
How to digitize slides

Table of Contents

Capture the image	2
Scanner approach	2
Hacker approach	2
Slide adapter	3
Tune the image	4
Rotate the image	5
Remove black borders	5
Improve the picture	5
Restore colors	5
Dots and scratches	5
Big spots	5

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The target is to digitize the following slide, that I took years ago in Australia. To compare the different methods, I zoomed into the section of the front wheel.



Capture the image

Scanner approach

I tried a HP scanjet 3570c with 4800 dpi resolution. It was very slow and I had problems with dust. Newer Scanner of course should be always better and much faster, but is it worth the money?



Hacker approach

Just take a picture from the slide. I used my pocket camera Pentax Optio S60 (6Mega pixels) using the best camera settings, no flash and super macro. I needed to zoom in a bit to get a full picture of the slide that was in an old battery based slide viewer. I put everything on a table and use the timer to take the picture and made the room a bit dark.



The hacker approach looked very promising. It was much faster to capture, much less dust sensitive and better picture quality. The only disadvantage is that the picture got yellow, due to the incandescent light bulb. Luckily today are bright white LED's available that easily improve this.

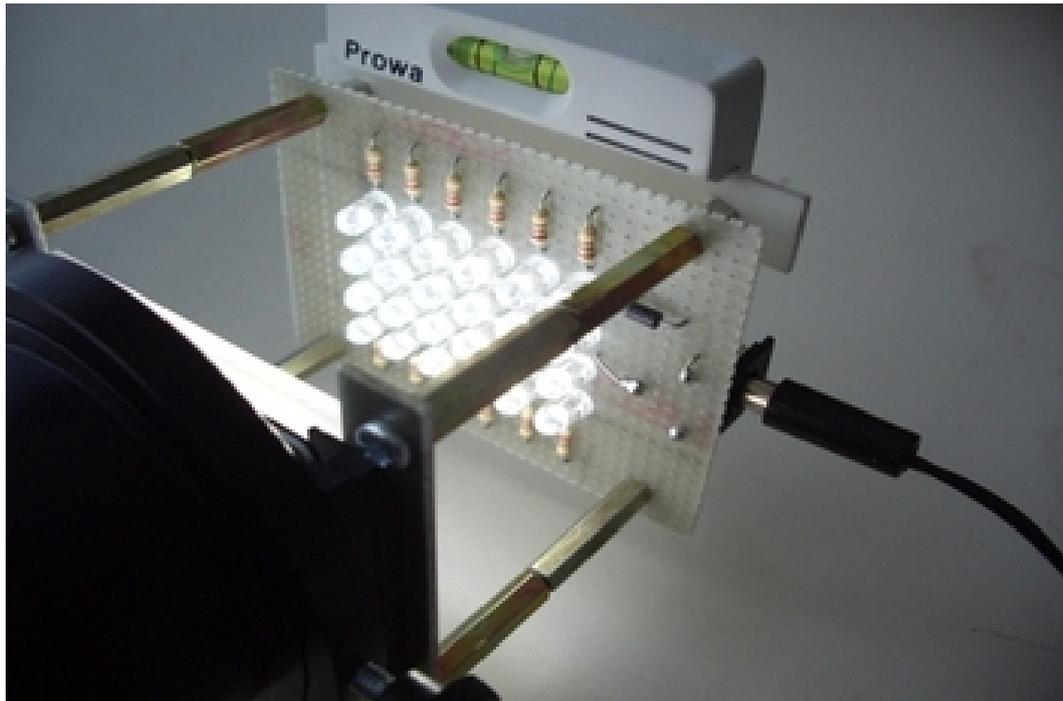


Slide adapter

Now the ultimate improvement is using a camera with a slide adapter. The slide adapter is from: <http://srb-photographic.co.uk>



I improved it to have a customized LED light (containing 6 times 4 single LEDs).



Since the camera turns the slide when its auto focus function takes place. The length and weight of the adapter might cause bending stresses on the camera, so it is recommended to point the camera towards the floor and use a tri-pod. The picture needs to be zoomed, focused, put horizontal and then captured. Finally this gave the best result of all methods tested.



Tune the image

The captured image probably does not satisfy completely, it might have black borders and not completely horizontal. Using gimp the following operations can fix it.

Rotate the image

In the window showing the image select in the menu Layer, Transform, Arbitrary Rotation. However it is not recommended to do this since the picture loses quality (maybe due to the data compression of jpg, since it works on rectangular squares), it is therefore much better to take care and capture it already horizontally.

Remove black borders

In the window Toolbox, select Rectangle Select Tool. In the window showing the image, select the picture in a manner that no black borders appear. In the menu Image click to Crop to Selection and you get the picture.

Improve the picture

In the GPL world the program for that is Gimp. Instead of installing appropriate plugins for each issue, the already available techniques can be applied:

1. Use Filters>Blur to denoise the pictures, the loose information and get softer
2. Filters>Enhance has some other features
3. Editing is another option where color picker, brush and finally smudge are the tools

Restore colors

Find a gimp script here: http://www.lionhouse.plus.com/photosoftware/gimp_plugins/

1. Download the restore.py file
2. Copy it to the plugin directory of GIMP (Linux: /home/<user>/gimp-2.6/plugin-ins/)
3. Make the script executable (in the plugins dir on a shell write "chmod a+x restore.py").
4. Launch GIMP 2.6, and you should find a new main menu entry named "Restore".
5. Open up a scan/photo and apply the plugin.

Dots and scratches

Dots and scratches need to be over painted. To not make it visible do:

1. Use the free select tool to mark the area around the dot. Consider to use Select > Feather to not have a sharp selection border.
2. Use the color picker tool to get the color and then the paint brush or any other tool to remove the dot.
3. Use the smudge tool to get rid of sharp edges in the color difference.
4. Finally apply filters noise to not have an uniform colored area.

Big spots

Big spots can usually not be over painted. Free select tool and to not create sharp edges select feather to 100 pixels. To not see the disturbing selection border press **Ctrl+T**, the work with contrast and colors until you are satisfied.