

Pixel Vistas *PhotoLift* 1.0

User Guide

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1. Introduction & Background

Thankyou for downloading Pixel Vistas *PhotoLift*! *PhotoLift* is a filter plug-in for Adobe® Photoshop®. It applies some recent developments in image editing to improve local contrast in digital photographs.

What Is Local Contrast?

Local contrast refers to small-scale variations in an image, as opposed to its large-scale distribution of light and dark.

Human vision is more sensitive to local contrast than to large-scale variations. However, the dynamic range (the range of light levels from lightest to darkest) which can be represented in a printed or on-screen photograph is much smaller than typically occurs in a real scene. Consequently, the levels of local contrast in a photograph are often attenuated in comparison to the original scene. If you have ever wondered why your photographs seem less vivid than your recollection, this may be one of the reasons.

How PhotoLift Works

PhotoLift uses an unusual image decomposition in order to achieve aggressive detail enhancement. First, a *base layer* is created from the image by using an *edge-preserving blur filter*. This is a non-linear algorithm which is similar to the traditional Gaussian blur. Unlike Gaussian blurs, however, strong edges in the image – sharp transitions between dark and bright – are preserved. (Slight edges, such as those which occur in areas of high texture and detail, are not preserved.)

Thus, the base layer represents both the low-frequency variations in image brightness and its edges. This base layer is mathematically subtracted from the original image, with the remainder – the *detail layer* – representing small-scale detail in the image.

(Note that the term “layer” as used here is distinct from the concept of Photoshop layers. *PhotoLift* does not affect the layer structure of a Photoshop document.)

Once this image decomposition is complete, *PhotoLift* allows each layer to be independently manipulated. By selectively amplifying the detail layer, the local contrast can be effectively boosted, while maintaining the overall tonal balance of the image as represented in the base layer. In the last step of the filtering process, the base and detail layers are recombined to produce the final image.

2. Installing *PhotoLift*

System Requirements

PhotoLift requires Microsoft Windows® and Adobe Photoshop. It has been tested with Photoshop CS and CS2, but will probably work with versions down to version 6 or earlier. The algorithms used by *PhotoLift* are processor-intensive, so a fast CPU and ample memory will be beneficial (we recommend a minimum of 1Mb of RAM). A screen resolution of at least 1024x768 is required.

Installing the Plug-In

PhotoLift is downloaded in the form of a zip file, photolift100.zip. The zip file contains a folder, entitled Pixel Vistas, with the following files:

- PhotoLift100.8bf, the binary for the filter;
- EULA.txt, a text file containing the end user license agreement;
- copyright.txt, a text file containing copyright notices; and
- PhotoLift-1-0-User-Guide.pdf, this user guide in PDF format.

To INSTALL *PHOTOLIFT*, simply extract the Pixel Vistas folder from the zip file into the Photoshop filter plug-in directory on your computer. This directory is typically:

C:\Program Files\Adobe\Adobe Photoshop CS2
\Plug-Ins\Adobe Photoshop Only\Filters

To uninstall *PhotoLift*, simply delete the Pixel Vistas folder.

Once the filter has been installed, Photoshop should be restarted. *PhotoLift* will appear in the *Filters* menu under a new *Pixel Vistas* sub-menu.

Purchasing and Installing a License Key

The *PhotoLift* filter is initially configured to run in *evaluation mode*. Pixel Vistas offers the software under a thirty-day evaluation license, during which time the software is fully functional and you have the opportunity to evaluate its suitability for your purposes. While in evaluation mode, the software will present the dialog box shown in Figure 2.1 before each use.

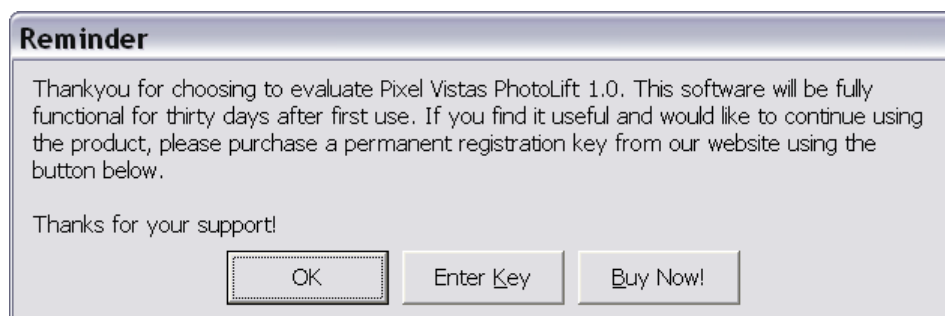


Figure 2.1. The *evaluation mode* dialog box is displayed during the evaluation period.

