

Image processing with FOSS

SyLunch April 9th, 2019

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Welcome to the longest presentation I ever did –
usually I prefer less than 10 slides...

Back to the roots



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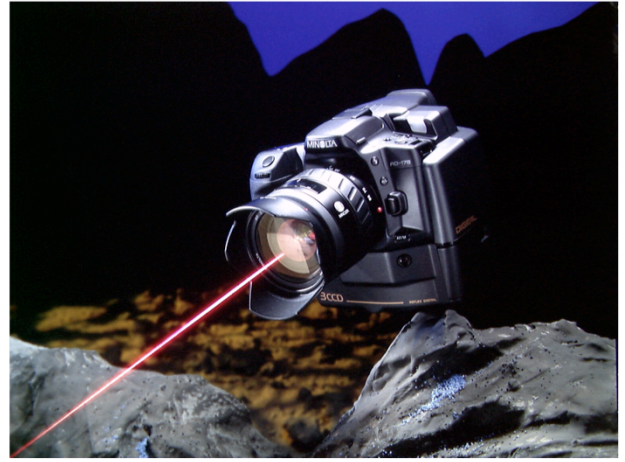
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I started my career in 1988 at Photo Bären in Zürich
(the shop is history since November 2018)

<https://fotistudio.ch/galerie/20181224-pleite>

Probably the strangest thing I used was the Canon
ION, a “Still video camera”

Going digital



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You see me 1996 at the Photokina in Cologne.

Minolta presented a prototype of a semi-professional DSLR: The RD-175.

https://en.wikipedia.org/wiki/Minolta_RD-175

In the next three years I assisted the sales crew in selling this CHF 19'990.- beast delivering 1.75 megapixels.

Wilber the Gimp

```
if (argc != 4) {
    fprintf(stderr, "\nmdc2tiff (C) Version 2.0 1997 Beat Rubischoen <beat@rubis.ch>\n");
    fprintf(stderr, "Usage: mdc2tiff 0|1|2|3 <infile> <outfile>\n");
    fprintf(stderr, "      compression 0=none, 1=lzw, 2=zip, 3=packbits\n\n");
    return(-1);
}

fd = open(argv[2], O_RDONLY);
if (!fd) {
    fprintf(stderr, "Infile could not be opened\n");
    return(-1);
}

ret = read(fd, &header[0], 512);
if (ret != 512) {
    fprintf(stderr, "Error reading header\n");
    return(-1);
}

if (header[0] != 0x00 && header[1] != 0x00) {
    fprintf(stderr, "Wrong magic number\n");
    return(-1);
}
```



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Since I used Linux on my workstation, I quickly adopted Gimp, built 0.54 using Motif from the Caldera Network Desktop, later on 0.9x from the nightly snapshots.

<https://www.gimp.org/>

<https://en.wikipedia.org/wiki/GIMP>

In Summer 1997 I built my first, only and last C program, converting the proprietary file format into TIFF, occasionally enhanced to code to a Gimp plugin.

<ftp://ftp.0x1b.ch/pub/mdc2tiff/>

Minolta Japan dropped Digital Cameras in 1999, a few years later the company was history...

My first Canon (and my 2nd)



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I bought my first own DSLR in November 2009.

<https://fotistudio.ch/galerie/20091121-erste-bilder>

25k pictures later, in April 2011, I exchanged my Hasselblad to a large DSLR.

<https://fotistudio.ch/galerie/20120401-fruehlingsspaziergang>

My processing tools in chronological order:

- iPhoto (because it was part of MacOS X)
- Aperture (because iPhoto didn't scale)
- Lightroom (because Aperture didn't support 5D3)

Getting rid of Adobe...



