
Flask-IIIF Documentation

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CERN

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Flask-IIIF is a Flask extension permitting easy integration with the International Image Interoperability Framework (IIIF) API standards.

CHAPTER 1

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1.1 Installation

Flask-IIIF is on PyPI so all you need is :

```
$ pip install flask-iiif
```

The development version can be downloaded from [its page at GitHub](#).

```
$ git clone https://github.com/inveniosoftware/flask-iiif.git
$ cd flask-iiif
$ python setup.py develop
$ ./run-tests.sh
```

1.1.1 Requirements

Flask-IIIF has the following dependencies:

- [Flask](#)
- [blinker](#)
- [six](#)

Flask-IIIF requires Python version 2.6, 2.7 or 3.3+

1.2 Quickstart

This part of the documentation will show you how to get started in using Flask-IIIF with Flask.

This guide assumes that you have successfully installed Flask-IIIF and that you have a working understanding of Flask framework. If not, please follow the installation steps and read about Flask at <http://flask.pocoo.org/docs/>.

1.2.1 A Minimal Example

A minimal Flask-IIIF usage example looks like this.

First, let's create the application and initialise the extension:

```
from flask import Flask, session, redirect
from flask_iiif import IIIF
app = Flask("myapp")
ext = IIIF(app=app)
```


Second, let's create *Flask-RESTful* api instance and register image resource.

```
from flask_restful import Api
api = Api(app=app)
ext.init_restful(api)
```

1.3 Configuration

IIIF configuration.

`flask_iiif.config.IIIF_CACHE_HANDLER`
Add the preferred cache adaptor.

See also:

[*ImageCache*](#)

`flask_iiif.config.IIIF_CACHE_REDIS_PREFIX`
Sets prefix for redis keys, default: *iiif*

`flask_iiif.config.IIIF_CACHE_TIME`
How much time the image would be cached.

`flask_iiif.config.IIIF_QUALITIES`
The supported image qualities.

See also:

[IIIF Image API](#)

`flask_iiif.config.IIIF_CONVERTERS`
The supported image converters.

`flask_iiif.config.IIIF_FORMATS`
The supported image formats with their MIME type.

`flask_iiif.config.IIIF_VALIDATIONS`
The IIIF Image API validation.

See also:

[IIIF Image API v1](#) and [IIIF Image API v2](#)

`flask_iiif.config.IIIF_API_INFO_RESPONSE_SKELETON`
Information request document for the image.

See also:

[IIIF Image API v1 Information request](#) and [IIIF Image API v2 Information request](#)

1.4 API

This documentation section is automatically generated from Flask-IIIF source code.

1.4.1 Flask-IIIF

Multimedia Image API.

class flask_iiif.api.IIIFImageAPIWrapper (*image*)
IIIF Image API Wrapper.

Initialize the image.

apply_api (***kwargs*)
Apply the IIIF API to the image.

Example to apply the IIIF API:

```
from flask_iiif.api import IIIFImageAPIWrapper

image = IIIFImageAPIWrapper.from_file(path)

image.apply_api(
    version=version,
    region=region,
    size=size,
    rotation=rotation,
    quality=quality
)
```

Note:

- If the version is not specified it will fallback to version 2.0.
 - Please note the `validate_api()` should be run before `apply_api()`.
-

apply_quality (*value*)
IIIF apply quality.
Apply `quality()`.

apply_region (*value*)
IIIF apply crop.
Apply `crop()`.

apply_rotate (*value*)
IIIF apply rotate.
Apply `rotate()`.

Note: PIL rotates anti-clockwise, IIIF specifies clockwise

apply_size (*value*)
IIIF apply resize.
Apply `resize()`.

classmethod open_image (*source*)
Create an *MultimediaImage* instance.

Parameters

- **source** (*BytesIO* object) – The image image string
- **source_type** (*str*) – the type of data

Returns a *MultimediaImage* instance

```
static validate_api (**kwargs)
```

Validate IIIF Image API.

Example to validate the IIIF API:

```
from flask_iiif.api import IIIFImageAPIWrapper

IIIFImageAPIWrapper.validate_api(
    version=version,
    region=region,
    size=size,
    rotation=rotation,
    quality=quality,
    image_format=image_format
)
```

Note: If the version is not specified it will fallback to version 2.0.

```
class flask_iiif.api.MultimediaImage (image)
```

Multimedia Image API.

Initializes an image api with IIIF standards. You can:

- Resize *resize()*.
- Crop *crop()*.
- Rotate *rotate()*.
- Change image quality *quality()*.