The *OK* button should be clicked to begin using the plug-in. The *Buy Now!* button provides a direct link to the Pixel Vistas website (<http://www.pixelvistas.com>), where a full license for the software may be purchased. Once you have purchased a registration key, press the *Enter Key* button to enter this key in the dialog box shown in Figure 2.2.



Figure 2.2. The *Enter Key* dialog box is used to enter the registration key after purchase.

After you purchase a license for the software, copy the key directly from the purchase email you received and paste it into the *Key* field. In the *Name* field, enter your first and last names exactly as you entered them during the order process. A message will inform you of correct registration. After a valid license key has been entered, *PhotoLift* is enabled for permanent operation, and the evaluation mode dialog box will no longer appear.

After the evaluation period has ended, a dialog box similar to Figure 2.1 will be displayed, but the software will no longer function. If you wish to continue use of the software, a registration key should be purchased. Otherwise, the software is easily removed from your computer by deleting the *Pixel Vistas* folder from the plug-ins directory.

Upgrading

Upgrades may be provided from time to time in order to fix any bugs which may arise and to provide additional features. Visit <http://www.pixelvistas.com/downloads.html> to check for the availability of upgrades. While we expect to provide minor upgrades free of charge, if we introduce significant new functionality to the software, we may require the purchase of a new or upgrade registration key.

3. Using *PhotoLift*

Overview

Figure 3.1 illustrates the user interface for *PhotoLift*. The interface is easy to use and mostly self-explanatory. The main elements are:

- in the top left of the window, a preview window showing the effect of the filter;
- below the preview, a set of controls for zooming and toggling the preview;
- to the right of the preview, a navigation pane showing the section of the image currently displayed in the preview; and
- along the bottom, panels of sliders controlling detail enhancement, base levels, sharpening and colour saturation.

