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Convertron3000

Convertron3000 is a graphics converter for Commodore 64 computers. It runs on Linux, MacOS, Windows and other systems supported by Python.

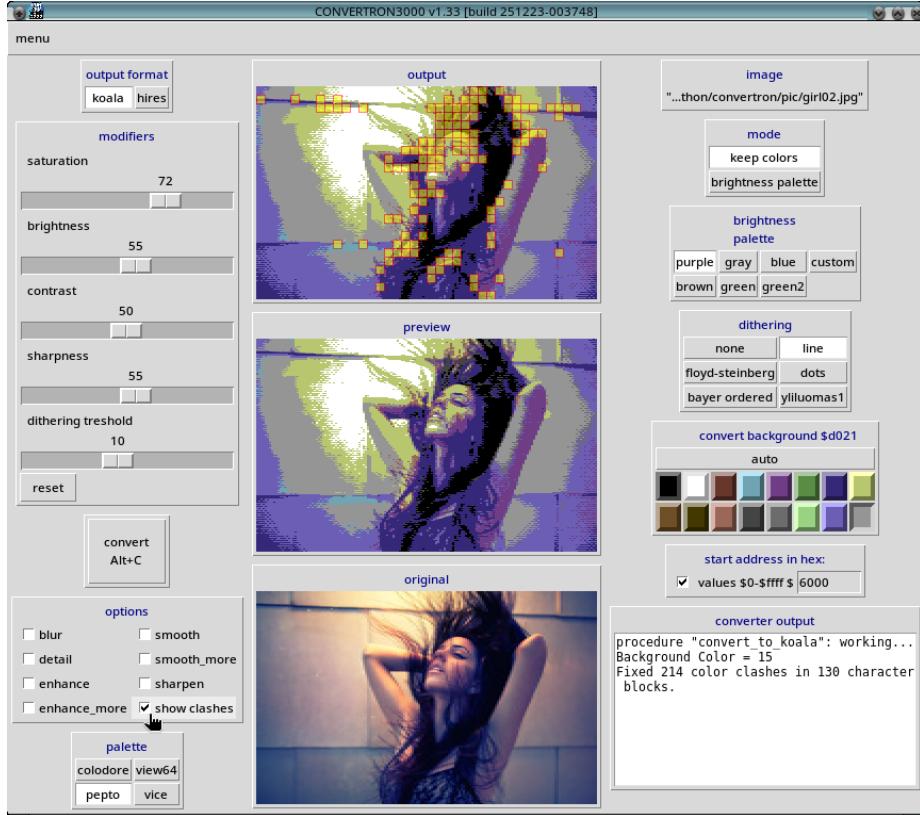


Figure 1: screenshot

Why Convertron3000?

| reason | description |
|-----------------|--|
| open source | easy to modify and to improve, any useful contribution is highly welcome |
| portable | available on Linux, MacOS, Windows and any other system supported by Python3 |
| instant preview | just fiddle around with the sliders and see the result before converting |

| reason | description |
|-------------------------|---|
| deal with color clashes | visualize color clashes instantly or read out their position from an optional json-file |

Author

- fieserWolf/Abyss-Connection - *initial work* - <https://github.com/fieserWolf> <https://csdb.dk/scener/?id=3623>

Acknowledgments

- thanks to Green/ATW for spontaneously naming Convertron3000 :)
- thanks to people on csdb.dk for commenting and giving ideas how to improve
- thanks to Henrik Blidh for his hitherdither library <https://github.com/hbldh/hitherdither> which I use

Using Convertron 3000

Usage

Using Convertron3000 is pretty straight-forward:

- Open some image.
- Adjust the sliders or apply an effect.
- Convert to koala or hires format.
- optional: Check position of color-clashes.
- Save the resulting image.

Dithering

As of now, Convertron3000 offers various dithering methods. As the PIL-library only implements “floyd-steinberg”-dithering, all other dithering methods were taken from the hitherdither library.

| reason | description |
|---------------------------|---|
| floyd-steinberg dithering | speedy performance from the PIL-library |
| bayer-ordered dithering | the speedy standard, my favourite for C64 pictures |
| line dithering | a modified bayer-ordered dithering method, sometimes looks better than normal ordered dithering |
| dot dithering | not my favourite, but might give nice results on some pictures |
| yiluomas1 dithering | Warning: Painfully slow - use with care! The results are stunningly good sometimes, though. |

Please, take note that all dithering implementations except “floyd-steinberg”-dithering are quite slow when using the “Brightness palette”-mode, which is described below.

Brightness palette

Sometimes converted images look better when applying a palette based on brightness values.

- Select “brightness palette” mode.
- Choose one of the presets (“purple”, “brown” etc.).

You can also create your own palette like this:

- Edit the .json file: In the .json file you specify the size of your palette and the C64-colors like in one of the examples provided.
- Open your .json file. You find this option in the drop-down menu under “open custom gradient”
- Choose “custom” as your brightness palette.

