications or filters that let you use another layer as a mask or to control the effect work the same way. From Track Mattes to Displacement Maps to Layer Masks in Photoshop, they all use the same concept. It's a pretty simple concept, but if you haven't used them before we recommend experimenting with different masks to see what happens. That's the best way to learn about them.

Shadow and Highlight Masks

These mask sections allow you to protect the dark and highlight areas from sharpening.

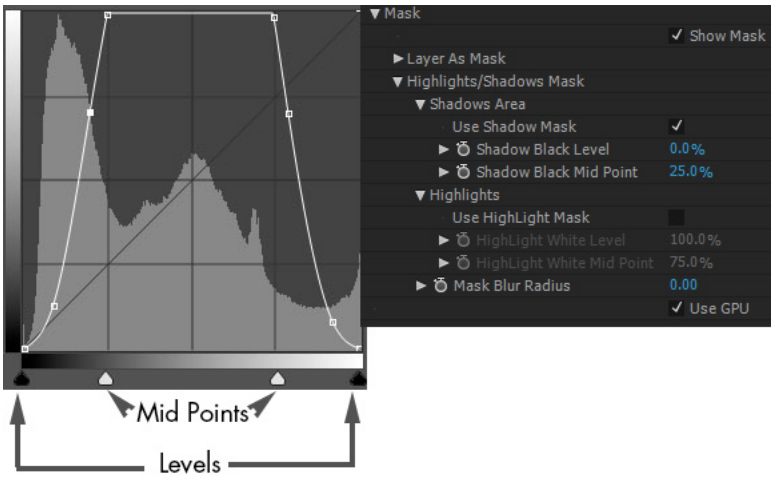
1) Dark areas of video footage contain more noise than the rest of the image. They also typically do not have much detail. So the only thing being sharpened is the noise which makes the footage look worse. It's usually very beneficial to not sharpen the shadow areas of film or video.

2) Highlight areas can get blown out by sharpening. This is less of a problem than the noise in dark areas, but it can be an issue. Highlight areas that are very close to white, especially smaller/thinner areas, can lose what little detail they have when sharpened.

Protecting (i.e. not sharpening) the dark/shadow areas is probably going to be the more common use of this section, but keep an eye on highlight areas to see if you're losing detail there.

The Way It Works

The masking section is really a modified Curves filter. The Shadow/Highlight sliders are allowing you to adjust points on an inverted 'U' shaped curve. If you're using both the Shadow and Highlight sections, the ends of the curve will be black, while the middle of the curve, the mid-tones, will be white. You can see in the above image what that means, with both dark and light areas in the image corresponding to black areas in the mask.



If you're familiar with Curves, you should be able to understand what these controls are doing without much trouble. If you're not familiar with Curves, I'll go over it a bit here but we've designed Samurai Sharpen so you DON'T need to know Curves. You should just be able to turn on Show Mask and play around with the sliders to get an idea of what they do.

As mentioned before, the masks in Samurai sharpen work the same as masks elsewhere in compositing and video editing apps. Black means there's no sharpening applied and White areas will get the full Amount. Gray values will get something in between.

Show Mask

First off, you can see what the mask looks like, as well as any adjustments you make, by turning on the Show Mask checkbox.

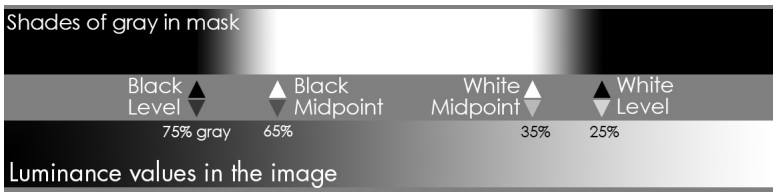
This is an important feature. It's difficult to tell what's going on as you adjust the Black/White Level or the Mid-Points if you can't see the effect on the mask. Show Mask allows you to see how your changes are affecting the mask and therefore, the image.