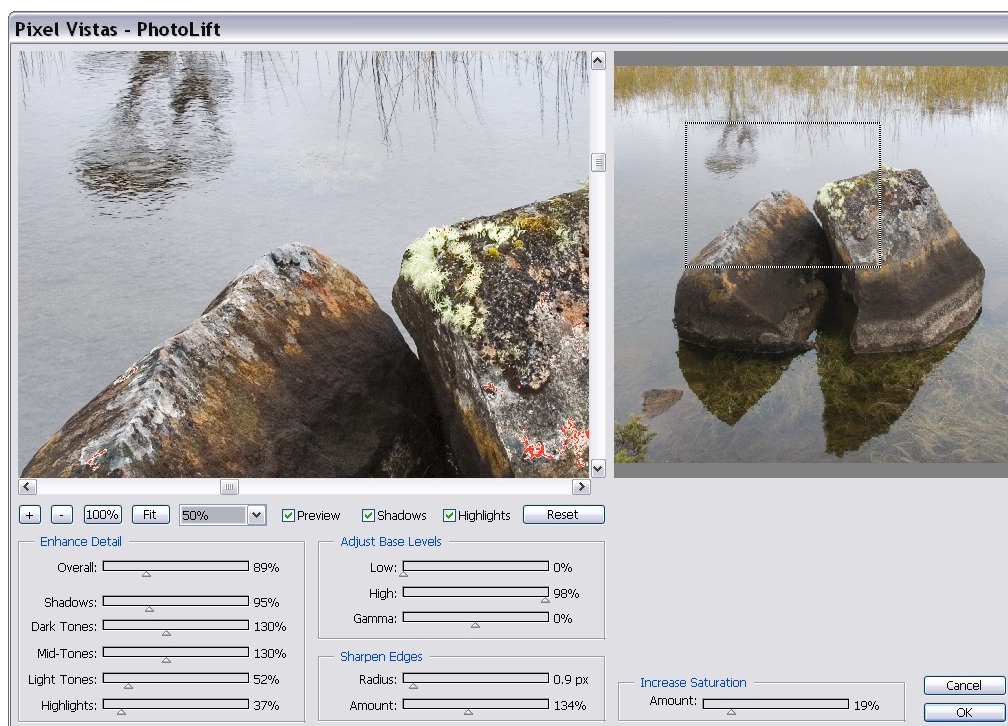


Figure 3.1. The user interface for *PhotoLift*, including a preview window at top left, a navigation window at top right, and various sliders controlling parameter values.

Using the Preview Window and Navigation Pane

PhotoLift's preview window operates in typical Photoshop fashion (for example, it is similar in operation to *Adobe Camera RAW*). Figure 3.2 shows the preview controls. These include + and - buttons for zooming in and out, a menu for selecting a specific zoom level, a 100% button for switching directly to a 100% zoom level, and a Fit button for zooming the preview to fit the entire image.



Figure 3.2. These buttons control the zoom level of the preview. The check boxes control the display of shadow and highlight clipping indicators.

The zoom level may also be changed by clicking on the preview using keyboard shortcuts. Use ctrl-click to zoom in on the preview, and ctrl-alt-click to zoom out.

The preview window may be scrolled in several ways. Horizontal and vertical scrollbars are provided. The preview may also be moved directly by dragging it using the mouse. Finally, the navigation pane may also be used to shift the preview window by clicking on the desired area. The dashed rectangle in the navigation pane illustrates the current location of the preview window.

A *preview* check box is provided to toggle the preview on and off. When this box is unchecked, the preview window shows the original image. The original image is also displayed whenever the preview window or navigation pane is being dragged.

Shadow and *Highlight* check boxes select whether areas of shadow and highlight clipping are to be indicated on the preview. A pixel is displayed as a clipped shadow when its luminance value (in Lab colour) is zero. Similarly, a pixel is displayed as a clipped highlight when its luminance value is the maximum allowed (255 in 8-bit mode, or 32768 in 16-bit mode). Clipped shadows are shown in blue and clipped highlights in red.

A cautionary note about low-zoom previews: Users should be aware that the previews shown at low zoom levels (those of 50% or less) are approximations only, and may not always present the effect of the filter with complete accuracy. In particular, the clipping indicators often show more clipping than is actually present in the 100% preview. We recommend that fine adjustments be made using the 100% zoom level.

Enhancing Detail

The *Enhance Detail* panel contains the main controls for augmenting detail levels in the filtered image. Five sliders are supplied for control of detail at various brightness levels in the image, from its darkest through brightest areas. (Note that there is some overlap between these divisions.) An *Overall* slider controls detail at all light levels simultaneously.

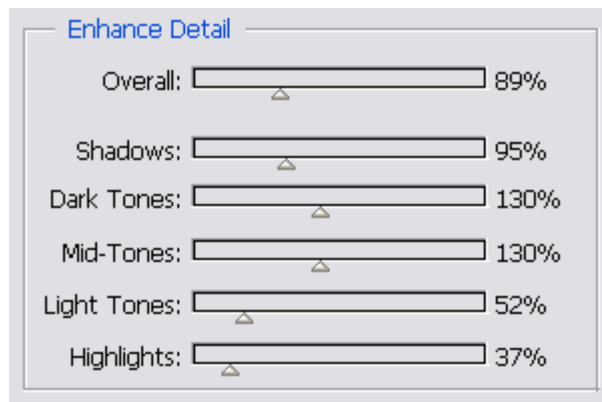


Figure 3.3. The *Enhance Detail* sliders control the amplification of local contrast.

As the *detail* sliders are adjusted, the preview window will show the effects of the adjustment. If any shadow or highlight clipping results, this will be indicated on the preview in the appropriate colour.

