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

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

This guide assumes you have successfully installed Flask-IIIF and a working understanding of Flask. If not, 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:

```python
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.

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

1.3 Configuration

IIIF configuration.

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

See also:

ImageCache

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_VALIDATIONS
The IIIF Image API validation.

See also:

IIIF Image API v1 and IIIF Image API v2
```
1.4 API

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

1.4.1 Flask-IIIF

Multimedia Image API.

class flask_iiif.api.IIIFImageAPIWrapper(image)
    IIIF Image API Wraper.

    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,
        rotate=rotation,
        quality=quality
    )

    Note:
    • If the version is not specified it will fallback to version 2.0.
    • Please note the validate_api() should be ran 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().

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

    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,
    rotate=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 and image and save it to disk:

  ```python
  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:

  ```python
  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."
    # 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

```python
return send_file(image.serve(), mimetype='image/jpeg')
```

## 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’: percentance.

## 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 image string

**Returns**

- A `MultimediaImage` instance

## static percent_to_number(number)
Calculate the percentance.

## 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=0)
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 percentance 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 by given degress.

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

static sanitize_format_name(value)
Lowercase formats and make sure that jpg is written as jpeg.

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)
- 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)
- 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

Return type list

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
Abstract cache layer.

delete(key)
Delete the specific key.

flush()
Flush the cache.
get(key)
Return the key value.

Parameters key (string) – The object’s key

set(key, value, timeout=172800)
Cache the object.

Parameters

• key (string) – The object’s key
• value (StringIO.StringIO object) – the stored object
• timeout (int) – The cache timeout in seconds

Implement a simple cache.

class flask_iiif.cache.simple.ImageSimpleCache
Simple image cache.

delete(key)
Delete the specific key.

flush()
Flush the cache.

get(key)
Return the key value.

Parameters key (string) – The object’s key

Returns the stored object

Return type BytesIO object

set(key, value, timeout=172800)
Cache the object.

Parameters

• key (string) – The object’s key
• value (BytesIO object) – the stored object
• timeout (int) – 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

1.4. API
The image process must follow strictly the following workflow:
- Region
- Size
- Rotation
- Quality
- Format

```python
def delete():
    delete.
def get(version, uuid, region, size, rotation, quality, image_format):
    Run IIIF Image API workflow.
def head():
    head.
def options():
    options.
def post():
    post.
def put():
    put.
def flask_iiif.restful.error_handler(f):
    error handler.
```

## 1.5 Changes

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

**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:

```bash
$ ./run-tests.sh
```
1.7 License

Flask-IIIF is free software; you can redistribute it and/or modify it under the terms of the Revised BSD License quoted below.

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Flask-IIIF was originally developed for use in Invenio digital library software.

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