Example of editing an image and saving it to disk:

```
from flask_iiif.api import MultimediaImage

image = IIIFImageAPIWrapper.from_file(path)
# Rotate the image
image.rotate(90)
# Resize the image
image.resize('300,200')
# Crop the image
image.crop('20,20,400,300')
# Make the image black and white
image.quality('grey')
# Finally save it to /tmp
image.save('/tmp')
```

Example of serving the modified image over http:

```
from flask import current_app, Blueprint
from flask_iiif.api import MultimediaImage

@blueprint.route('/serve/<string:uuid>/<string:size>')
def serve_thumbnail(uuid, size):
    \"\"\"Serve the image thumbnail.

    :param uuid: The document uuid.
    :param size: The desired image size.
```

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```
\"\"\"
# Initialize the image with the uuid
path = current_app.extensions['iiif'].uuid_to_path(uuid)
image = IIIFImageAPIWrapper.from_file(path)
# Resize it
image.resize(size)
# Serve it
return send_file(image.serve(), mimetype='image/jpeg')
```

Initialize the image.

crop (*coordinates*)

Crop the image.

Parameters **coordinates** (*str*) – The coordinates to crop the image

Note:

- *coordinates* must have the following pattern:
 - ‘x,y,w,h’: in pixels.
 - ‘pct:x,y,w,h’: percentage.
-

classmethod **from_file** (*path*)

Return the image object from the given path.

Parameters **path** (*str*) – The absolute path of the file

Returns a *MultimediaImage* instance

classmethod **from_string** (*source*)

Create an *MultimediaImage* instance.

Parameters **source** (*BytesIO* object) – the image string

Returns a *MultimediaImage* instance

static **percent_to_number** (*number*)

Calculate the percentage.

quality (*quality*)

Change the image format.

Parameters **quality** (*str*) – The image quality should be in (default, grey, bitonal, color)

Note: The library supports transformations between each supported mode and the “L” and “RGB” modes. To convert between other modes, you may have to use an intermediate image (typically an “RGB” image).

static **reduce_by** (*nominally, dominator*)

Calculate the ratio.

resize (*dimensions, resample=None*)

Resize the image.

Parameters

- **dimensions** (*str*) – The dimensions to resize the image
- **resample** (*PIL.Image* algorithm) – The algorithm to be used

Note:

- *dimensions* must be one of the following:
 - ‘w’: The exact width, height will be calculated.
 - ‘h’: The exact height, width will be calculated.
 - ‘pct:n’: Image percentage scale.
 - ‘w,h’: The exact width and height.
 - ‘!w,h’: Best fit for the given width and height.
-

rotate (*degrees*, *mirror=False*)

Rotate the image clockwise by given degrees.

Parameters

- **degrees** (*float*) – The degrees, should be in range of [0, 360]
- **mirror** (*bool*) – Flip image from left to right

save (*path*, *image_format='jpeg'*, *quality=90*)

Store the image to the specific path.

Parameters

- **path** (*str*) – absolute path
- **image_format** (*str*) – (gif, jpeg, pdf, png, tif)
- **quality** (*int*) – The image quality; [1, 100]

Note: *image_format* = jpg will not be recognized by `PIL.Image` and it will be changed to jpeg.

serve (*image_format='png'*, *quality=90*)

Return a BytesIO object to easily serve it through HTTP.

Parameters

- **image_format** (*str*) – (gif, jpeg, pdf, png, tif)
- **quality** (*int*) – The image quality; [1, 100]

Note: *image_format* = jpg will not be recognized by `PIL.Image` and it will be changed to jpeg.

size ()

Return the current image size.

Returns the image size

class flask_iiif.api.**MultimediaObject**

The Multimedia Object.

1.4.2 Cache

Abstract simple cache definition.

All cache adaptors must at least implement `get()` and `set()` methods.

```
class flask_iiif.cache.cache.ImageCache (app=None)
    Abstract cache layer.

    Initialize the cache.

    delete (key)
        Delete the specific key.

    flush ()
        Flush the cache.

    get (key)
        Return the key value.

        Parameters key – the object’s key

    get_last_modification (key)
        Get last modification of cached file.

        Parameters key – the file object’s key

    set (key, value, timeout=None)
        Cache the object.

        Parameters

- key – the object’s key
- value (StringIO.StringIO object) – the stored object
- timeout – the cache timeout in seconds

set_last_modification (key, last_modification=None, timeout=None)
        Set last modification of cached file.

        Parameters

- key – the file object’s key
- last_modification (datetime.datetime) – Last modification date of file represented by the key
- timeout – the cache timeout in seconds

timeout
        Return default timeout from config.

    Implement a simple cache.

class flask_iiif.cache.simple.ImageSimpleCache (app=None)
    Simple image cache.

    Initialize the cache.

    delete (key)
        Delete the specific key.

    flush ()
        Flush the cache.

    get (key)
        Return the key value.

