
laminocopy-cli Documentation

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Argonne National Laboratory

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Laminocupy-cli is a command-line interface for GPU reconstruction of laminographic data. All preprocessing operations are implemented on GPU with using cupy library.

FEATURES

- List here
- the module features

CONTRIBUTE

- Documentation: <https://laminocupy.readthedocs.io/en/latest/#>
- Issue Tracker: <https://github.com/nikitinvv/laminocupy-cli/issues>
- Source Code: <https://github.com/nikitinvv/laminocupy-cli/>

CONTENT

3.1 Install

1. Create environment with necessary dependencies

```
(base)$ conda create -n laminocupy -c conda-forge python=3.9 dxchange cupy scikit-build_
↳ swig pywavelets numexpr astropy olefile opencv
(base)$ conda activate laminocupy
(laminocupy)$ pip install torch==1.9.1+cu111 torchvision==0.10.1+cu111 torchaudio==0.9.1_
↳ -f https://download.pytorch.org/whl/torch_stable.html
```

2. Install the pytorch pywavelets package for ring removal

```
(laminocupy)$ git clone https://github.com/fbcotter/pytorch_wavelets
(laminocupy)$ cd pytorch_wavelets
(laminocupy)$ pip install .
(laminocupy)$ cd -
```

3. Set path to the nvcc profiler (e.g. /local/cuda-11.4/bin/nvcc) and install laminocupy

```
(laminocupy)$ export CUDACXX=/local/cuda-11.4/bin/nvcc
(laminocupy)$ git clone https://github.com/nikitinvv/laminocupy-cli
(laminocupy)$ cd laminocupy-cli
(laminocupy)$ python setup.py install
```

3.1.1 Update

laminocupy-cli is constantly updated to include new features. To update your locally installed version:

```
(laminocupy)$ cd laminocupy-cli
(laminocupy)$ git pull
(laminocupy)$ python setup.py install
```

3.2 Usage

3.2.1 Example

```
(laminocupy)$ laminocupy reconstep --file-name /data/2021-12/Duchkov/exp4_ho_130_
↳vertical_0_2018.h5 --remove-stripe-method fw --nproj-per-chunk 32 --nsino-per-chunk 32_
↳--reconstruction-type full --rotation-axis 1198 --lamino-angle 30
```

3.2.2 More options

```
(laminocupy)$ laminocupy -h
(laminocupy)$ laminocupy reconstep -h
```

3.3 Performance

3.4 API reference

laminocupy_cli Modules:

3.4.1 `laminocupy_cli.rec_steps`

3.4.2 `laminocupy_cli.remove_stripe`

3.4.3 `laminocupy_cli.retrieve_phase`

3.5 Credits

3.5.1 Citations

We kindly request that you cite the following article [[A1](#)] if you use **laminocupy-cli**

3.5.2 References

BIBLIOGRAPHY

- [A1] Viktor Nikitin, Aniket Tekawade, Anton Duchkov, Pavel Shevchenko, and Francesco De Carlo. Real-time streaming tomographic reconstruction with on-demand data capturing and 3d zooming to regions of interest. *Journal of Synchrotron Radiation*, 2022.
- [B1] Viktor Nikitin, Aniket Tekawade, Anton Duchkov, Pavel Shevchenko, and Francesco De Carlo. Real-time streaming tomographic reconstruction with on-demand data capturing and 3d zooming to regions of interest. *Journal of Synchrotron Radiation*, 2022.