Adjusting Base Levels

As a result of heavy amplification of the detail layer, shadow and highlight areas in the image may become *clipped*. Highlight clipping occurs when a pixel's brightness level exceeds the brightest level that Photoshop can represent. When clipping occurs, detail in the clipped areas is lost and the clipped areas effectively become pure white. While this may be acceptable or desirable in some situations (for example, specular reflections), it is often undesirable to have significant areas of shadow and highlight clipping in an image.

To prevent clipping due to amplified detail levels, the luminance range of the base layer may be compressed to compensate using the *Adjust Base Levels* sliders, as shown in Figure 3.4. The *Low* slider increases the minimum brightness of the base layer; the *High* slider decreases its maximum brightness. (These are equivalent to *output levels* in Photoshop's *Levels* command.) The shadow and highlight clipping indicators may be used to judge how much compression is necessary.

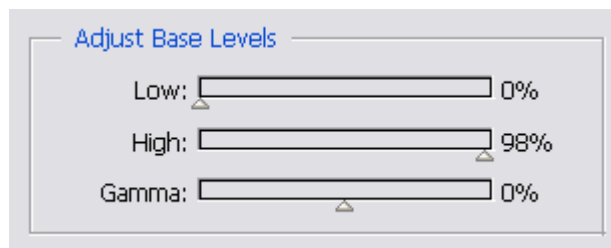


Figure 3.4. The *Adjust Base Level* sliders allow the user to compress the tonal range of the base layer in order to prevent clipping.

A *Gamma* slider is also provided for adjusting the gamma of the base layer, within the *Low* and *High* limits which have been set.

Keep in mind that these adjustments apply to the **base layer** only – once the adjusted detail level is recombined with the base layer to produce the filtered image, there will still be areas of high brightness and deep shadow. (In other words, the *Adjust Base Levels* panel does not limit the entire brightness range of the image.)

Sharpening

Figure 3.5 shows the *Sharpen Edges* panel. These sliders control the amount of edge sharpening applied to the image. A traditional *unsharp mask* is used in this operation, however the unsharp mask is applied only to the base layer, containing only the more prominent edges in the image. Consequently, this is effectively a form of *edge sharpening* – the fine detail in the image (including any image noise) remains untouched.

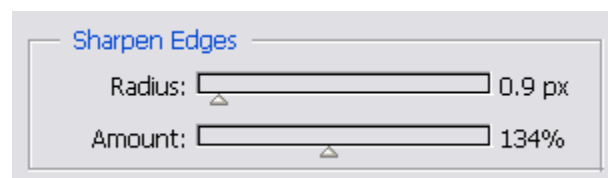


Figure 3.5. The *Sharpen Edges* sliders control the strength and radius of an unsharp mask applied to strong edges.

The *Radius* slider controls the area of influence of the sharpening operation. A small radius is usually best. The *Amount* slider controls the strength of sharpening. If no sharpening is desired, set *Amount* to zero.

Increasing Saturation

The *Increase Saturation* slider (illustrated in Figure 3.6) is provided to boost overall colour saturation. After amplification of detail using the *Enhance Detail* sliders, the image colours often appear slightly bleached or washed out. This can be compensated for by increasing saturation. If more precise control is desired over which hues are effected, Photoshop's *Hue/Saturation* adjustment should instead be used following application of *PhotoLift*.

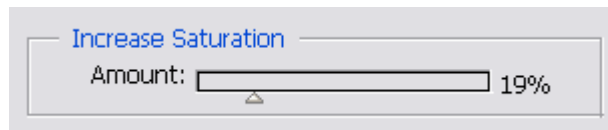


Figure 3.6. The *Increase Saturation* slider.

Suggestions for Successful Use of PhotoLift

One suggested method for applying *PhotoLift* is to use the following sequence:

1. Adjust the *Overall* detail slider to achieve the approximate amount of detail enhancement desired. Most likely, some of the brightest areas of the image will show highlight clipping.
2. Decrease the *High* base level slider to bring down the base layer and eliminate some of the highlight clipping.
3. Decrease the *Highlights* and *Light Tones* sliders to further reduce highlight clipping.
4. Decrease the *Shadows* and *Dark Tones* sliders if excessive shadow clipping is indicated.
5. Increase saturation a moderate amount to return natural-looking colour to the image.
6. Apply sharpening as desired.

