
aiohttp*utils*
Release 3.0.0

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Release v3.0.0. (*Changelog*)

aiohttp_utils provides handy utilities for building `aiohttp.web` applications.

- Method-based handlers (“resources”)
- Routing utilities
- Content negotiation with JSON rendering by default

Everything is optional. You can use as much (or as little) of this toolkit as you need.

```
from aiohttp import web
from aiohttp_utils import Response, routing, negotiation

app = web.Application(router=routing.ResourceRouter())

# Method-based handlers
class HelloResource:

    async def get(self, request):
        name = request.GET.get('name', 'World')
        return Response({
            'message': 'Hello ' + name
        })

app.router.add_resource_object('/', HelloResource())

# Content negotiation
negotiation.setup(
    app, renderers={
        'application/json': negotiation.render_json
    }
)
```


CHAPTER 1

Install

```
$ pip install aiohttp_utils
```

Ready to get started? Go on to one of the the usage guides below or check out some [examples](#).

Below are usage guides for each of the modules.

negotiation - Content negotiation

Content negotiation is the process of selecting an appropriate representation (e.g. JSON, HTML, etc.) to return to a client based on the client's and/or server's preferences.

If no custom renderers are supplied, this plugin will render responses to JSON.

```
import asyncio

from aiohttp import web
from aiohttp_utils import negotiation, Response

async def handler(request):
    return Response({'message': "Let's negotiate"})

app = web.Application()
app.router.add_route('GET', '/', handler)

# No configuration: renders to JSON by default
negotiation.setup(app)
```

We can consume the app with httpie.

```
$ pip install httpie
$ http :5000/
HTTP/1.1 200 OK
CONNECTION: keep-alive
CONTENT-LENGTH: 30
CONTENT-TYPE: application/json
DATE: Thu, 22 Oct 2015 06:03:39 GMT
SERVER: Python/3.5 aiohttp/0.17.4
```

```
{
    "message": "Let's negotiate"
}
```

Note: Handlers **MUST** return an `aiohttp_utils.negotiation.Response` (which can be imported from the top-level `aiohttp_utils` module) for data to be properly negotiated. `aiohttp_utils.negotiation.Response` is the same as `aiohttp.web.Response`, except that its first argument is data, the data to be negotiated.

Customizing negotiation

Renderers are just callables that receive a `request` and the data to render.

Renderers can return either the rendered representation of the data or a `Response`.

Example:

```
# A simple text renderer
def render_text(request, data):
    return data.encode(request.charset)

# OR, if you need to parametrize your renderer, you can use a class

class TextRenderer:
    def __init__(self, charset):
        self.charset = charset

    def __call__(self, request, data):
        return data.encode(self.charset)

render_text_utf8 = TextRenderer('utf-8')
render_text_utf16 = TextRenderer('utf-16')
```

You can then pass your renderers to `setup` with a corresponding media type.

```
from collections import OrderedDict
from aiohttp_utils import negotiation

negotiation.setup(app, renderers=OrderedDict([
    ('text/plain', render_text),
    ('application/json', negotiation.render_json),
]))
```

Note: We use an `OrderedDict` of renderers because priority is given to the first specified renderer when the client passes an unsupported media type.

```
aiohttp_utils.negotiation.setup(app: aiohttp.web.Application, *, negotiator: <built-in function callable> = <function select_renderer>, renderers: collections.OrderedDict = OrderedDict([('application/json', <JSONRenderer()>)]), force_negotiation: bool = True)
    Set up the negotiation middleware. Reads configuration from app['AIOHTTP_UTILS'].
```

Parameters

- **app** (*Application*) – Application to set up.
- **negotiator** – Function that selects a renderer given a request, a dict of renderers, and a *force* parameter (whether to return a renderer even if the client passes an unsupported media type).
- **renderers** (*OrderedDict*) – Mapping of mediatypes to callable renderers.
- **force_negotiation** (*bool*) – Whether to return a rennderer even if the client passes an unsupported media type).

