eagexp Documentation

Release 0.0.0

ponty

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eagexp can convert eagle schematic and board to image or partlist.

Date: April 28, 2011

Contents:

eagexp can export eagle partlist or image of schematic or board.

Links:

- home: https://github.com/ponty/eagexp
- html documentation: http://ponty.github.com/eagexp
- pdf documentation: https://github.com/ponty/eagexp/raw/master/docs/_build/latex/eagexp.pdf

Features:

- background processing (only if Xephyr, Xvfb and PyVirtualDisplay are installed)
- timeout

Known problems:

- slow: eagle is opened and closed for each export
- high DPI does not work (memory problem?)
- Python 3 is not supported
- export can be blocked by eagle -> timeout

CHAPTER

ONE

BASIC USAGE

```
>>> from eagexp import image, partlist
>>> brd='~/.eagle/projects/examples/singlesided/singlesided.brd'
>>> image.export_image(brd, 'brd.png', resolution=600)
>>> print partlist.raw_partlist(brd)
```

CHAPTER

TWO

HOW IT WORKS

1. start Xvfb headless X server using PyVirtualDisplay
2. redirect eagle display to Xvfb server by setting $DISPLAY variable.
3. start eagle with EXPORT and QUIT commands

CHAPTER

THREE

INSTALLATION

3.1 General

- install eagle
- install setuptools
- install PyVirtualDisplay , xvfb , xephyr (optional for background processing)
- install the program:

```
# as root
easy_install https://github.com/ponty/eagexp/zipball/master
```

3.2 Ubuntu

```
sudo apt-get install eagle
sudo apt-get install python-setuptools

# optional for background processing
sudo apt-get install xvfb xserver-xephyr

sudo easy_install https://github.com/ponty/eagexp/zipball/master
```

3.3 Uninstall

```
# as root
pip uninstall eagexp
```

CHAPTER

FOUR

USAGE

4.1 Export from python code

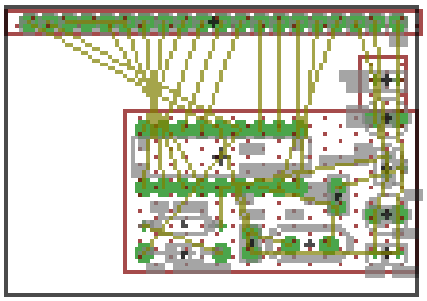
Example:

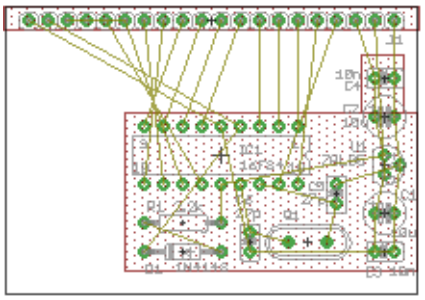
```
'''
Example for image export with various options
'''

from eagexp import image

brd='~/.eagle/projects/examples/singlesided/singlesided.brd'

# set resolution in DPI
image.export_image(brd, 'docs/api_brd_50.png' , resolution=50)
image.export_image(brd, 'docs/api_brd_100.png', resolution=100)
image.export_image(brd, 'docs/api_brd_150.png', resolution=150)

# mirror image
image.export_image(brd, 'docs/api_brd_mirror.png', mirror=True)

# display only 2 layers
image.export_image(brd, 'docs/api_brd_layer.png', layers=['dimension', 'pads'])

# display layer using eagle command
image.export_image(brd, 'docs/api_brd_command.png', command='display none dimension')
```

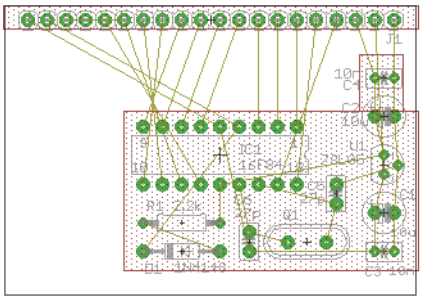
Start the example program:

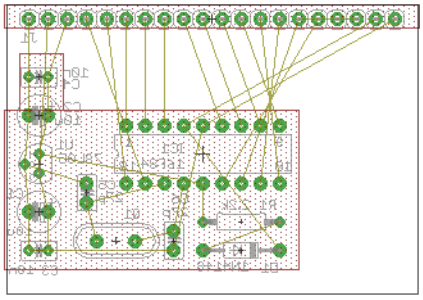
```
python -m eagexp.examples.image_example
```