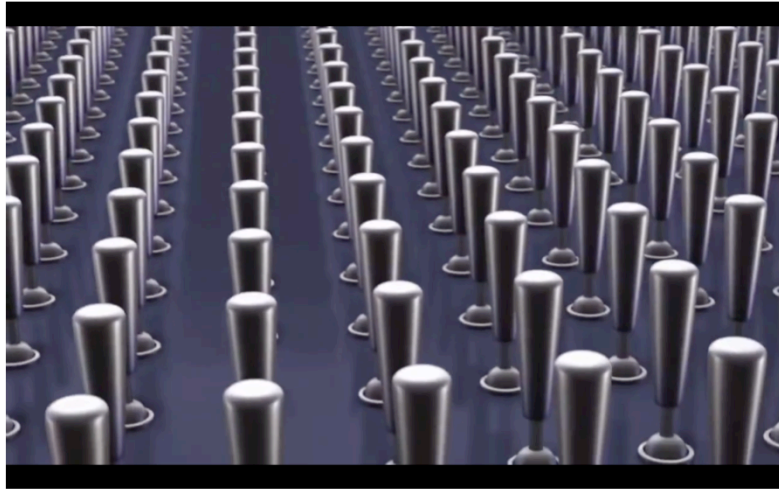
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Adobe made me angry in 2015 when they started to add features (the dehaze filter) to the rented Lightroom only. I decided to get rid of their products, switch to open source due to my upcoming employment at Red Hat and started a long journey.

https://fotistudio.ch/pages/can_of_worms

...feels like...



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Do you know the little alien in the Pixar Short Movie “Lifted”? I felt the same way. Processing RAW files from a Bayer based DSLR is rocket science and the FOSS tools do not hide this fact from the user.

...but is a lot of fun!



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I learnt more then ever before about digital images – stuff I never wanted to know :-)

And I did a lot of crazy things: On the left you see me taking photos from darkness, on the right you see taking me photos containing white.

<https://fotistudio.ch/pages/dark-frame>

<https://fotistudio.ch/galerie/20160102-telezoom>

<https://fotistudio.ch/galerie/20160703-vampir>

My tools - DAM

- <https://www.digikam.org/>
 - https://www.digikam.org/recipes_book/
- <https://www.idimager.com/>

I found it impossible to cover all the aspects of selecting, tagging, developing and storing pictures in a single tool.

I evaluated DigiKam and Photo Supreme, both fat clients available offline but also capable of working against a central database and file share.

I dropped Photo Supreme after discovering it's a one man show.

My Tools – RAW Developer

- <http://rawtherapee.com/>
 - http://rawpedia.rawtherapee.com/Main_Page
- <http://www.darktable.org/>
- <http://www.lightzoneproject.org/>
- <http://photoflowblog.blogspot.com/>

I started developing with Darktable, it's the de facto standard in the FOSS world. Once I saw the results of a 25600 ISO show I gave DigiKam a try and never turned back.

Lightzone is nice, but somewhat limited for today. Basically there is no lens correction available.

Photoflow is still young and in the Beta state – even the results sometimes look stunning.

My Tools - Editing

- <http://www.gimp.org/>
- <http://hugin.sourceforge.net/>
- <http://qtpfsgui.sourceforge.net/>

Still Gimp user, now with 23 years of experience :-)

Hugin for Panoramas:

<https://fotistudio.ch/tags/panorama>

And Luminance HDR for HDR:

<https://fotistudio.ch/tags/hdr>

My Tools - Helpers

- <https://www.rawdigger.com/>
- <https://www.markus-enzweiler.de/software/software.html>
- https://helpx.adobe.com/ch_de/photoshop/using/adobe-dng-converter.html
- <https://helpx.adobe.com/photoshop/digital-negative.html#resources>

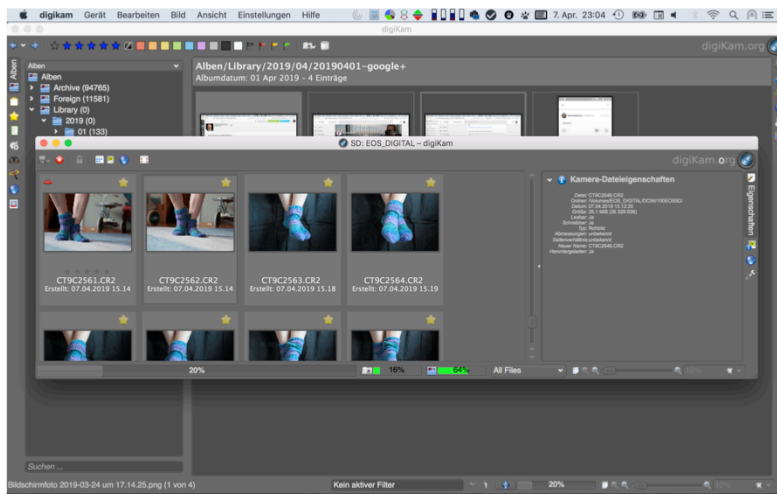
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Some nice helpers, indispensable and without FOSS alternative.

