leicaexperiment Documentation

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Contents

leicaexperiment package

class leicaexperiment.**Experiment**(*path*)

> **columns**(*well_x*, *well_y*)
>> List of columns for given well.
>>
>>> **Parameters**
>>>
>>> - **well_x** (*int*) – Starts at 0.
>>>
>>> - **well_y** (*int*) – Starts at 0.
>>>
>>> **Returns** Columns found for specified well.
>>>
>>> **Return type** list of ints

> **compress**(*delete_tif=False*, *folder=None*)
>> Lossless compress all images in experiment to PNG. If folder is omitted, images will not be moved.
>>
>> Images which already exists in PNG are omitted.
>>
>>> **Parameters**
>>>
>>> - **folder** (*string*) – Where to store PNGs. Defaults to the folder they are in.
>>>
>>> - **delete_tif** (*bool*) – If set to truthy value, ome.tifs will be deleted after compression.
>>>
>>> **Returns** Filenames of PNG images. Files which already exists before compression are also returned.
>>>
>>> **Return type** list

> **field_metadata**(*well_x=0*, *well_y=0*, *field_x=0*, *field_y=0*)
>> Get OME-XML metadata of given field.
>>
>>> **Parameters**
>>>
>>> - **well_x** (*int*) – X well coordinate.
>>>
>>> - **well_y** (*int*) – Y well coordinate.
>>>
>>> - **field_x** (*int*) – X field coordinate.
>>>
>>> - **field_y** (*int*) – Y field coordinate.
>>>
>>> **Returns** lxml object of OME-XML found in slide/chamber/field/metadata.
>>>
>>> **Return type** lxml.objectify.ObjectifiedElement

fields
> List of paths to fields.

image(*well_x*, *well_y*, *field_x*, *field_y*)
> Get path of specified image.

>> **Parameters**

>>> • **well_x** (*int*) – Starts at 0.

>>> • **well_y** (*int*) – Starts at 0.

>>> • **field_x** (*int*) – Starts at 0.

>>> • **field_y** (*int*) – Starts at 0.

>> **Returns** Path to image or empty string if image is not found.

>> **Return type** string

images
> List of paths to images.

rows(*well_x*, *well_y*)
> List of rows for given well.

>> **Parameters**

>>> • **well_x** (*int*) – Starts at 0.

>>> • **well_y** (*int*) – Starts at 0.

>> **Returns** Rows found for specified well.

>> **Return type** list of ints

scanning_template
> Path to {ScanningTemplate}name.xml of experiment.

slides
> List of paths to slides.

stitch(*folder=None*)
> Stitches all wells in experiment with ImageJ. Stitched images are saved in experiment root.

> Images which already exists are omitted stitching.

>> **Parameters** **folder** (*string*) – Where to store stitched images. Defaults to experiment path.

>> **Returns** Filenames of stitched images. Files which already exists before stitching are also returned.

>> **Return type** list

stitch_coordinates(*well_x=0*, *well_y=0*)
> Get a list of stitch coordinates for the given well.

>> **Parameters**

>>> • **well_x** (*int*) – X well coordinate.

>>> • **well_y** (*int*) – Y well coordinate.

>> **Returns** (xs, ys, attr) – Tuple of x's, y's and attributes.

>> **Return type** tuples with float and collections.OrderedDict

stitched
> List of stitched images if they are in experiment folder.

well_images(*well_x*, *well_y*)
> Get list of paths to images in specified well.

> > **Parameters**

> > > - **well_x** (*int*) – Starts at 0.

> > > - **well_y** (*int*) – Starts at 0.

> > **Returns** Paths to images or empty list if no images are found.

> > **Return type** list of strings

wells
> List of paths to wells.

leicaexperiment.**compress**(*images*, *delete_tif=False*, *folder=None*)
> Lossless compression. Save images as PNG and TIFF tags to json. Can be reversed with *decompress*. Will run in multiprocessing, where number of workers is decided by leicaexperiment.experiment._pools.

> > **Parameters**

> > > - **images** (*list of filenames*) – Images to lossless compress.

> > > - **delete_tif** (*bool*) – Wheter to delete original images.

> > > - **folder** (*string*) – Where to store images. Basename will be kept.

> > **Returns** List of compressed files.

> > **Return type** list of filenames

leicaexperiment.**decompress**(*images*, *delete_png=False*, *delete_json=False*, *folder=None*)
> Reverse compression from tif to png and save them in original format (ome.tif). TIFF-tags are gotten from json-files named the same as given images.

> > **Parameters**

> > > - **images** (*list of filenames*) – Image to decompress.