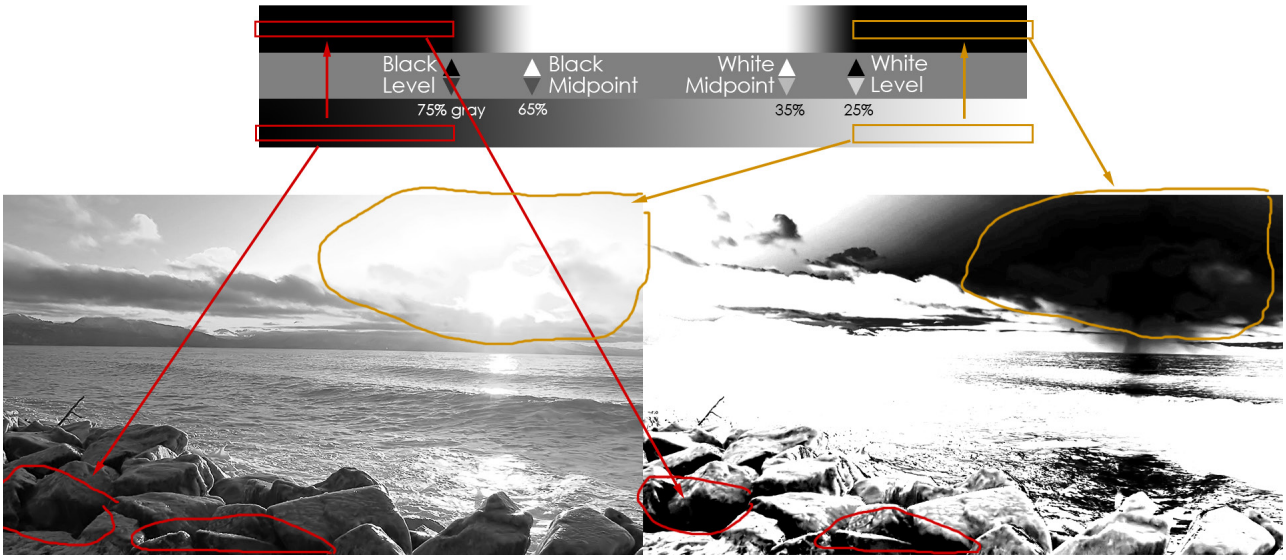
Levels and Mid-Points

There are many excellent tutorials available on the Curves filter, so I'm not going to go over that in depth. However, I will attempt to explain what the Level and Mid-Point parameters are doing.

The original color image is first turned into a grayscale version of itself:

This is then turned into a mask using the values of the Black/White Levels and MidPoints.





What does all this mean? Let's take a look at just the Shadow Mask. As we move the Black Level higher, we're telling Samurai to turn all those shades of gray into solid black in the Mask. Anywhere in the image there's a shade of gray darker than 75%, it becomes black in the mask. If you look at the Red circles and lines above, you'll see what this looks like.

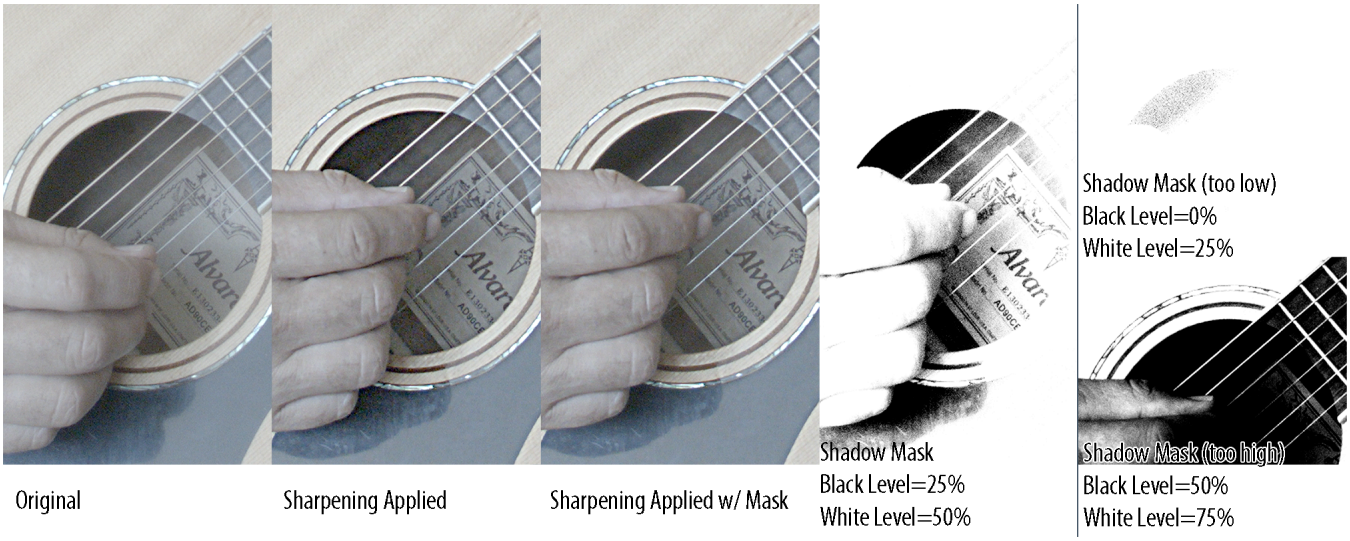
The Black MidPoint sets the transition to white in the mask. All the shades of gray between the Black MidPoint and the White MidPoint become solid white in the Mask. Between the Black Level and the Black MidPoint the parts of the image that correspond to those shades of gray act as a transition between the Black and White parts of the mask. This softens the mask and makes for a smoother transition between the areas that get sharpened and those that don't.

Again, the mask acts like a traditional mask. Where there's black in the mask, no sharpening will occur. Where it's white, 100% of the Amount will be applied. Shades of gray will get more or less sharpening depending on how close to white they are.

Also, the Shadow and Highlight Masks are independant. You can select one or the other or both.

The white areas of the image will be sharpened. The black areas will not be. This gives you a lot of control on where the sharpening occurs. Good sharpening is usually *Subtle* sharpening. So the masks are designed to help you sharpening ONLY the areas you want sharpened while leaving the rest of the footage alone.