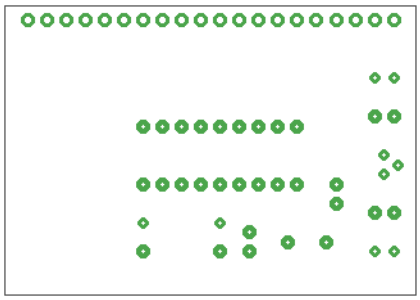
Result:











Example for partlist export:

```
from eagexp import partlist

sch='~/.eagle/projects/examples/singlesided/singlesided.sch'
brd='~/.eagle/projects/examples/singlesided/singlesided.brd'
```

```
print 'raw_partlist of '+sch
print "'''"
print partlist.raw_partlist(sch)
print "'''"

print

print 'raw_partlist of '+brd
print "'''"
print partlist.raw_partlist(brd)
print "'''"

print

print 'structured_partlist of '+sch
print partlist.structured_partlist(sch)

print

print 'structured_partlist of '+brd
print partlist.structured_partlist(brd)
```

Start the example program:

```
$ python -m eagexp.examples.partlist_example
raw_partlist of ~/.eagle/projects/examples/singlesided/singlesided.sch
'''
Partlist

Exported from singlesided.sch at 4/28/11 6:56 PM

EAGLE Version 5.10.0 Copyright (c) 1988-2010 CadSoft

Part     Value          Device          Package      Library        Sheet

C1       10u            E2,5-6          E2,5-6       polcap         1
C2       10u            E2,5-6          E2,5-6       polcap         1
C3       10n            C-EU025-025X050 C025-025X050 rcl            1
C4       10n            C-EU025-025X050 C025-025X050 rcl            1
C5       27p            C2.5/2          C2,5-2       capacitor-wima 1
C6       27p            C2.5/2          C2,5-2       capacitor-wima 1
D1       1N4148         1N4148          DO35-10      diode          1
IC1      16F84          PIC16F84AP      DIL18        microchip      1
J1                      PINHD-1X20      1X20         PINHEAD        1
Q1                      XTAL/S          QS           special        1
R1       2.2k           R-EU_0207/10    0207/10      rcl            1
U1       78L05          78LXXZ          TO92         linear         1

'''

raw_partlist of ~/.eagle/projects/examples/singlesided/singlesided.brd
'''
Partlist

Exported from singlesided.brd at 4/28/11 6:56 PM

EAGLE Version 5.10.0 Copyright (c) 1988-2010 CadSoft
```

```
Part     Value          Package      Library        Position (mil)        Orientation

C1       10u            E2,5-6       polcap         (1950 400)            R0
C2       10u            E2,5-6       polcap         (1950 900)            R0
C3       10n            C025-025X050 rcl            (1950 200)            R180
C4       10n            C025-025X050 rcl            (1950 1100)           R180
C5       27p            C2,5-2       capacitor-wima (1700 500)            R270
C6       27p            C2,5-2       capacitor-wima (1250 250)            R90
D1       1N4148         DO35-10      diode          (900 200)             R0
IC1      16F84          DIL18        microchip      (1100 700)            R180
J1                      1X20         PINHEAD        (1050 1400)           R180
Q1                      QS           special        (1550 250)            R0
R1       2.2k           0207/10      rcl            (900 350)             R0
U1       78L05          TO92         linear         (1950 650)            R270

'''

structured_partlist of ~/.eagle/projects/examples/singlesided/singlesided.sch
(['part', 'value', 'device', 'package', 'library', 'sheet'], [{'sheet': '1', 'package': 'E2,5-6', 'li

structured_partlist of ~/.eagle/projects/examples/singlesided/singlesided.brd
(['part', 'value', 'package', 'library', 'position', 'orientation'], [{'orientation': 'R0', 'package'
```