> > > - **delete_png** (*bool*) – Wheter to delete PNG images.

> > > - **delete_json** (*bool*) – Wheter to delete TIFF-tags stored in json files on compress.

> > **Returns** List of decompressed files.

> > **Return type** list of filenames

leicaexperiment.**attribute**(*path*, *name*)
> Returns the two numbers found behind –[A-Z] in path. If several matches are found, the last one is returned.

> > **Parameters**

> > > - **path** (*string*) – String with path of file/folder to get attribute from.

> > > - **name** (*string*) – Name of attribute to get. Should be A-Z or a-z (implicit converted to uppercase).

> > **Returns** Returns number found in path behind –name as an integer.

> > **Return type** integer

leicaexperiment.**attribute_as_str**(*path*, *name*)
> Returns the two numbers found behind –[A-Z] in path. If several matches are found, the last one is returned.

> **Parameters**
>
> - **path** (*string*) – String with path of file/folder to get attribute from.
> - **name** (*string*) – Name of attribute to get. Should be A-Z or a-z (implicit converted to uppercase).
>
> **Returns** Returns two digit number found in path behind –name.
>
> **Return type** string

leicaexperiment.**attributes**(*path*)

> Get attributes from path based on format –[A-Z]. Returns namedtuple with upper case attributes equal to what found in path (string) and lower case as int. If path holds several occurrences of same character, only the last one is kept.

```
>>> attrs = attributes('/folder/file--X00-X01.tif')
>>> print(attrs)
namedtuple('attributes', 'X x')('01', 1)
>>> print(attrs.x)
1
```

> **Parameters path** (*string*) –
>
> **Returns**
>
> **Return type** collections.namedtuple

1.1 Submodules

1.2 leicaexperiment.experiment module

Access matrix scans from Leica LAS AF MatrixScreener (Data Exporter) through an object.

class leicaexperiment.experiment.**Experiment**(*path*)

> **columns**(*well_x*, *well_y*)
>
> > List of columns for given well.
> >
> > **Parameters**
> >
> > - **well_x** (*int*) – Starts at 0.
> > - **well_y** (*int*) – Starts at 0.
> >
> > **Returns** Columns found for specified well.
> >
> > **Return type** list of ints
>
> **compress**(*delete_tif=False*, *folder=None*)
>
> > Lossless compress all images in experiment to PNG. If folder is omitted, images will not be moved.
> >
> > Images which already exists in PNG are omitted.
> >
> > **Parameters**
> >
> > - **folder** (*string*) – Where to store PNGs. Defaults to the folder they are in.
> > - **delete_tif** (*bool*) – If set to truthy value, ome.tifs will be deleted after compression.

Returns Filenames of PNG images. Files which already exists before compression are also returned.

Return type list

field_metadata(*well_x=0*, *well_y=0*, *field_x=0*, *field_y=0*)
Get OME-XML metadata of given field.

Parameters

- **well_x** (*int*) – X well coordinate.

- **well_y** (*int*) – Y well coordinate.

- **field_x** (*int*) – X field coordinate.

- **field_y** (*int*) – Y field coordinate.

Returns lxml object of OME-XML found in slide/chamber/field/metadata.

Return type lxml.objectify.ObjectifiedElement

fields
List of paths to fields.

image(*well_x*, *well_y*, *field_x*, *field_y*)
Get path of specified image.

Parameters

- **well_x** (*int*) – Starts at 0.

- **well_y** (*int*) – Starts at 0.

- **field_x** (*int*) – Starts at 0.

- **field_y** (*int*) – Starts at 0.

Returns Path to image or empty string if image is not found.

Return type string

images
List of paths to images.

rows(*well_x*, *well_y*)
List of rows for given well.

Parameters

- **well_x** (*int*) – Starts at 0.

- **well_y** (*int*) – Starts at 0.

Returns Rows found for specified well.

Return type list of ints

scanning_template
Path to {ScanningTemplate}name.xml of experiment.

slides
List of paths to slides.

stitch(*folder=None*)
Stitches all wells in experiment with ImageJ. Stitched images are saved in experiment root.

Images which already exists are omitted stitching.

