040b73747265616d747970656481a203840163c48403737373810a0a810b 0b815f5f84012584067f411b312d37

14882_TMSFilter.tiff ¬ **Filters**

This tools is always accompanied by the Bitmap Controller (;../BitmapControler/BitmapControler.rtfd;;¬).
In the filter portion of the panel you can control type, size, and effect of different filters.

880066_paste.tiff ¬Figure: The Filters panel

types;¬Filter Type
The Filters tool provides some predefined filters as shown and explained below: ¬
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Figure: Pop-up list of predefined filters

Schaerfefilter;¬Sharpen Filter
This filter increases the grayscale or color contrast between neighboring pixels, enhancing detail in an image.

Selective Sharpen Filter
Similar to the <*Sharpen Filter*>, this filter enhances the contrast in an image but respects existing sharpness. When selecting this filter, an additional entry field, <*Observe Present Sharpness*>, appears, where you can set a percentage value for filtering. The filtering effect will gradually increase for pixels having a sharpness from 0% to half of the value you've specified. For pixels of higher sharpness, the effect will diminish again.

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Figure: The portion of the Filters panel for setting the value of the sharpness to be observed.

For example, with a setting of 40%, the effect will be greatest on pixels having a sharpness of 20%. Pixels with a sharpness of 40%

won't be filtered at all. The effect on pixels with 10% and 30% sharpness values will be half of the *<Impact>* value. This filter is useful for reducing noise and subtle filtering of obvious edges.

Detail Contrast Enhancement
This filter is similar to the *<Sharpen Filter>*, but it's impact is more subtle. When you select this filter, an additional entry field appears, in which you can specify the *<Filter Size>*. This value refers to the size of the image features for which details should be enhanced.

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Figure: The portion of the Filters panel for setting the filter size.

UnschÙrffilter;¬Blur Filter
Blur filters (or unsharpen filters) are used for reducing color or grayscale differences between neighboring pixels. They remove contrast from images and make structures less visible.

Mittelwertfilter;¬Mean Value Filter
This filter is used to unsharpen images. Each pixel is assigned a weighted mean value based on the grayscale or color values of its neighboring pixels. This reduces noise, but also diminishes contrast and makes structures less visible, especially contrasts between foreground and background.

Minimum Value Filter
This filter is used for eliminating isolated and incorrect pixels. It works much like a mean value or median filter. As a side effect, the image will darken.

Maximum Value Filter
This filter is used for eliminating isolated and incorrect pixels. It works much like a mean value or median filter. As a side effect, the image will lighten.

Medianfilter;¬Median Filter

The median filter is used for eliminating isolated and incorrect pixels, freeing images from light noise. Non-homogeneous areas containing many grays or colors can be smoothed. The image's sharpness won't be reduced as much as with the mean value filter.

Spatter Filter
This kind of filter is useful for mildly distorting images. It replaces each pixel with a random one found in the filter matrix. The larger the matrix, the stronger becomes the effect of the filtering.

Dynamic Mean Value Filter
The dynamic mean value filter is used for preparing images for grayscale conversion. The decision to lighten or darken a pixel depends on the values of the pixel's neighbors within the filter matrix.

Vertical Edge Filter
Vertical edge filters extract vertical structures in grayscale or color images. Their effect is similar to that of the *<Find Edge Filter>*, but they concentrate chiefly on vertical structures. The result of the filtering is displayed according to the colors specified in the corresponding color well icons (;TMSFilter.rtfd;Konturfarbe;¬).

Horizontal Edge Filter
Horizontal edge filters extract horizontal structures in grayscale or color images. Their effect is similar to that of the *<Find Edge Filter>*, but they concentrate chiefly on horizontal structures. The result of the filtering is displayed according to the colors specified in the corresponding color well icons (;TMSFilter.rtfd;Konturfarbe;¬).

Find Edges Filter
This type of filter extracts the edges of grayscale or color images. The result of the filtering is displayed according to the colors, specified in the color well icons which are displayed for all edge filters.

Konturfarbe;¬Fore- and Background Color for Edge Filters
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Figure: The portion of the Filters panel for setting the colors for edge filters.

These color well icons are only available for the *<Vertical Edge Filter>*, the *<Horizontal Edge Filte*r> and the *<Find Edges Filter>*.

Pixels that have been recognized as parts of edges are assigned the color of the right color well, i.e., the foreground color. All other pixels are set to the color of the left color well. You can deactivate the color assignment either for foreground or background by removing the mark from the corresponding option button.

Hint: Smooth edge enhancement is possible by applying the filter only on selected channels. For example, if you use the HIS color model, select only the I-channel.

Elimination Filter
This filter is used to eliminate incorrect pixels. The advantage in comparison to the median filter is that only the incorrect pixels are removed without affecting the neighboring ones.

Emboss Filter
Using this filter creates a three-dimensional effect. It works best on grayscale images, and when employing a 3x3 filter matrix,

Grain Filter
The grain filter roughens an image by adding a random value to each pixel. This filter is especially suitable for coarse masks and blends.

FilterSelbst;¬User-defined Filter
This selection displays additional commands for defining your own filters, a process described in a separate chapter (;CustomFilter.rtfd;;¬).

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Figure: The portion of the Filters panel for defining own filters.

Matrix
The size of the filter matrix can be selected from five different options in the pop-up list: 3 x 3, 5 x 5, 7 x 7, 9 x 9, 11 x 11. The size of the matrix determines both the function and quality of the filter. The bigger the matrix, the more pixels are used for calculating the filter effect, and the more computing time is required. If you select a 3x3 matrix, the matrix consists of a center pixel and eight pixels surrounding it. If you use the 11x11 matrix, 121 pixels are used for calculating each pixel of your image.

You cannot select an arbitrary matrix size for a user-defined filter; you are restricted to the matrixes for which the filter was defined.

Color Model and Channel Selection
These controls are used for determining which color model and channels will be used during   image processing.
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After selecting the color model, you can restrict the filter's effect to particular channels. The *<Filter>* line specifies which channels will be filtered. The selections in the *<Set>* line specify the channels that can be modified by the filter.

<u>Note</u>: The channels that may be selected depend on how the corresponding filter is defined. This is especially important for user-defined filters.

Filter Impact
This slider enables you to specify how strong the effects of the filter will be.
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The range of this slider varies depending on the filter you are using.

Some filters allow to extend the range by entering numerical values in the entry field to up to some thousand percent.

Note: Repeatedly filtering an image with a low impact value (e.g., five times at 10%) has a different effect than applying the same filter once with a higher impact value (in this case, 50 %).

Next: ;CustomFilter.rtfd;;¬   User-defined Filters