



GIMP Plugin Registry

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Wavelet denoise

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The wavelet denoise plugin is a tool to reduce noise in each channel of an image separately. The default colour space to do denoising is YCbCr which has the advantage that chroma noise can be reduced without affecting image details. Denoising in CIELAB ($L^*a^*b^*$) or RGB is available as an option. The user interface allows colour mode and preview channel selection. The denoising threshold can be set for each colour channel independently.

Features

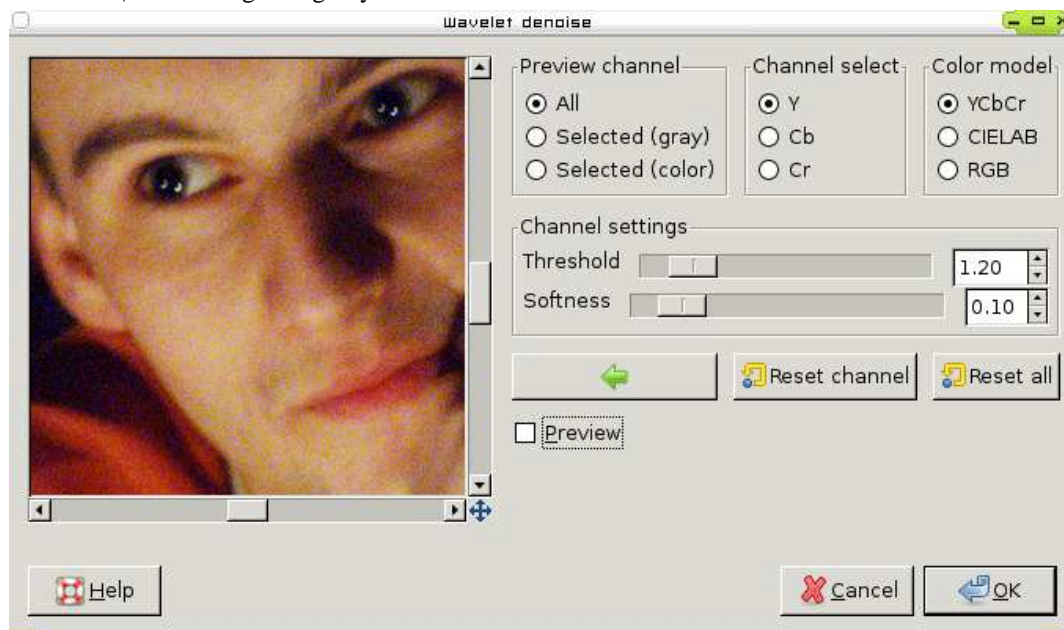
- User interface with preview is available.
- Amount of denoising for each channel is selectable.
- Possibility to denoise YCbCr or CIELAB channels instead of RGB exists.
- Noise profiling is done.
- Conversion from RGB to YCbCr and RGB to CIELAB is lossless.
- Preview is capable of displaying one single channel only if desired.
- Processing time is reasonably fast (around 20 seconds for a 10 Megapixel image) and independent from the amount of denoising applied.
- User interface in multiple languages is available.

Details

The wavelet denoise plugin for The GIMP reduces noise in an image using the algorithm copied and altered from the UFRaw program [Udi Fuchs] (which inherited the algorithm from dcraw [Dave Coffin]). Instead of denoising all RGB channels at once, the plugin implementation allows to denoise the RGB channels individually and - even more useful - to denoise the YCbCr or CIELAB channels individually. The colour model conversions are nearly lossless as the internal calculations are done in floating point numbers and rounding errors are avoided. Because the algorithm implements a wavelet filtering it runs quite fast.

Example

This is part of a picture taken with the Nikon D80 DSLR camera at ISO 1600 in RAW format. The face is lit by two candles and a colour temperature setting of 2500 K was used. The file was opened with the UFRaw plugin.



The goal is not to reduce all noise. The unpleasant part is the chroma noise which appears only when shooting the camera in RAW mode at a high ISO speed. As you can see the colour (chroma) noise is almost completely gone in the second picture and the luminance noise is slightly reduced. If you look closely at the face you will notice that the image details have not been altered much, the sharpness is almost the same.

Note that this is just the result of a uniform application of the filter on the unprocessed image. Masking the filter effect with a selection is possible which could improve the result even more.

Platforms

This plug-in runs on multiple platforms:

- Linux

The plugin can easily be compiled from sources but be aware that some Linux distributions provide packages:

- Ubuntu: Install the package 'gimp-plugin-registry'.
- ArchLinux: Install the package 'gimp-plugin-wavelet-denoise'.
- Debian: Install the package 'gimp-plugin-registry'.

- Windows

There exists a pre compiled binary for the plugin [here](#). (Thank you Francois C.!)

- Mac OS X

'Gimp on OS X' provides a complete Gimp distribution which includes the plugin. You can download it [here](#). (Thanks, Simone!)

What's new in version 0.3

The most significant changes are the introduction of noise profiling and internationalization.

- Noise profiling is done.
- Internationalization is possible now, several translations exist.
- New slider "Softness" (which replaces the old "Detail" slider, but is completely different from it) to control the thresholding mechanism.
- Introduction of the CIELAB (L*a*b*) colour space.
- Reorganisation of source files and new installation routine via Makefiles.

What's new in version 0.2

There are several changes that have been made to improve the plugin.

- The denoising is done on linear data now. The sRGB gamma of approximately 2.2 is compensated.
- The interface has been reorganized
- A 'Detail' slider has been added which affects the thresholds dependency on noise frequency.
- Tool-tips have been added.
- The single channel preview can now be displayed in colour.
- There is a 'Reset' button which resets the currently selected channel temporarily (during the time the button is pressed).
- Normal reset buttons have been added.
- The size of the dialog is saved now after it is closed.
- The default thresholds are all zero now.
- The progress bar was fixed and tweaked.

Apart from that minor other changes have been made.

License

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