> Parameters **folder** (*string*) – Where to store stitched images. Defaults to experiment path.
>
> Returns Filenames of stitched images. Files which already exists before stitching are also returned.
>
> Return type list

stitch_coordinates(*well_x=0*, *well_y=0*)
> Get a list of stitch coordinates for the given well.
>
> > Parameters
> >
> > - **well_x** (*int*) – X well coordinate.
> >
> > - **well_y** (*int*) – Y well coordinate.
> >
> > Returns (xs, ys, attr) – Tuple of x's, y's and attributes.
> >
> > Return type tuples with float and collections.OrderedDict

stitched
> List of stitched images if they are in experiment folder.

well_images(*well_x*, *well_y*)
> Get list of paths to images in specified well.
>
> > Parameters
> >
> > - **well_x** (*int*) – Starts at 0.
> >
> > - **well_y** (*int*) – Starts at 0.
> >
> > Returns Paths to images or empty list if no images are found.
> >
> > Return type list of strings

wells
> List of paths to wells.

leicaexperiment.experiment.**attribute**(*path*, *name*)
> Returns the two numbers found behind –[A-Z] in path. If several matches are found, the last one is returned.
>
> > Parameters
> >
> > - **path** (*string*) – String with path of file/folder to get attribute from.
> >
> > - **name** (*string*) – Name of attribute to get. Should be A-Z or a-z (implicit converted to uppercase).
> >
> > Returns Returns number found in path behind –name as an integer.
> >
> > Return type integer

leicaexperiment.experiment.**attribute_as_str**(*path*, *name*)
> Returns the two numbers found behind –[A-Z] in path. If several matches are found, the last one is returned.
>
> > Parameters
> >
> > - **path** (*string*) – String with path of file/folder to get attribute from.
> >
> > - **name** (*string*) – Name of attribute to get. Should be A-Z or a-z (implicit converted to uppercase).
> >
> > Returns Returns two digit number found in path behind –name.
> >
> > Return type string

leicaexperiment.experiment.**attributes**(*path*)

Get attributes from path based on format –[A-Z]. Returns namedtuple with upper case attributes equal to what found in path (string) and lower case as int. If path holds several occurrences of same character, only the last one is kept.

```
>>> attrs = attributes('/folder/file--X00-X01.tif')
>>> print(attrs)
namedtuple('attributes', 'X x')('01', 1)
>>> print(attrs.x)
1
```

> **Parameters path** (*string*) –
>
> **Returns**
>
> **Return type** collections.namedtuple

leicaexperiment.experiment.**compress**(*images*, *delete_tif=False*, *folder=None*)

Lossless compression. Save images as PNG and TIFF tags to json. Can be reversed with *decompress*. Will run in multiprocessing, where number of workers is decided by leicaexperiment.experiment._pools.

> **Parameters**
>
> - **images** (*list of filenames*) – Images to lossless compress.
> - **delete_tif** (*bool*) – Wheter to delete original images.
> - **folder** (*string*) – Where to store images. Basename will be kept.
>
> **Returns** List of compressed files.
>
> **Return type** list of filenames

leicaexperiment.experiment.**compress_blocking**(*image*, *delete_tif=False*, *folder=None*, *force=False*)

Lossless compression. Save image as PNG and TIFF tags to json. Process can be reversed with *decompress*.

> **Parameters**
>
> - **image** (*string*) – TIF-image which should be compressed lossless.
> - **delete_tif** (*bool*) – Wheter to delete original images.
> - **force** (*bool*) – Wheter to compress even if .png already exists.
>
> **Returns** Filename of compressed image, or empty string if compress failed.
>
> **Return type** string

leicaexperiment.experiment.**decompress**(*images*, *delete_png=False*, *delete_json=False*, *folder=None*)

Reverse compression from tif to png and save them in original format (ome.tif). TIFF-tags are gotten from json-files named the same as given images.

> **Parameters**
>
> - **images** (*list of filenames*) – Image to decompress.
> - **delete_png** (*bool*) – Wheter to delete PNG images.
> - **delete_json** (*bool*) – Wheter to delete TIFF-tags stored in json files on compress.
>
> **Returns** List of decompressed files.
>
> **Return type** list of filenames

`leicaexperiment.experiment.`**`glob`**(*pattern*)
> Sorted glob.

`leicaexperiment.experiment.`**`stitch_macro`**(*path*, *output_folder=None*)
> Create fiji-macros for stitching all channels and z-stacks for a well.

> > **Parameters**
> >
> > - **`path`** (*string*) – Well path.
> > - **`output_folder`** (*string*) – Folder to store images. If not given well path is used.
> >
> > **Returns output_files, macros** – Tuple with filenames and macros for stitched well.
> >
> > **Return type** tuple

1.3 leicaexperiment.utils module

`leicaexperiment.utils.`**`chop`**(*list_*, *n*)
> Chop **list_** into n chunks. Returns a list.

A

C

D

E

F

G

I

L

R

S

W