- RawDigger comes from the libraw people and is an excellent tool to analyze RAW files
- Starstax helped me to stitch star trails
http://www.0x1b.ch/blog/1387880716/index_html
- The Adobe tools provides me the necessary DCP and LCP profiles for RawTherapee

Workflow - Import



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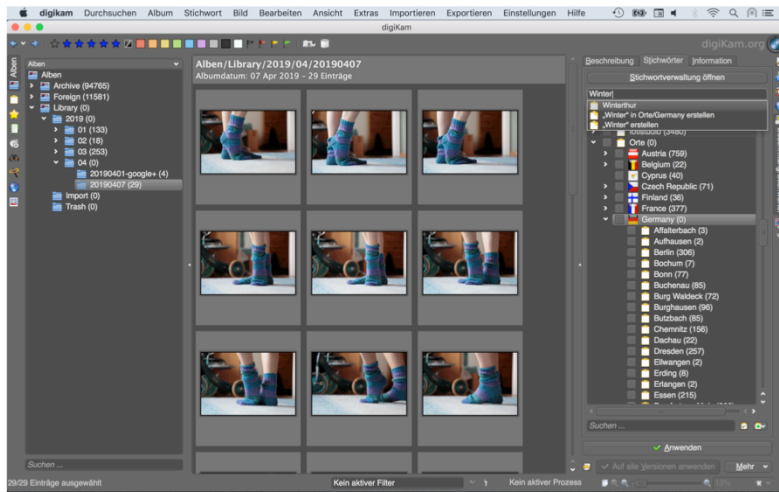
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Sucking the pictures from the SD-Card, the CF Slot is rarely used by me.

I use a directory structure from the beginning, influenced by iPhoto:

<https://fotistudio.ch/galerie/20190102-ablage>

Workflow - Tagging



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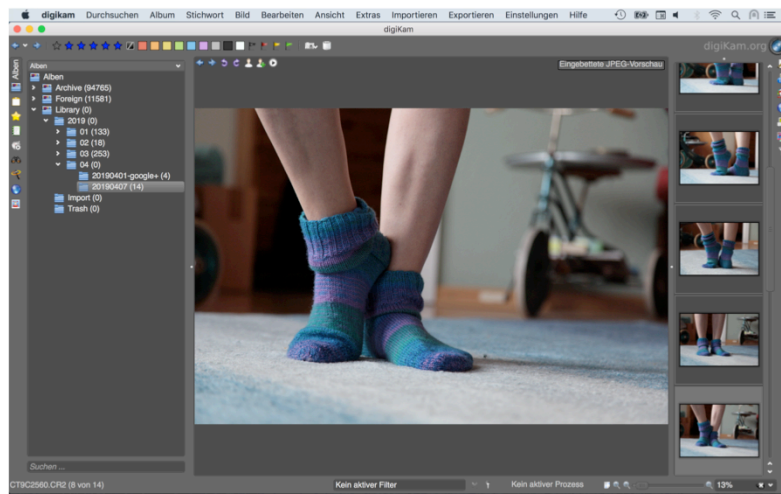
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IPTC and XMP Tags:

<https://fotistudio.ch/tags>

<https://fotistudio.ch/orte>

Workflow – Delete, delete, delete :-)

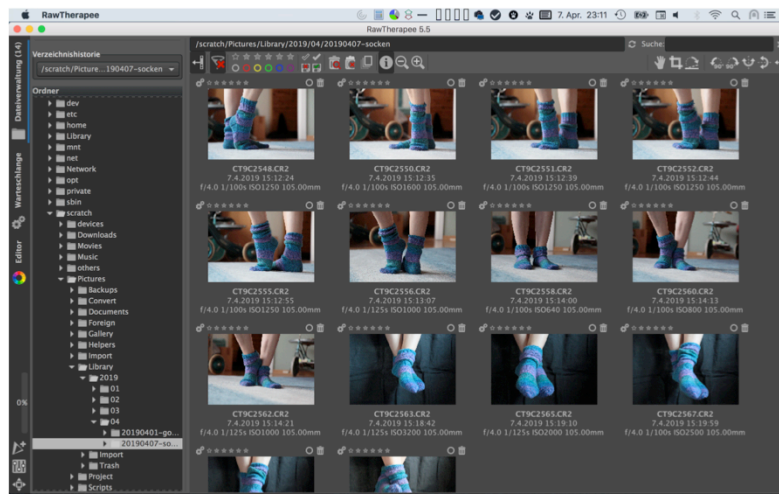


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...sometimes hard but necessary...