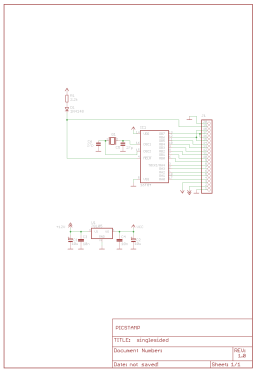
4.2 Export schematic from command-line

4.2.1 Export image

Start the eagexp module directly with python:

```
python -m eagexp.image ~/.eagle/projects/examples/singlesided/singlesided.sch docs/cli_sch.png
```

Result:



4.2.2 Export partlist

Start the eagexp module directly with python:

```
$ python -m eagexp.partlist ~/.eagle/projects/examples/singlesided/singlesided.sch
Partlist

Exported from singlesided.sch at 4/28/11 6:56 PM
```

```
EAGLE Version 5.10.0 Copyright (c) 1988-2010 CadSoft

Part      Value          Device          Package      Library        Sheet

C1        10u            E2,5-6          E2,5-6       polcap         1
C2        10u            E2,5-6          E2,5-6       polcap         1
C3        10n            C-EU025-025X050 C025-025X050 rcl            1
C4        10n            C-EU025-025X050 C025-025X050 rcl            1
C5        27p            C2.5/2          C2,5-2       capacitor-wima 1
C6        27p            C2.5/2          C2,5-2       capacitor-wima 1
D1        1N4148         1N4148          DO35-10      diode          1
IC1       16F84          PIC16F84AP      DIL18        microchip      1
J1                       PINHD-1X20      1X20         PINHEAD        1
Q1                       XTAL/S          QS           special        1
R1        2.2k           R-EU_0207/10    0207/10      rcl            1
U1        78L05          78LXXZ          TO92         linear         1
```

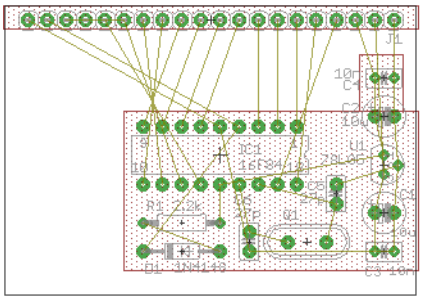
4.3 Export board from command-line

4.3.1 Export image

Start the eagexp module directly with python:

```
python -m eagexp.image ~/.eagle/projects/examples/singlesided/singlesided.brd docs/cli_brd.png
```

Result:



4.3.2 Export partlist

Start the eagexp module directly with python:

```
$ python -m eagexp.partlist ~/.eagle/projects/examples/singlesided/singlesided.brd
Partlist

Exported from singlesided.brd at 4/28/11 6:56 PM

EAGLE Version 5.10.0 Copyright (c) 1988-2010 CadSoft

Part      Value          Package      Library        Position (mil)        Orientation

C1        10u            E2,5-6       polcap         (1950 400)            R0
C2        10u            E2,5-6       polcap         (1950 900)            R0
C3        10n            C025-025X050 rcl            (1950 200)            R180
```

```
C4      10n           C025-025X050 rcl            (1950 1100)          R180
C5      27p           C2,5-2       capacitor-wima (1700 500)           R270
C6      27p           C2,5-2       capacitor-wima (1250 250)           R90
D1      1N4148        DO35-10      diode          (900 200)            R0
IC1     16F84         DIL18        microchip      (1100 700)           R180
J1                    1X20         PINHEAD        (1050 1400)          R180
Q1                    QS           special        (1550 250)           R0
R1      2.2k          0207/10      rcl            (900 350)            R0
U1      78L05         TO92         linear         (1950 650)           R270
```

CHAPTER

FIVE

API

5.1 eagexp.image

eagexp.image.**export_image**(*input*, *output*, *timeout=20*, *palette='white'*, *resolution=150*, *layers=None*, *command=None*, *mirror=False*, *showgui=False*)

Exporting eagle .sch or .brd file into image file. GUI is not displayed if PyVirtualDisplay is installed. If export is blocked somehow (e.g. popup window is displayed) then after timeout operation is canceled with exception. Problem can be investigated by setting 'showgui' flag.

