

Contents

Convertron3000	3
Why Convertron3000?	3
Author	4
Acknowledgments	4
Using Convertron 3000	5
Usage	5
shortcuts	5
Dithering	5
Brightness palette	6
File Formats	6
Commandline options	6
Getting Started	8
Run the executable	8
Note for Windows users	8
Note for MacOS users	8
Run the Python3 script directly	8
Prerequisites	8
Download Convertron3000	9
Changelog	10
Future plans	10
Changes in 1.35	10
Changes in 1.34 (on Dream210 Party 2025)	10
Changes in 1.33	10
Changes in 1.32	10
Changes in 1.31	10
Changes in 1.3 (on X2024)	11
Changes in 1.2	11
Changes in 1.1	11
Changes in 1.01	11
Changes in 1.0	11
Changes in 0.1	11
License	12
GNU General Public License	13
Preamble	13
TERMS AND CONDITIONS	14
0. Definitions	14

1. Source Code	15
2. Basic Permissions	15
3. Protecting Users' Legal Rights From Anti-Circumvention Law	16
4. Conveying Verbatim Copies	16
5. Conveying Modified Source Versions	16
6. Conveying Non-Source Forms	17
7. Additional Terms	19
8. Termination	20
9. Acceptance Not Required for Having Copies	21
10. Automatic Licensing of Downstream Recipients	21
11. Patents	21
12. No Surrender of Others' Freedom	23
13. Use with the GNU Affero General Public License	23
14. Revised Versions of this License	23
15. Disclaimer of Warranty	24
16. Limitation of Liability	24
17. Interpretation of Sections 15 and 16	24
How to Apply These Terms to Your New Programs	24
Python 3 license	26
The Python Imaging Library (PIL)	27
Tcl/Tk License Terms	27
hitherdither-library	28
argparse	29
History	29

Convertron3000

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

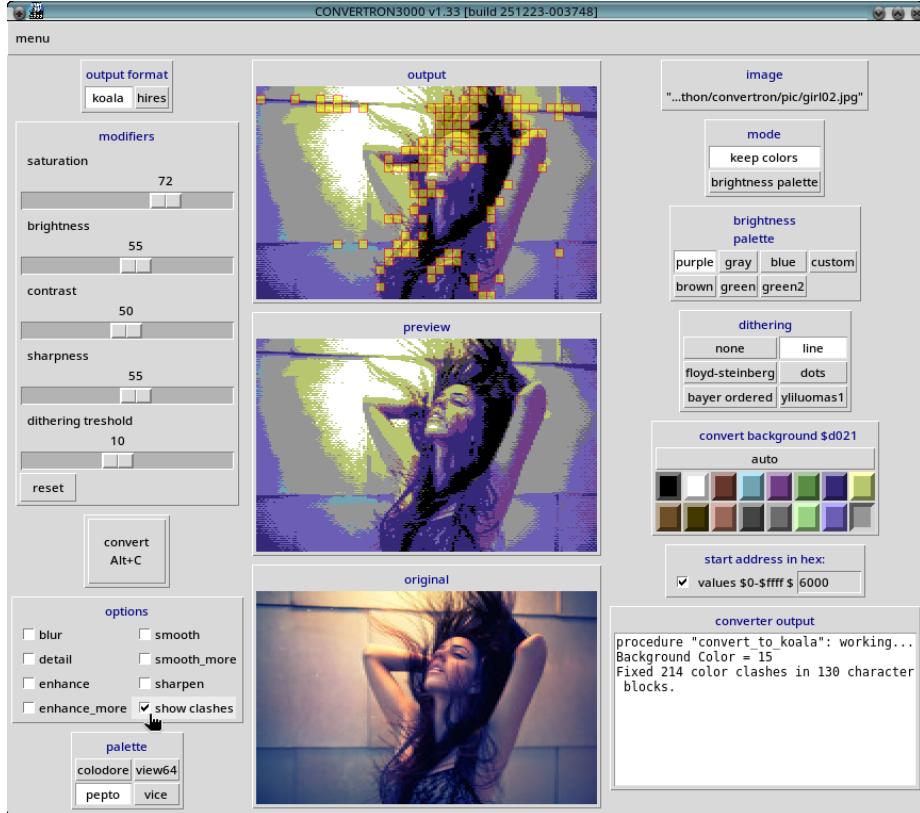


Figure 1: screenshot

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.

shortcuts

key	function
F1	help
Alt-o	open image
Alt-s	save image (koala or hires format)
Alt-c	convert image
Alt-p	open settings
Alt-v	save settings
Alt-q	quit

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
yliluomas1 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 (.koa) 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 v1.34 [build 251229-205604] *** by fieserWolf
usage: convertron.py [-h] [-i INPUT_IMAGE] [-g FILE_GRADIENT] [-s FILE_SETTINGS] [-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)
-g, --gradient FILE_GRADIENT
                      filename of custom gradient file (JSON) to be loaded
```

```
-s, --settings FILE_SETTINGS
                  filename of settings file (JSON) to be loaded
-d, --debug        show color-clashes on console
```

Example: ./convertron.py -i image.png -g 8color_gradient-brown.json -s settings.json -d

Getting Started

Convertron3000 comes in two flavors:

- Python3 script if you have python3 installed on your system (preferred method)
- executable for Linux and Windows (see releases)

Run the executable

Just download your zip-bundle at releases, extract it to a folder of your choice and enjoy.

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

In releases you also find older versions of Convertron 3000 compiled as standalone executables. You may use this, but 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

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

You might need to install git (apt install git) first.

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
```

Download Convertron3000

- Go to <https://github.com/fieserWolf/convertron3000>.
- Click on the green “Code” button and “Download ZIP”.
- Extract the downloaded ZIP-file to any folder.

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 1.35

- resizable image windows
- various bug fixes

Changes in 1.34 (on Dream210 Party 2025)

- 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
- responsive GUI
- 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

Before (and including) argparse 1.1, the argparse package was licensed under Apache License v2.0.

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