Workflow – Switch to RawTherapee

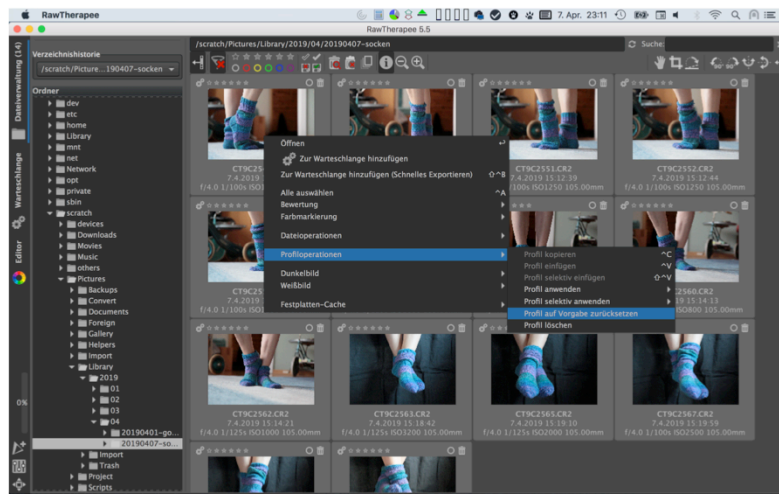


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Open the same folder.

Workflow – Apply basic settings



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- No Auto Exposure
- Sharpening
- Slight SharpenEdge
- Slight SharpenMicro
- Amaze demosaicing
- FlatField / DarkFrame auto
- Preset for Black & White
- Preset for Toning
- Preset for Vignette
- Exposure +1
- Link to DCP/Canon EOS 5D Mark III Camera Faithful.dcp

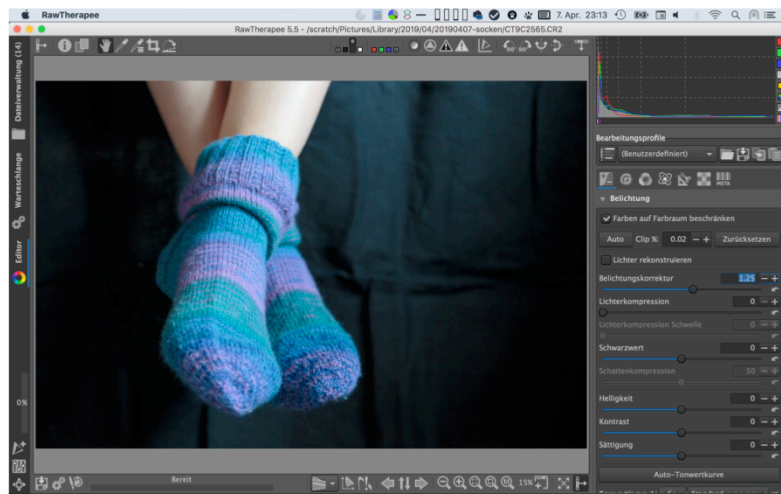
ISO Settings:

- Exposure +0.6/+1/+1.3
- Noise reduction including median filter
- Immse > 10k ISO

Lens profiles:

- link to LCP/Canon EOS-1Ds Mark III (Canon EF

Workflow – Adjustments



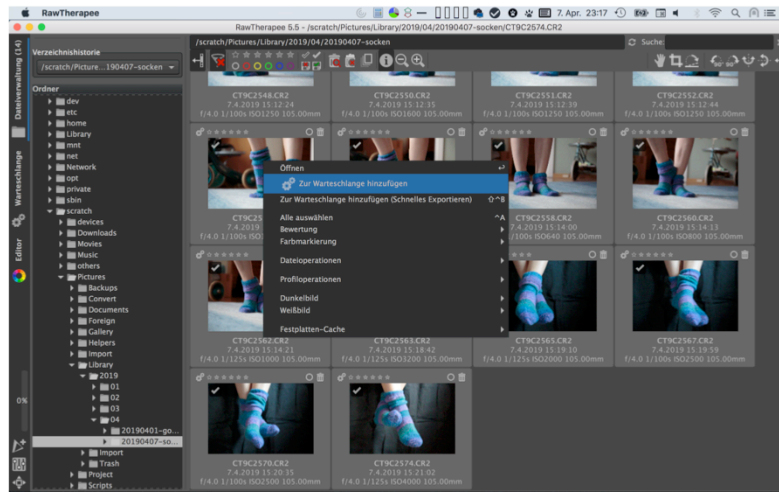
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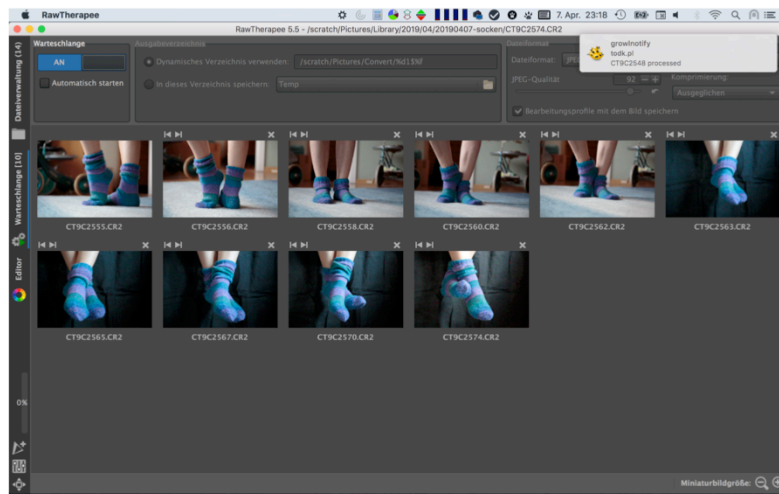
In most cases:

- Exposure correction ($\frac{1}{4}$ up or down)
- Highlight / Shadow compression
- White balance

Workflow – Place into queue



Workflow – Process queue



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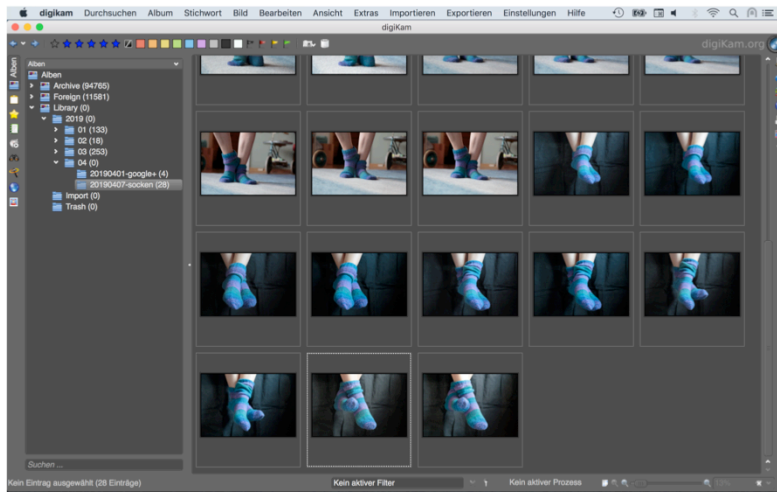
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Takes some time – yes, commercial software is faster.

A Script triggered by a folder action (OS X) / incron (Linux) takes the final output, tags it with the ITPX/ XMP data from DigiKam, shrinks it to a preview and places it back into DigiKam.