Exporting generates an image file with a format corresponding to the given filename extension. The following image formats are available:

.bmp Windows Bitmap Files

.png Portable Network Graphics Files

.pbm Portable Bitmap Files

.pgm Portable Grayscale Bitmap Files

.ppm Portable Pixelmap Files

.tif TIFF Files

.xbm X Bitmap Files

.xpm X Pixmap Files

Parameters

- **input** – eagle .sch or .brd file name
- **output** – image file name, existing file will be removed first!
- **palette** – background color [None,black,white,colored]
- **resolution** – image resolution in dpi (50..2400)
- **timeout** – operation is canceled after this timeout (sec)
- **showgui** – eagle GUI is displayed
- **layers** – list, layers to be displayed ['top','pads']
- **command** – string, direct eagle command
- **mirror** – Bool

Return type None

5.2 eagexp.partlist

eagexp.partlist.**export_partlist_to_file**(*input*, *output*, *timeout=20*, *showgui=False*)
call eagle and export sch or brd to partlist text file

Parameters

- **input** – .sch or .brd file name
- **output** – text file name
- **timeout** – int
- **showgui** – Bool, True -> do not hide eagle GUI

Return type None

eagexp.partlist.**parse_partlist**(*str*)
parse partlist text delivered by eagle.

header is converted to lowercase

Parameters **str** – input string

Return type tuple of header list and dict list: (['part','value',..], [{'part':'C1', 'value':'1n'}, ..])

eagexp.partlist.**print_partlist**(*input*, *timeout=20*, *showgui=False*)
print partlist text delivered by eagle

Parameters

- **input** – .sch or .brd file name
- **timeout** – int
- **showgui** – Bool, True -> do not hide eagle GUI

Return type None

eagexp.partlist.**raw_partlist**(*input*, *timeout=20*, *showgui=False*)
export partlist by eagle, then return it

Parameters

- **input** – .sch or .brd file name
- **timeout** – int
- **showgui** – Bool, True -> do not hide eagle GUI

Return type string

eagexp.partlist.**structured_partlist**(*input*, *timeout=20*, *showgui=False*)
export partlist by eagle, then parse it

Parameters

- **input** – .sch or .brd file name
- **timeout** – int
- **showgui** – Bool, True -> do not hide eagle GUI

Return type tuple of header list and dict list: (['part','value',..], [{'part':'C1', 'value':'1n'}, ..])

CHAPTER

SIX

COMMAND-LINE HELP

```
$ python -m eagexp.image --help
usage: image.py [-h] [-t TIMEOUT] [-p PALETTE] [-r RESOLUTION] [-l LAYERS]
                [-c COMMAND] [-m] [-s] [--debug] [--version]
                input output

Exporting eagle .sch or .brd file into image file. GUI is not displayed if
PyVirtualDisplay is installed. If export is blocked somehow (e.g. popup window
is displayed) then after timeout operation is canceled with exception. Problem
can be investigated by setting 'showgui' flag.

Exporting generates an image file with a format corresponding to the given
filename extension. The following image formats are available:

.bmp    Windows Bitmap Files

.png    Portable Network Graphics Files

.pbm    Portable Bitmap Files

.pgm    Portable Grayscale Bitmap Files

.ppm    Portable Pixelmap Files

.tif    TIFF Files

.xbm    X Bitmap Files

.xpm    X Pixmap Files

positional arguments:
  input                 eagle .sch or .brd file name
  output                image file name, existing file will be removed first!

optional arguments:
  -h, --help            show this help message and exit
  -t TIMEOUT, --timeout TIMEOUT
                        operation is canceled after this timeout (sec)
  -p PALETTE, --palette PALETTE
                        background color [None,black,white,colored]
  -r RESOLUTION, --resolution RESOLUTION
                        image resolution in dpi (50..2400)
  -l LAYERS, --layers LAYERS
                        list, layers to be displayed ['top','pads']
```

```
  -c COMMAND, --command COMMAND
                        string, direct eagle command
  -m, --mirror          Bool
  -s, --showgui         eagle GUI is displayed
  --debug               set logging level to DEBUG
  --version             show program's version number and exit

$ python -m eagexp.partlist --help
usage: partlist.py [-h] [-t TIMEOUT] [-s] [--debug] [--version] input

print partlist text delivered by eagle

positional arguments:
  input                 .sch or .brd file name

optional arguments:
  -h, --help            show this help message and exit
  -t TIMEOUT, --timeout TIMEOUT
                        int
  -s, --showgui         Bool, True -> do not hide eagle GUI
  --debug               set logging level to DEBUG
  --version             show program's version number and exit
```

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SEVEN

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