File Formats

The multicolor bitmap is stored in the widely-spread KoalaPainter (.ko) format:

- 2 bytes load address
- 8000 bytes raw bitmap data
- 1000 bytes raw “Video Matrix” (screen) data
- 1000 bytes raw “Color RAM” data
- 1 byte background data

The hires bitmap is stored in the widely-spread Advanced Art Studio (.art) format:

- 2 bytes load address
- 8000 bytes raw bitmap data
- 1000 bytes raw “Video Matrix” (screen) data

Commandline options

```
CONVERTRON3000 v1.33 [build 250322-030736] *** by fieserWolf
usage: convertron.py [-h] [-i INPUT_IMAGE] [-c CLASHES_JSON] [-o CLASHES_IMAGE] [-d]
```

This program reads an image-file, lets the user adjust settings and converts it to a C64 koa

```
options:
-h, --help            show this help message and exit
-i, --image INPUT_IMAGE
                      image file)
-c, --clashes CLASHES_JSON
                      filename of report containing all color-clashes (in json-format (de
-o, --output CLASHES_IMAGE
                      filename of color-clash image (default="/tmp/color_clashes.png")
-d, --debug           show color-clashes on console
```

Example: ./convertron.py -i image.png -c /tmp/clashes.json -d

Getting Started

Convertron3000 comes in two flavors:

- standalone executable for 64-bit systems Linux, MacOS/Darwin and Windows (see releases)
- Python3 script

Run the standalone executable

Just download your bundle at releases and enjoy. Keep in mind that only 64bit systems are supported as I could not find a 32bit system to generate the bundle.

Note for Windows users

If some antivirus scanner puts Convertron3000 into quarantine because it suspects a trojan or virus, simply put it out there again. It isn't harmful, I used PyInstaller to bundle the standalone executable for you. Unfortunately, the PyInstaller bootloader triggers a false alarm on some systems. I even tried my best and re-compiled the PyInstaller bootloader so that this should not happen anymore. Keep your fingers crossed ;)

Note for MacOs users

Your system might complain that the code is not signed by a certificated developer. Well, I am not, so I signed the program on my own.

"Convertron3000" can't be opened because it is from an unidentified developer.

You need to right-click or Control-click the app and select "Open".

Run the Python3 script directly

Download *convertron.py* and the whole *resource* - directory into the same folder on your computer.

Prerequisites

At least this is needed to run the script directly:

- python 3
- python tkinter module
- python "The Python Imaging Library" (PIL)
- python "argparse" library
- python "hitherdither" library

Normally, you would use pip like this:

```
pip3 install tk pillow argparse git+https://www.github.com/hbldh/hitherdither
```

On my Debian GNU/Linux machine I use apt-get to install everything needed:

```
apt update  
apt install python3 python3-tk python3-pil python3-pil.imagetk  
pip3 install git+https://www.github.com/hbldh/hitherdither
```

Changelog

Future plans

- custom brightness palette editor

Any help and support in any form is highly appreciated.

If you have a feature request, a bug report or if you want to offer help, please, contact me:

<http://csdb.dk/scener/?id=3623> or wolf@abyss-connection.de

Changes in 1.34

(next release candidate)

- all settings can now be written to a file and restored to a file (json format)
- rearranged the main layout to simplify the workflow (all controls are closer by now)
- rewritten the whole code, split up into parts
- rearranged the documentation
- bug fix: proper file-not-found handling when opening images
- bug fix: fixed crash when not finding reasonable color replacement in hires mode (thanks slesinger for the bug report)

Changes in 1.33

- added: color-clashes can be saved as image and as json
- bug fixes

Changes in 1.32

- added proper commandline argument parsing (try “convertron.py –help”)
- added json output of color clashes (can be read from other tools to work on color clashes)
- fixed: removed leftover saving debug image “/tmp/1.png”

Changes in 1.31

- fixed: wrong hires image dimensions when using line dithering

Changes in 1.3 (on X2024)

- fixed: proper scaling, better conversion
- show position of color clashes in GUI and on console

Changes in 1.2

- proper dithering support: bayer-ordered, line dither and some others
- GUI improvements
- moved standalone executables to releases

Changes in 1.1

- transferred whole code to Python3
- great speed improvement, converts much faster now
- new feature: specify image on the command-line, e.g. “convertron.py picture.jpg”
- standalone executables for 64bit-systems: Linux, Darwin (MacOS) and Windows
- GUI design adjusted for MacOS/Darwin
- numpy library not used any more
- documentation
- custom brightness palette now uses .json format

Changes in 1.01

- added licenses
- added to github with proper README.md

Changes in 1.0

- hires mode
- colodore palette
- button: reset color modifiers to default
- start address now in hex
- custom brightness palette (config file)

Changes in 0.1

- initial release

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For further questions, please contact me at <http://csdb.dk/scener/?id=3623> or wolf@abyss-connection.de

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Version 3, 29 June 2007

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hitherdither-library

<https://github.com/hbldh/hitherdither> library used

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argparse

<https://github.com/bewest/argparse> library used

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History

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