`scripts/todk.pl`

Workflow – Switch to Digikam

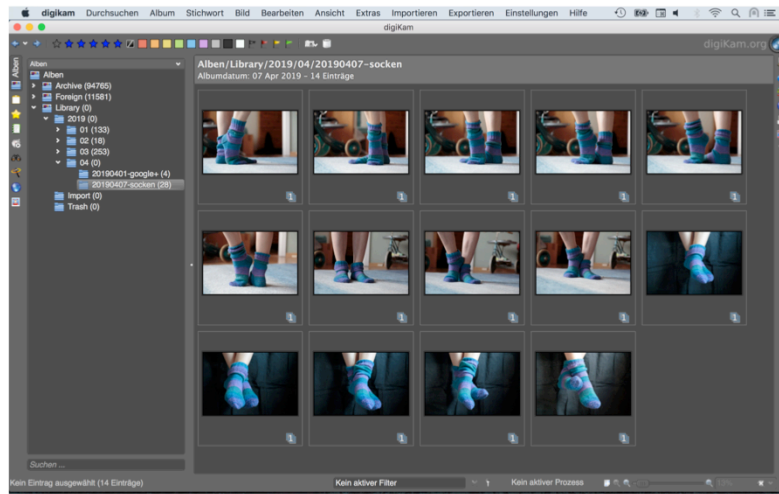


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Hopefully the pictures are already visible, otherwise use "Refresh".

Workflow – Stack pictures



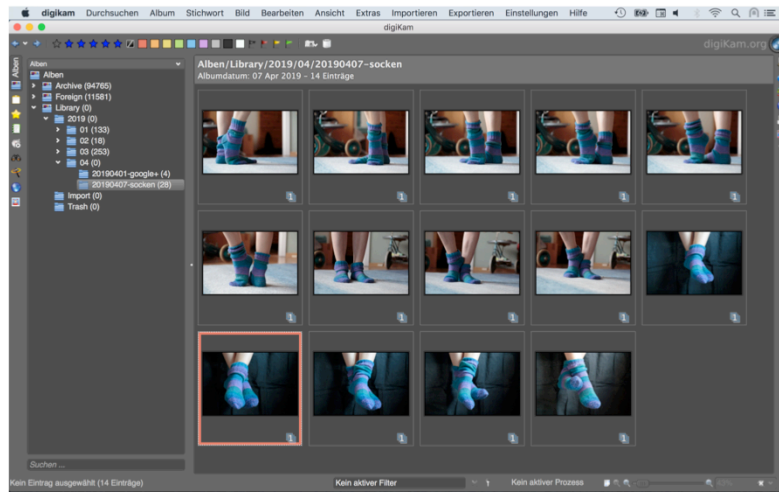
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Scripted...

`scripts/stack.pl`

Workflow – Select for gallery



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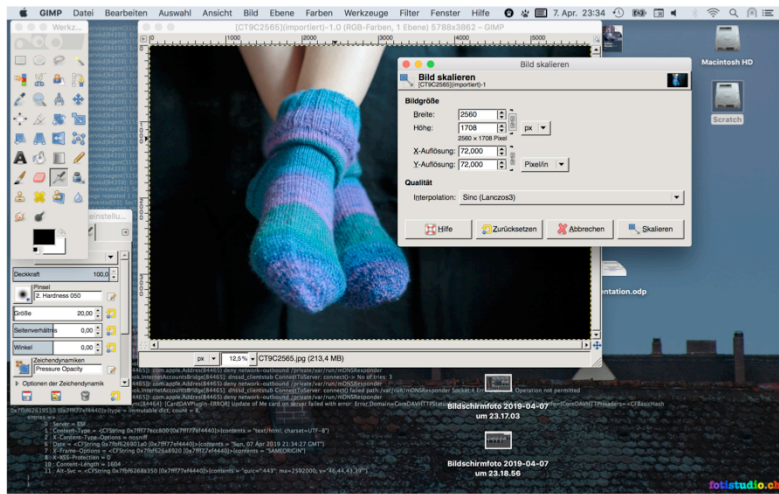
Once again I have a script exporting all “Red” Pictures and uploading them by rsync.

`scripts/gallery.sh`

Once uploaded, the pictures are filed into a DokuWiki.