`aiohttp_utils.negotiation.negotiation_middleware` (*renderers=OrderedDict([(‘application/json’, <JSONRenderer(>)]), negotiator=<function select_renderer>, force_negotiation=True)*
 Middleware which selects a renderer for a given request then renders a handler’s data to a `aiohttp.web.Response`.

class `aiohttp_utils.negotiation.Response` (*data=None, *args, **kwargs*)
 Same as `aiohttp.web.Response`, except that the constructor takes a *data* argument, which is the data to be negotiated by the `negotiation_middleware`.

`aiohttp_utils.negotiation.select_renderer` (*request: aiohttp.web_reqrep.Request, renderers: collections.OrderedDict, force=True*)
 Given a request, a list of renderers, and the *force* configuration option, return a two-tuple of: (media type, render callable). Uses `mimemagic` to find the best media type match from the `ACCEPT` header.

class `aiohttp_utils.negotiation.JSONRenderer`
 Callable object which renders to JSON.

`json_module = <module ‘json’ from ‘/usr/lib/python3.5/json/_init_.py’>`

`aiohttp_utils.negotiation.render_json = <JSONRenderer(>`
 Render data to JSON. Singleton `JSONRenderer`. This can be passed to the `RENDERERS` configuration option, e.g. (`‘application/json’, render_json`).

routing - Routing utilities

Routing utilities.

class `aiohttp_utils.routing.ResourceRouter`
 Router with an `add_resource()` method for registering method-based handlers, a.k.a “resources”. Includes all the methods `aiohttp.web.UrlDispatcher` with the addition of `add_resource`.

Example:

```
from aiohttp import web
from aiohttp_utils.routing import ResourceRouter

app = web.Application(router=ResourceRouter())

class IndexResource:

    async def get(self, request):
        return web.Response(body=b'Got it', content_type='text/plain')

    async def post(self, request):
        return web.Response(body=b'Posted it', content_type='text/plain')
```

```

app.router.add_resource_object('/', IndexResource())

# Normal function-based handlers still work
async def handler(request):
    return web.Response()

app.router.add_route('GET', '/simple', handler)

```

By default, handler names will be registered with the name `<ClassName>:<method>`.

```
app.router['IndexResource:post'].url() == '/'
```

You can override the default names by passing a names dict to `add_resource`.

```

app.router.add_resource_object('/', IndexResource(), names={'get': 'index_get'})
app.router['index_get'].url() == '/'

```

add_resource_object (*path: str, resource, methods: tuple = (), names: collections.abc.Mapping = None*)

Add routes by an resource instance's methods.

Parameters

- **path** (`str`) – route path. Should be started with slash ('/').
- **resource** – A “resource” instance. May be an instance of a plain object.
- **methods** (`tuple`) – Methods (strings) to register.
- **names** (`Mapping`) – Dictionary of name overrides.

`aiohttp_utils.routing.add_route_context` (*app: aiohttp.web.Application, module=None, url_prefix: str = None, name_prefix: str = None*)

Context manager which yields a function for adding multiple routes from a given module.

Example:

```

# myapp/articles/views.py
async def list_articles(request):
    return web.Response(b'article list...')

async def create_article(request):
    return web.Response(b'created article...')

```

```

# myapp/app.py
from myapp.articles import views

with add_route_context(app, url_prefix='/api/', name_prefix='articles') as route:
    route('GET', '/articles/', views.list_articles)
    route('POST', '/articles/', views.create_article)

app.router['articles.list_articles'].url() # /api/articles/

```

If you prefer, you can also pass module and handler names as strings.

```

with add_route_context(app, module='myapp.articles.views',
    url_prefix='/api/', name_prefix='articles') as route:

```

```
route('GET', '/articles/', 'list_articles')
route('POST', '/articles/', 'create_article')
```

Parameters

- **app** (`Application`) – Application to add routes to.
- **module** – Import path to module (str) or module object which contains the handlers.
- **url_prefix** (str) – Prefix to prepend to all route paths.
- **name_prefix** (str) – Prefix to prepend to all route names.

