
litterbox Documentation

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XESS Corp.

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Contents:

A set of tools to manage all the crap for the CAT Board.

- Free software: MIT license
- Documentation: <http://xesscorp.github.io/litterbox>.

1.1 Features

- Configure the FPGA on the CAT Board with a bitstream file stored in the Raspberry Pi.
- **Program the CAT Board serial flash with a bitstream that will be loaded** into the FPGA upon power-up or reset.
- Erase the serial flash.

Installation

At the command line:

```
$ easy_install litterbox
```

Or, if you have virtualenvwrapper installed:

```
$ mkvirtualenv litterbox  
$ pip install litterbox
```

Usage

litterbox lets you control the CAT Board from the Raspberry Pi. You'll use it primarily to do three things:

1. Configure the FPGA on the CAT Board with a bitstream file like so:

```
sudo litterbox -c filename.bin
```

2. Store a bitstream file into the CAT Board serial flash that will be loaded into the FPGA whenever the board is powered on or reset:

```
sudo litterbox -p filename.bin
```

3. Erase the serial flash so the FPGA will no longer be configured by default:

```
sudo litterbox -e
```

3.1 Command-Line Options

```
usage: litterbox [-h] [-V] [-e] [-v [file.bin]] [-p [file.bin]]
                [-c [file.bin]] [-r] [-d [LEVEL]] [-t [file.bin]] [--enable]
                [--disable] [--reset_pin [pin#]] [--done_pin [pin#]]
                [--cs_pin [pin#]] [--clk_pin [pin#]] [--mosi_pin [pin#]]
                [--miso_pin [pin#]]
```

Configure CAT Board FPGA with a bitstream file, or erase and program CAT Board SPI flash.

optional arguments:

-h, --help	show this help message and exit
-V, --version	show program's version number and exit
-e, --erase	Erase flash.
-v [file.bin], --verify [file.bin]	Verify flash contents against file.
-p [file.bin], --program [file.bin]	Program flash with contents of file.
-c [file.bin], --configure [file.bin]	Configure FPGA with contents of bitstream file.
-r, --reset	Reset FPGA.
-d [LEVEL], --debug [LEVEL]	Print debugging info. (Larger LEVEL means more info.)
-t [file.bin], --test [file.bin]	Run FPGA configuration test.
-s [Mhz], --speedtest [Mhz]	Run SPI link speed test.
--enable	Wake flash from deep power-down state.

<code>--disable</code>	Put flash into deep power-down state.
<code>--reset_pin [pin#]</code>	Specify FPGA reset GPIO pin number.
<code>--done_pin [pin#]</code>	Specify FPGA configuration done GPIO pin number.
<code>--cs_pin [pin#]</code>	Specify SPI flash chip-select GPIO pin number.
<code>--clk_pin [pin#]</code>	Specify SPI flash clock GPIO pin number.
<code>--mosi_pin [pin#]</code>	Specify SPI flash MOSI GPIO pin number.
<code>--miso_pin [pin#]</code>	Specify SPI flash MISO GPIO pin number.

Contributing

Contributions are welcome, and they are greatly appreciated! Every little bit helps, and credit will always be given. You can contribute in many ways:

4.1 Types of Contributions

4.1.1 Report Bugs

Report bugs at <https://github.com/xesscorp/litterbox/issues>.

If you are reporting a bug, please include:

- Your operating system name and version.
- Any details about your local setup that might be helpful in troubleshooting.
- Detailed steps to reproduce the bug.

4.1.2 Fix Bugs

Look through the GitHub issues for bugs. Anything tagged with “bug” is open to whoever wants to implement it.

4.1.3 Implement Features

Look through the GitHub issues for features. Anything tagged with “feature” is open to whoever wants to implement it.

4.1.4 Write Documentation

litterbox could always use more documentation, whether as part of the official litterbox docs, in docstrings, or even on the web in blog posts, articles, and such.

4.1.5 Submit Feedback

The best way to send feedback is to file an issue at <https://github.com/xesscorp/litterbox/issues>.

If you are proposing a feature:

- Explain in detail how it would work.
- Keep the scope as narrow as possible, to make it easier to implement.
- Remember that this is a volunteer-driven project, and that contributions are welcome :)

4.2 Get Started!

Ready to contribute? Here's how to set up *litterbox* for local development.

1. Fork the *litterbox* repo on GitHub.
2. Clone your fork locally:

```
$ git clone git@github.com:your_name_here/litterbox.git
```

3. Install your local copy into a virtualenv. Assuming you have virtualenvwrapper installed, this is how you set up your fork for local development:

```
$ mkvirtualenv litterbox
$ cd litterbox/
$ python setup.py develop
```

4. Create a branch for local development:

```
$ git checkout -b name-of-your-bugfix-or-feature
```

Now you can make your changes locally.

5. When you're done making changes, check that your changes pass flake8 and the tests, including testing other Python versions with tox:

```
$ flake8 litterbox tests
$ python setup.py test
$ tox
```

To get flake8 and tox, just pip install them into your virtualenv.

6. Commit your changes and push your branch to GitHub:

```
$ git add .
$ git commit -m "Your detailed description of your changes."
$ git push origin name-of-your-bugfix-or-feature
```

7. Submit a pull request through the GitHub website.

4.3 Pull Request Guidelines

Before you submit a pull request, check that it meets these guidelines:

1. The pull request should include tests.
2. If the pull request adds functionality, the docs should be updated. Put your new functionality into a function with a docstring, and add the feature to the list in README.rst.
3. The pull request should work for Python 2.6, 2.7, 3.3, and 3.4, and for PyPy. Check https://travis-ci.org/xesscorp/litterbox/pull_requests and make sure that the tests pass for all supported Python versions.

4.4 Tips

To run a subset of tests:

```
$ python -m unittest tests.test_litterbox
```

Credits

5.1 Development Lead

- XESS Corp. <info@xess.com>

5.2 Contributors

None yet. Why not be the first?

History

6.1 0.2.1 (2016-09-07)

- Removed dependency on spi module (python-spi).

6.2 0.2.0 (2016-09-07)

- python-spi package was incorporated into litterbox and modified to increase transfer rates.
- Documentation moved to Github pages.

6.3 0.1.0 (2016-05-07)

- First release on PyPI.

Indices and tables

- `genindex`
- `modindex`
- `search`