https://fotistudio.ch/pages/the_big_picture

Exception – Use Gimp

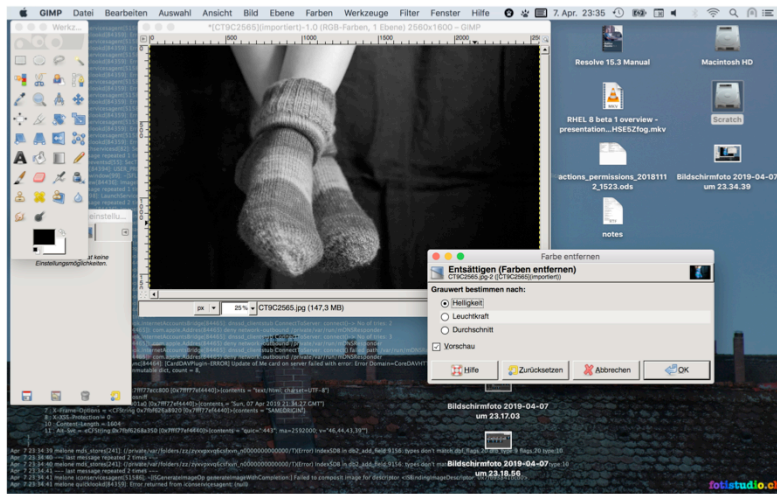


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I use rarely Gimp. In this example I create a background for my notebook.

Exception – Make B/W

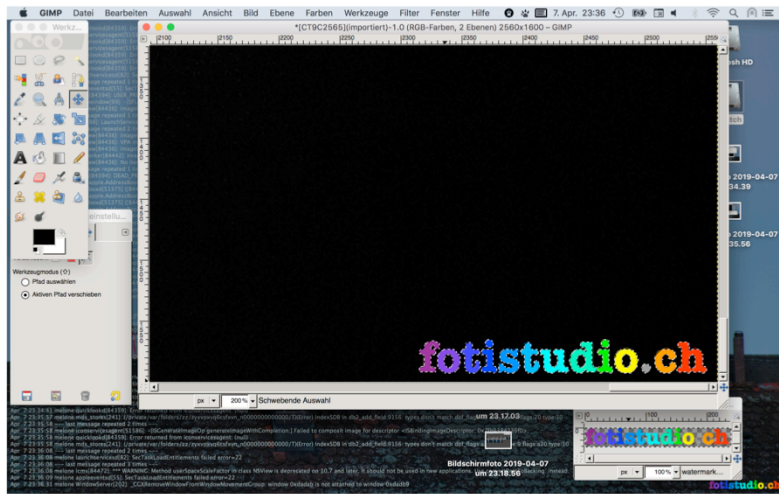


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I rarely pimp pictures, my desktop wallpapers are an exception.

Exception – Add logo

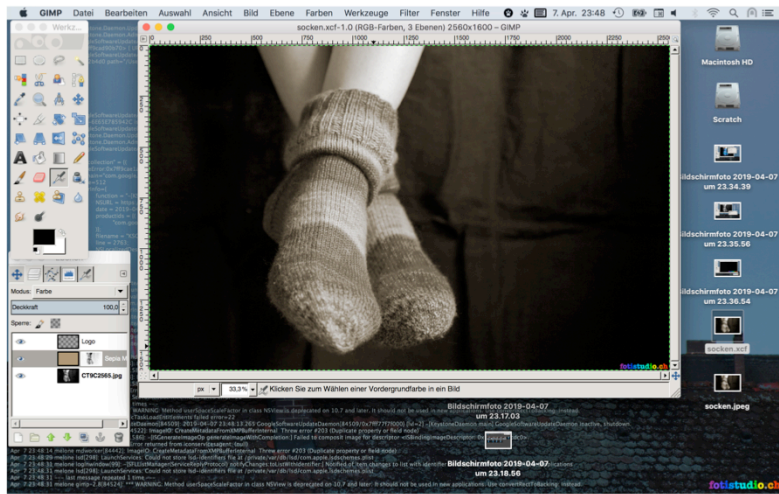


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A must when carrying my notebook to customers ;-)

Exception – Toning



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See https://www.gimp.org/tutorials/Sepia_Toning/

Famous last words

- https://fotistudio.ch/pages/can_of_worms
- <https://fotistudio.ch/galerie/20190102-ablage>
- <https://fotistudio.ch/pages/dark-frame>
- <https://fotistudio.ch/galerie/20160703-vampir>
- <ftp://ftp.0x1b.ch/pub/mdc2tiff/>

Insights I'm taking into my daily work:

- Automation is dangerous, the current flow works fine, but I'm scared of an upgrade of DigiKam
- Getting rid of commercial products doesn't mean saving money, neither in the case of Adobe nor with Oracle

Thanks for listening / reading :-)