        Parameters key – the object’s key

        Returns the stored object
```

Return type *BytesIO* object

get_last_modification (*key*)
Get last modification of cached file.

Parameters **key** – the file object’s key

set (*key*, *value*, *timeout=None*)
Cache the object.

Parameters

- **key** – the object’s key
- **value** (*BytesIO* object) – the stored object
- **timeout** – the cache timeout in seconds

set_last_modification (*key*, *last_modification=None*, *timeout=None*)
Set last modification of cached file.

Parameters

- **key** – the file object’s key
- **last_modification** (*datetime.datetime*) – Last modification date of file represented by the key
- **timeout** – the cache timeout in seconds

1.4.3 RESTful

Multimedia IIIF Image API.

class flask_iiif.restful.**IIIFImageAPI**
IIIF API Implementation.

Note:

- **IIIF IMAGE API v1.0**
 - For more infos please visit <<http://iiif.io/api/image/>>.
- **IIIF Image API v2.0**
 - For more infos please visit <<http://iiif.io/api/image/2.0/>>.
- The API works only for GET requests
- The image process must follow strictly the following workflow:
 - Region
 - Size
 - Rotation
 - Quality
 - Format

get (*version*, *uuid*, *region*, *size*, *rotation*, *quality*, *image_format*)
Run IIIF Image API workflow.

class flask_iiif.restful.IIIFImageBase

IIIF Image Base.

get (*version, uuid*)

Get IIIF Image Base.

Note: It will redirect to `iiifimageinfo` endpoint with status code 303.

class flask_iiif.restful.IIIFImageInfo

IIIF Image Info.

get (***kwargs*)

Get IIIF Image Info.

1.5 Changes

Here you can see the full list of changes between each Flask-IIIF release.

1.5.1 Version 0.6.1 (released 2020-03-19)

- Added missing `app` argument for the `flask_iiif.cache.ImageCache` constructor.

1.5.2 Version 0.6.0 (released 2020-03-13)

- Removes support for Python 2.7
- **Image API specification fixes**
 - Support both `gray` and `grey` as valid qualities.
 - Rotations are now performed clock-wise.
 - No padding added to resized images.
- Better support for image extension conversions (`.tif/.tiff, .jpg2`).
- Pillow bumped to v4.0
- Introduced `IIIF_CACHE_IGNORE_ERRORS` config variable to allow ignoring cache access exceptions.
- Changed `current_iiif.cache` from a callable function to a Werkzeug `cached_property`.

1.5.3 Version 0.5.3 (released 2019-11-21)

- Adds Last-Modified and If-Modified-Since to `imageapi`
- Removes warning message for `LocalProxy`
- Fixes werkzeug deprecation warning

1.5.4 Version 0.5.2 (released 2019-07-25)

- Sets Redis cache prefix
- Fixes cache control headers

1.5.5 Version 0.5.1 (released 2019-05-23)

- Fixes syntax error in documentation
- Fixes import sorting

1.5.6 Version 0.5.0 (released 2018-05-18)

- Fixes
 - wrong ratio calculation for best fit
- New features
 - adds black background to requested best fit thumbnail or gif if the image does not cover the whole window of requested size

1.5.7 Version 0.4.0 (released 2018-04-17)

- Fixes unicode filename issues.
- Changes default resampling algorithm to BICUBIC for better image quality.
- Adds support for `_external`, `_scheme` etc parameters for `iiif_image_url`.

1.5.8 Version 0.3.2 (released 2018-04-09)

- Security
 - Fixed missing API protection on image metadata endpoint.

1.5.9 Version 0.3.1 (released 2017-08-18)

- Deployment changes.

1.5.10 Version 0.3.0 (released 2017-08-17)

- New features
 - Adds TIFF image support to the default config.
 - Adds proper GIF resize.
 - Adds optional Redis cache.
- Notes
 - Minimum Pillow version is update to 3.4.

1.5.11 Version 0.2.0 (released 2015-05-22)

- Incompatible changes
 - Removes *uuid_to_path_handler* callback.
 - Updates error classes names (MultimediaImageResizeError and MultimediaImageCropError).
- New features
 - Adds image information request endpoint *<uuid>/info.json* which contains available metadata for the image, such as the full height and width, and the functionality available for the image, such as the formats in which it may be retrieved, and the IIIIF profile used.
 - Adds new signals to REST API that permits to have access before and after process of the request as well as after the validation of IIIIF.
 - Adds a configurable decorator to the REST API which can be configure with the *api_decorator_handler*.
 - Adds the *uuid_to_image_opener_handler* which can handle both *fullpath* and *bytestream* as source.
- Improved features
 - Improves the initialisation of the REST API by adding a possibility to override the default API prefix */api/multimedia/image/*.
 - Adds better testing cases and increases the overall test efficiency.
- Notes
 - The decorator can be used to restrict access to the REST API.

1.5.12 Version 0.1.0 (released 2015-04-28)

- Initial public release.

1.6 Contributing

Bug reports, feature requests, and other contributions are welcome. If you find a demonstrable problem that is caused by the code of this library, please:

1. Search for [already reported problems](#).
2. Check if the issue has been fixed or is still reproducible on the latest *master* branch.
3. Create an issue with **a test case**.

If you create a feature branch, you can run the tests to ensure everything is operating correctly:

```
$ ./run-tests.sh
```

1.7 License

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1.8 Authors

Flask-IIIF was originally developed for use in [Invenio](#) digital library software.

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