`aiohttp_utils.routing.add_resource_context` (*app: aiohttp.web.Application, module=None, url_prefix: str = None, name_prefix: str = None, make_resource=<function <lambda>>*)

Context manager which yields a function for adding multiple resources from a given module to an app using `ResourceRouter`.

Example:

```
# myapp/articles/views.py
class ArticleList:
    async def get(self, request):
        return web.Response(b'article list...')

class ArticleDetail:
    async def get(self, request):
        return web.Response(b'article detail...')
```

```
# myapp/app.py
from myapp.articles import views

with add_resource_context(app, url_prefix='/api/') as route:
    route('/articles/', views.ArticleList())
    route('/articles/{pk}', views.ArticleDetail())

app.router['ArticleList:get'].url() # /api/articles/
app.router['ArticleDetail:get'].url(parts={'pk': 42}) # /api/articles/42
```

If you prefer, you can also pass module and class names as strings.

```
with add_resource_context(app, module='myapp.articles.views',
                        url_prefix='/api/') as route:
    route('/articles/', 'ArticleList')
    route('/articles/{pk}', 'ArticleDetail')
```

Note: If passing class names, the resource classes will be instantiated with no arguments. You can change this behavior by overriding `make_resource`.

```
# myapp/authors/views.py
class AuthorList:
    def __init__(self, db):
        self.db = db
```

```
async def get(self, request):  
    # Fetch authors from self.db...
```

```
# myapp/app.py  
from myapp.database import db  
  
with add_resource_context(app, module='myapp.authors.views',  
                          url_prefix='/api/',  
                          make_resource=lambda cls: cls(db=db)) as route:  
    route('/authors/', 'AuthorList')
```

Parameters

- **app** (*Application*) – Application to add routes to.
- **resource** – Import path to module (*str*) or module object which contains the resource classes.
- **url_prefix** (*str*) – Prefix to prepend to all route paths.
- **name_prefix** (*str*) – Prefix to prepend to all route names.
- **make_resource** – Function which receives a resource class and returns a resource instance.

Changelog

3.0.0 (2016-03-16)

- Test against Python 3.6.
- [runner] *Backwards-incompatible*: The `runner` module is deprecated. Install `aiohttp-devtools` and use the `adev runserver` command instead.
- [path_norm] *Backwards-incompatible*: The `path_norm` module is removed, as it is now available in `aiohttp` in `aiohttp.web_middlewares.normalize_path_middleware`.

2.0.1 (2016-04-03)

- [runner] Fix compatibility with `aiohttp` $\geq 0.21.0$ (#2). Thanks [@charlesfleche](#) for reporting.

2.0.0 (2016-03-13)

- Fix compatibility with `aiohttp` $\geq 0.21.0$.
- [routing] *Backwards-incompatible*: Renamed `ResourceRouter.add_resource` to `ResourceRouter.add_resource_object` to prevent clashing with `aiohttp`'s `URLDispatcher`.

1.0.0 (2015-10-27)

- [negotiation,path_norm] *Backwards-incompatible*: Changed signatures of `negotiation.setup` and `path_norm.setup` to be more explicit. Both now take keyword-only arguments which are the same as the module's configuration keys, except lowercased, e.g. `setup(app, append_slash=True, merge_slashes=True)`.

- [runner] Make run importable from top-level aihttp_utils module.
- [runner] Fix behavior when passing reload=False when app.debug=True
- Improved docs.

0.1.0 (2015-10-25)

- First PyPI release. Includes negotiation, path_norm, routing, and runner modules.

Versioning

aihttp_utils follows a form of [sentimental versioning](#). Given that this package contains independent modules with varying degrees of stability, [semver](#) doesn't quite fit.

Major breaking changes will be clearly documented in the [changelog](#).

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