darktable - Bug #12347

Invert module does not work for raw images

09/29/2018 12:33 AM - Christian Mandel

Status:	Patch attached	**Start date:**	09/29/2018	
Priority:	Low	**Due date:**		
Assignee:		**% Done:**	70%	
Category:	Darkroom	**Estimated time:**	0.00 hour	
Target version:	Candidate for next patch release			
Affected Version:	2.4.4	**bitness:**	64-bit	
System:	Ubuntu	**hardware architecture:**	amd64/x86	

Description

As discussed here: https://discuss.pixls.us/t/inverting-photos-of-color-negatives-with-darktable/9140, there are issues with inverting raw files. Since it becomes more and more popular to digitally photograph old film instead of real scanning, this is unfortunate. I tested with the files provided in the thread linked above and with my own scans with darktable 2.4.4, and the colour picker seems not to provide the correct colour in the raw case but works for my scans (tiff files).

History

#1 - 09/29/2018 12:39 AM - Christian Mandel

Maybe related: https://redmine.darktable.org/issues/11164 and https://redmine.darktable.org/issues/10835.

#2 - 09/29/2018 02:31 PM - Daniel Laidig

- File polar_bear.cr2 added

- File processing_examples_dt_gimp.jpg added

- File house.cr2 added

I have attached the two raw files I posted in the pixl.us thread and an overview image showing the results of using the darktable invert module and of inverting using GIMP (all CC-BY-SA).

I would also like to point out that it is quite easy to get good results using GIMP (without manual tuning except for optionally picking the film base color like in the darktable module).

Based on a tiff exported using darktable with the basecurve disabled:

- pick the color of the unexposed part of the film
- create a new layer with that color and choose the blend mode "divide"
- merge the two layers
- invert the image (colors > invert)

The image still looks flat (which can easily be solved), but the colors are quite good.

Another approach using GIMP is to stretch the histogram of all color channels individually:

- crop the image so that no unexposed part is in the image
- colors > invert
- colors-> levels > auto input levels (just called "auto" in GIMP 2.8)

Of course, this uses information from the whole image and makes assumptions that might easily be wrong for some images. But I think the first method that uses the film base color should be quite comparable to what darktable's invert module should be doing (and shows that it is possible to invert the image quite well based on the color of the unexposed film).

#3 - 09/30/2018 10:40 AM - Daniel Laidig

I have played around with the code of the invert module and I think I have found out what is going on and how to potentially fix it.

What darktable is doing is film_color - in (for each channel, where film_color is the value of the unexposed film and in is the input value of the pixel). When inverting in GIMP using the divide layer, the operation basically is 1 - in/film_color. The difference between the operations is a multiplication with film_color, which means each color channel is scaled differently.

I have hacked the divide version into the invert module (in a not very nice way by disabling the SSE implementation -- I don't have opencl anyway). It turns out that when disabling white balance (as picking the film color already does white balance) and also disabling the base curve (why?), I get an inverted picture with the right colors. It is still quite dull, so I cropped it and stretched the histogram using a tone curve with RGB chroma scaling.

I attached a screenshot of darktable with the inverted picture, the quick and dirty patch I used and the xmp. Of course the patch is far away from being something that could be merged. I am also not sure what would be needed for that (Generally, is this the right approach? Is there a way to make it better and require less postprocessing? What about backwards compatibility?)

#4 - 09/30/2018 11:36 PM - Daniel Laidig

- File 0001-quick-hack-to-make-inverting-sort-of-work.patch added

- File polar_bear.xmp added

- File screenshot_patched_invert_module.png added

Oops, here are the files.

#5 - 10/03/2018 07:13 AM - Aurélien PIERRE

- % Done changed from 0 to 70

- Status changed from New to Patch attached

- Target version set to Candidate for next patch release

Files

house.cr2	24.8 MB	09/29/2018	Daniel Laidig
polar_bear.cr2	25.1 MB	09/29/2018	Daniel Laidig
processing_examples_dt_gimp.jpg	2.74 MB	09/29/2018	Daniel Laidig
0001-quick-hack-to-make-inverting-sort-of-work.patch	1.37 KB	09/30/2018	Daniel Laidig
screenshot_patched_invert_module.png	748 KB	09/30/2018	Daniel Laidig
polar_bear.xmp	3.59 KB	09/30/2018	Daniel Laidig