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http://www.silx.org/
Initial goals:

- Share maintenance of common features across Python-based applications/libraries (PyMca, pyFAI, ..):
  - share/reuse code,
  - documented,
  - tested.
- Make features available for others
- Provide tools to support the migration/use of HDF5
• Features:
  - I/O:
    • Reading SPEC and images
    • HDF5 conversion helpers
  - Data processing, including GPU-accelerated routines (using OpenCL):
    • SIFT
    • (Filtered) Back projection
    • Median filter,...
  - Qt widgets for:
    • Browsing HDF5-like data
    • Visualizing and interacting with data (1D, 2D, 3D)
silx

- Python package (with Cython, C, C++, OpenCL, GLSL code)
- License: MIT
- Linux, Windows, macOS
- Last version: v0.11.0:
- Install through: pip, conda, debian
- Resources:
  - http://www.silx.org/
  - https://github.com/silx-kit/silx
  - Documentation: http://www.silx.org/doc/silx/latest/
Conversion to HDF5

• Context:
  – ESRF legacy acquisition format: SPEC file + EDF (or other format) images
  – Moving towards HDF5/NeXus

• Transition period:
  – Data in SPEC+images format
  – “Future[/present]-proof” software needs to read HDF5
Conversion to HDF5: Tool

- Command line tool: `silx convert`

- Concatenation of all SPEC files in the current directory:
  ```
silx convert *.dat -o all_SPEC.h5
  ```

- Add a list of images (supported by fabio) into an existing HDF5 file:
  ```
silx convert ch09__mca_0005_0000_%d.edf -o archive.h5::/ch09__mca_0005_0000_0008 -m a --compression
  ```
Conversion to HDF5: API

Python package: `silx.io`

- File conversion functions:
  ```python
  silx.io.io.convert.write_to_h5  # or convert
  ```

- Accessing SPEC and image files (using fabio) with a h5py-like API and a NeXus structure:
  ```python
  silx.io.io.open(filename)
  ```
• HDF5 (and other formats) browsing and viewing
• GUI application (PyQt5/PySide2-based)
• Visualization: matplotliblib and OpenGL
Other HDF5/NeXus viewers:

- **NeXpy**
- **PyMca**
silx view

- Visualization of data as:
  - Array
  - Curve
  - Color-mapped image
  - 3D field: isosurface and color-mapped cut plane

- Support of 2D/3D complex data

- Support of nD datasets by selecting:
  - The kind of visualization
  - The slicing, i.e., viewed axes and positions along other axes

- Tools: mask, profile, curve fitting
silx view: NeXus support

- NeXus-aware:
  - Display @NX_Class in browser
  - Leverage NXData and @default attribute to display a default plot
silx view: widgets

- Widgets used by silx view are available from silx.gui for reuse in other applications.
Some inhouse silx-based applications
Demo: silx view
Thanks for your attention!

http://www.silx.org/