

IPASC Data Conversion Tool

version

Data Acquisition and Management Theme of IPASC

September 25, 2020

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Welcome to IPASC Data Conversion Tool's documentation!

The photoacoustic data landscape is very heterogeneous, which can lead to problems in the exchange of photoacoustic images. Essentially, each vendor of photoacoustic devices has developed their own sophisticated data format that suffices their own needs.

While this is a very natural process it leads to two distinct problems:

1. Dependency on vendor-specific data access software to interpret recorded images. If A exchanges data with B, but B does not have 2. test

To this end, the Data Acquisition and Management thematic working group of IPASC has developed a standardised list of metadata parameters and published a corresponding document on their website in early 2020: [IPASC Metadata definitions](#). This tool is based on the definitions contained in this document and is supposed to form the basis for a facilitated exchange of photoacoustic data.

Build the documentation

Run `sphinx-build -b pdf docs/source docs` in the top level folder to build the pdf documentation. The latest documentation will then be available under `docs/ipasc_tool_documentation.pdf`

Class references

Module: api

```
class ipasc_tool.api.BaseAdapter.BaseAdapter
```

abstract `generate_binary_data ()` → `numpy.ndarray`

#TODO very detailed decription of how the binary meta data dump should be organized. :return: numpy array

`generate_meta_data ()` → `dict`

Returns:

abstract `generate_meta_data_device ()` → `dict`

TODO this method can be implemented using the DeviceMetaDataCreator :return:

abstract `set_metadata_value (metadata_tag: ipasc_tool.core.Metadata.MetaDatum)` → `object`

This method must be implemented to yield appropriate data for all MetaDatum elements in the MetadataTags class.

Parameters: `metadata_tag` –

Returns:

```
class ipasc_tool.api.adapters.DKFZ_CAMI_Experimental_System_Nrrd_File_Converter.DKFZCAMIExperimentalSystemNrrdFileConverter (nrrd_file_path)
```

`generate_binary_data ()` → `numpy.ndarray`

#TODO very detailed decription of how the binary meta data dump should be organized. :return: numpy array

`generate_meta_data_device ()` → `dict`

TODO this method can be implemented using the DeviceMetaDataCreator :return:

`set_metadata_value (metadata_tag: ipasc_tool.core.Metadata.MetaDatum)` → `object`

This method must be implemented to yield appropriate data for all MetaDatum elements in the MetadataTags class.

Parameters: `metadata_tag` –

Returns:

Module: core

```
class ipasc_tool.core.Metadata.EnumeratedString (tag, mandatory, dtype, unit='N/A',
permissible_strings=None)
```

```
class ipasc_tool.core.Metadata.MetaDatum (tag: str, mandatory: bool, dtype: type, unit: str = 'N/A')
    This class represents a meta datum. A meta datum contains all necessary information to fully characterize the
    meta information represented by an instance of this class.
```

```
class ipasc_tool.core.Metadata.MetadataAcquisitionTags
    Binary time series data meta data tags
```

```
class ipasc_tool.core.Metadata.MetadataDeviceTags
    This class defines the naming conventions of the
```

```
class ipasc_tool.core.Metadata.NDimensionalNumpyArray (tag, mandatory, dtype, unit='N/A',
expected_array_dimension=1)
```

```
class ipasc_tool.core.Metadata.NonNegativeNumber (tag, mandatory, dtype, unit='N/A')
```

```
class ipasc_tool.core.Metadata.NonNegativeNumbersInArray (tag, mandatory, dtype, unit='N/A')
```

```
class ipasc_tool.core.Metadata.NonNegativeWholeNumber (tag, mandatory, dtype, unit='N/A')
```

```
class ipasc_tool.core.Metadata.NumberWithUpperAndLowerLimit (tag, mandatory, dtype, unit='N/A',
lower_limit=- inf, upper_limit=inf)
```

```
class ipasc_tool.core.Metadata.UnconstrainedMetaDatum (tag, mandatory, dtype, unit='N/A')
```

```
class ipasc_tool.core.PADData.PADData (binary_time_series_data: numpy.ndarray = None,
meta_data_acquisition: dict = None, meta_data_device: dict = None)
    TODO: Detailed documentation
```

Module: iohandler

```
ipasc_tool.iohandler.file_reader.load_data (path: str)
    TODO :param path: Path to an hdf5 file containing PADData. :return: PADData instance
```

```
ipasc_tool.iohandler.file_writer.write_data (path: str, pa_data: ipasc_tool.core.PADData.PADData)
    TODO :param path: Path to save an hdf5 file containing PADData. :param pa_data: PADData instance :return:
```

Module: qualitycontrol

```
ipasc_tool.qualitycontrol.CompletenessChecker.check_metadatum_from_dict (dictionary: dict,
metadatum: ipasc_tool.core.Metadata.MetaDatum)
```

Parameters:

- `dictionary` –

- `meta_datum` –

Returns: [log, count]

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