The best way to learn this is to just experiment around. The controls are designed to be (and hopefully are) intuitive, easy to use and self-explanatory with a little exploration. But it does help to have some experience working with chromakey, Curves, Levels, etc.



Layer As Mask

If you have some other layer or footage, like keyed footage, that you want to use to control where the sharpening occurs, this will let you do so. It works exactly the same way as the built-in masks. White areas receive full sharpening, black areas receive none, and shades of gray receive some percentage of the full Amount.

Simply select the layer you want in the pop-up menu (AE, Premiere) or drag it to the image bin (FCP). The Sharpening will then be controlled by that layer. Any type of footage or imager can be used as a Layer Mask.

Blend Section

Blend Shadow Opacity and Blend Hightlight Opacity

Good sharpening, especially for video, is about subtly. Sharpening just the areas that need it, making sure not to oversharpen, being mindful of areas that are prone to artifacts, etc.

The Blend parameters allow you to fine tune Samurai and adjust the sharpening precisely. It's a very subtle effect and in most situations, these are not necessary adjustments. However, in some cases it will allow you to tweak problematic footage and get the exact look you want.

As we discussed earlier, sharpening is caused by halos created around edges. Samurai increases the contrast around a given edge producing a light and dark side to the edge.

You can see the halos get larger as the Radius is increased

In some cases you may want to adjust the opacity/strength of one side or the other. Let's take the last example of 'creative sharpening', which is a bit extreme but will help illustrate how the Blend parameters work.

Blend Highlight = 100 (Radius = 20, Amount = 150) | Blend Highlight = 50 | Blend highlight = 0

In this case the Radius is so large that adjusting the Blend Shadow Opacity adjusts how dark almost all the dark areas in the image are. This will not usually be the case with normal Radius values (e.g. 1-2). However, with these images you can see both the pipe

and the shadows on the building in the background becoming much less dark as the Opacity is lowered. This shows more detail and makes the contrast less extreme.

In normal situations, the effect is much less obvious. Usually the problem you're trying to solve is that the halos have gotten clipped, meaning you're ending up with some halos that are solid white or solid black. This can create motion artifacts when played back as video.

In the above image, the highlights have become clipped in some cases, becoming solid white. By adjusting Blend Highlight Opacity to 50 you can dial down the brightness of just the halos that are a potential problem. It prevents the clipping and reduces the chance of artifacts when playing back the footage.

Again, the effect of these parameters are very subtle. Even in the above image, it's somewhat difficult to see until you notice that the white flecks and lines are not as distracting in the middle image.

When making these adjustments you should be at a zoom factor of 100%, or maybe 200%. If you have to zoom in to 800% to see the effect your changes are having, you can be certain that no viewer will ever notice the changes unless they're 6 feet away from an IMAX screen. Certainly possible, but perhaps not the most likely scenario. So your time may be better spent on other things.

This goes for sharpening generally, but especially for stuff like the Blend parameters which are meant to be very subtle.

Use GPU checkbox

Samurai Sharpen uses the GPU on your video card to speed up the time it takes to render the effect in your host application. GPU stands for Graphics Processing Unit. It is a separate processor on your video card that is optimized to speed up graphics. (Note: This is not the CPU which runs your computer.)

By using the video card's GPU, Samurai Sharpen significantly speeds up the time it takes to render. Therefore, you should usually leave this checkbox turned ON.

When to turn off Use GPU

The GPU can sometimes get overloaded and fail, meaning nothing will get rendered. You will usually see a 'Render Failed' error message or Samurai Sharpen will just render the original image with no effect applied. If this happens turn Use GPU off. This should be a rare event, but it's possible. Very large images will sometimes cause it. Having many applications open may cause it, particularly if those applications are also trying to use the GPU.

Troubleshooting section

This section covers technical issues you may run into when using Samurai Sharpen.

You are experiencing crashes or render problems

Since Samurai Sharpen uses the GPU of your video card, it is important to make sure you have the most up-to-date drivers. Most host applications also uses the GPU, so it will benefit. You can get drivers by going to:

For nVidia video cards:
http://www.nvidia.com/Download/index.aspx?lang=en-us

You'll also want the most up to date version of Nvidia's CUDA:
https://developer.nvidia.com/cuda-downloads For ATI video cards:
http://support.amd.com/en-us/download

Not having up-to-date drivers is the cause of a lot of problems. If you're running into problems with Samurai Sharpen, please try to update your video card drivers first. If you're not sure what video card you have, you can click the Samurai Sharpen 'About Box' or 'Setup' button.

The About Box will tell you who makes your video card and what model it is.

As mentioned, turning OFF 'UseGPU' is a quick way of determining if it's your video card causing the problem.

Samurai Sharpen appears to be rendering slowly

Make sure UseGPU is turned on. Also, go to the About box and make sure 'Enable OpenCL' or 'Enable CUDA' are turned on. These can get turned off if Samurai Sharpen crashes. It will attempt to disable these APIs to try and prevent further crashing.

If you have an older video card or less than 1gb of RAM, Samurai Sharpen may render slowly.