As with many Photoshop filters, fine-tuning the effect of the filter is usually an iterative process. Nonetheless, the above sequence should be a helpful starting point for making successful use of the *PhotoLift* filter.

How to Use PhotoLift in the Workflow

Many cameras give photographers the choice of either RAW or jpeg capture for their images. While *PhotoLift* operates with both image formats, the use of RAW format is recommended in order to maximise image quality. If jpeg is being used, the highest quality level should be selected, as jpeg artifacts can be exaggerated by the *PhotoLift* filtering process.

We recommended using *PhotoLift* in conjunction with a high quality noise reduction filter, such as *Noise Ninja* from PictureCode (<http://www.picturecode.com>). Image noise, produced by cameras at high ISO settings, in long exposures and in under-exposed photographs, tends to be amplified by the *PhotoLift* filtering process. We recommend

using the noise reduction filter early in your image workflow, before the application of *PhotoLift*. A second, more moderate application of the noise reduction filter after *PhotoLift* may also be beneficial.

Excellent results can be obtained for many images simply by applying *PhotoLift* to the entire image. However, in other situations, we expect the photographer may wish to be more selective in the use of the filter. For example, some regions of an image may require more detail enhancement than others. Photoshop has many excellent tools available for this purpose, and we recommend that the photographer become acquainted with them. The following tools are useful for selectively modifying the effect of *PhotoLift*:

- The *Fade...* command. This command allows the user to over-apply the filter and then throttle back its effect to fine-tune the overall result.
- The *History Brush*. With this tool, the user can “paint” over areas of the filtered image at varying opacities to partially revert those areas.
- Duplicate layers and layer masks. Another way to selectively apply *PhotoLift* is to duplicate the image to a new layer, apply *PhotoLift* to the duplicate layer, and then create a layer mask. By painting the mask, the original image underneath can be selectively blended with the filtered image.
- Selection tools. The effect of *PhotoLift* can be restricted to a given area by the use of a selection. Many useful selection tools are available, including *Color Range*, the various *Lasso* tools and the *Magic Wand*. These selection tools can either be used before applying *PhotoLift*, or to a layer mask after filtering.

Refer to the Photoshop documentation for more information on the use of these tools.

Finally, the *Sharpen Edges* option available in *PhotoLift* may be used on its own, or as part of a more complete sharpening process. Image sharpening is a complex topic with many solutions available. For example, many photographers employ a two-stage sharpening process, with the second round of sharpening applied differently according to the output medium (e.g. web, small print, large print, etc.) Nonetheless, in some circumstances (for example, in the preparation of low-resolution images for web display), the *Sharpen Edges* feature provides a quick way to get good results.

4. Other Topics

Frequently Asked Questions

1. **What are the system requirements?** *PhotoLift* requires Microsoft Windows and Adobe Photoshop. A fast CPU and large amount of memory will be beneficial when running *PhotoLift* (we recommend a minimum of 1Mb of RAM). A screen resolution of at least 1024x768 is required.
2. **Is there a Macintosh version?** No, not yet. However, if the product proves popular, we would very much like to port the code to Mac.
3. **What version of Photoshop is required?** *PhotoLift* has been tested with Photoshop CS and CS2; we expect it will probably work with Photoshop 7.0 and 6.0 as well. (If you have successfully used *PhotoLift* with these or earlier versions of Photoshop, please let us know!)
4. **How large is the plug-in?** *PhotoLift* requires about 2.0Mb of disk space.
5. **What image modes are supported?** *PhotoLift* works with both 8- and 16-bit images, and supports RGB, grayscale, Lab, and CMYK colour modes.
6. **Is *PhotoLift* scriptable?** No, not yet. If there is demand for the plug-in to be scriptable (so that it may be used in actions), we would like to implement this feature in a future version.
7. **How can I stay informed about upgrades?** Product upgrades will be announced on the news page (<http://www.pixelvistas.com/news.html>). We also have a news feed which you can subscribe to.

Contacting Pixel Vistas

If you would like to get in touch about any of our products, please use one of the email addresses listed on our website at <http://www.pixelvistas.com/contact.html>. We welcome any feedback, suggestions for improvement and bug reports.

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