
marshmallow-jsonapi

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Release v0.16.0. (*Changelog*)

JSON API 1.0 (<https://jsonapi.org>) formatting with marshmallow.

marshmallow-jsonapi provides a simple way to produce JSON API-compliant data in any Python web framework.

```
from marshmallow_jsonapi import Schema, fields

class PostSchema(Schema):
    id = fields.Str(dump_only=True)
    title = fields.Str()

    author = fields.Relationship(
        related_url='/authors/{author_id}',
        related_url_kwargs={'author_id': '<author.id>'},
    )

    comments = fields.Relationship(
        related_url='/posts/{post_id}/comments',
        related_url_kwargs={'post_id': '<id>'},
        # Include resource linkage
        many=True, include_resource_linkage=True,
        type_='comments'
    )

    class Meta:
        type_ = 'posts'
        strict = True

post_schema = PostSchema()
post_schema.dump(post).data
# {
#   "data": {
#     "id": "1",
#     "type": "posts"
#     "attributes": {
#       "title": "JSON API paints my bikeshed!"
#     },
#     "relationships": {
#       "author": {
#         "links": {
#           "related": "/authors/9"
#         }
#       },
#       "comments": {
#         "links": {
#           "related": "/posts/1/comments/"
#         }
#       },
#       "data": [
#         {"id": 5, "type": "comments"},
#         {"id": 12, "type": "comments"}
#       ],
#     }
#   },
# }
# }
```


CHAPTER 1

Installation

```
pip install marshmallow-jsonapi
```


2.1 Quickstart

Note: The following guide assumes some familiarity with the marshmallow API. To learn more about marshmallow, see its official documentation at <https://marshmallow.readthedocs.io>.

2.1.1 Declaring schemas

Declare your schemas as you would with marshmallow.

A Schema **MUST** define:

- An `id` field
- The `type_` class Meta option

It is **RECOMMENDED** to set strict mode to `True`.

Automatic self-linking is supported through these Meta options:

- `self_url` specifies the URL to the resource itself
- `self_url_kwargs` specifies replacement fields for `self_url`
- `self_url_many` specifies the URL the resource when a collection (many) are serialized

```
from marshmallow_jsonapi import Schema, fields

class ArticleSchema(Schema):
    id = fields.Str(dump_only=True)
    title = fields.Str()

    class Meta:
        type_ = 'articles'
```

```
self_url = '/articles/{id}'
self_url_kwargs = {'id': '<id>'}
self_url_many = '/articles/'
strict = True
```

These URLs can be auto-generated by specifying `self_view`, `self_view_kwargs` and `self_view_many` instead when using the *Flask integration*.

2.1.2 Serialization

Objects will be serialized to JSON API documents with primary data.

```
ArticleSchema().dump(article).data
# {
#   'data': {
#     'id': '1',
#     'type': 'articles',
#     'attributes': {'title': 'Django is Omakase'}
#   }
# }
```

2.1.3 Relationships

The `Relationship` field is used to serialize relationship objects.

To serialize links, pass a URL format string and a dictionary of keyword arguments. String arguments enclosed in `<` `>` will be interpreted as attributes to pull from the object being serialized. The relationship links can automatically be generated from Flask view names when using the *Flask integration*.

```
class ArticleSchema(Schema):
    id = fields.Str(dump_only=True)
    title = fields.Str()

    author = fields.Relationship(
        self_url='/articles/{article_id}/relationships/author',
        self_url_kwargs={'article_id': '<id>'},
        related_url='/authors/{author_id}',
        related_url_kwargs={'author_id': '<author.id>'}
    )

    class Meta:
        type_ = 'articles'
        strict = True

ArticleSchema().dump(article).data
# {
#   'data': {
#     'id': '1',
#     'type': 'articles'
#     'attributes': {'title': 'Django is Omakase'},
#     'relationships': {
#       'author': {
#         'links': {
#           'self': '/articles/1/relationships/author'
#           'related': '/authors/9',
```

```
#
#
#
#
# }
```

Resource linkages

You can serialize resource linkages by passing `include_resource_linkage=True`.

```
class ArticleSchema (Schema):
    id = fields.Str(dump_only=True)
    title = fields.Str()

    comments = fields.Relationship(
        related_url='/posts/{post_id}/comments',
        related_url_kwargs={'post_id': '<id>'},
        # Include resource linkage
        many=True, include_resource_linkage=True,
        type_='comments'
    )
    class Meta:
        type_ = 'articles'
        strict = True
```

ArticleSchema().dump(article).data

```
# {
#   "data": {
#     'id': '1',
#     'type': 'articles'
#     'attributes': {'title': 'Django is Omakase'},
#     "relationships": {
#       "comments": {
#         "links": {
#           "related": "/posts/1/comments/"
#         }
#         "data": [
#           {"id": "5", "type": "comments"},
#           {"id": "12", "type": "comments"}
#         ],
#       }
#     },
#   },
# }
```

Compound documents

Compound documents allow to include related resources into the request with the primary resource. In order to include objects, you have to define a Schema for the respective relationship, which will be used to render those objects.

```
class ArticleSchema (Schema):
    id = fields.Str(dump_only=True)
    title = fields.Str()

    comments = fields.Relationship(
```

```

related_url='/posts/{post_id}/comments',
related_url_kwargs={'post_id': '<id>'},
many=True, include_resource_linkage=True,
type_='comments',
# define a schema for rendering included data
schema='CommentSchema'
)
class Meta:
    type_ = 'articles'
    strict = True

```

Just as with nested fields the schema can be a class or a string with a simple or fully qualified class name. Make sure to import the schema beforehand.

Now you can include some data in a dump by specifying the includes (also supports nested relations via the dot syntax).

```

ArticleSchema(include_data=('comments', 'comments.author')).dump(article).data
# {
#   "data": {
#     "id": "1",
#     "type": "articles"
#     "attributes": {"title": "Django is Omakase"},
#     "relationships": {
#       "comments": {
#         "links": {
#           "related": "/posts/1/comments/"
#         }
#         "data": [
#           {"id": "5", "type": "comments"},
#           {"id": "12", "type": "comments"}
#         ],
#       }
#     },
#   }
#   "included": [
#     {
#       "attributes": {
#         "body": "Marshmallow is sweet like sugar!"
#       },
#       "id": "17",
#       "links": {"self": "/comments/17/"},
#       "type": "comments"
#     },
#     {
#       "attributes": {
#         "name": "Laura"
#       },
#       "id": "94",
#       "links": {"self": "/people/94/"},
#       "type": "people"
#     }
#   ]
# }

```

2.1.4 Meta Objects

The `marshmallow_jsonapi.fields.Meta` field is used to serialize the meta object within a resource object.

```

from marshmallow_jsonapi import Schema, fields

class AuthorSchema(Schema):
    id = fields.Str(dump_only=True)
    name = fields.Str()
    metadata = fields.Meta()

    class Meta:
        type_ = 'people'
        strict = True

author = {'name': 'Alice', 'metadata': {'page': {'offset': 10}}}
AuthorSchema().dump(author).data
# {
#   "data": {
#     "id": "1",
#     "type": "people"
#     "attributes": {"name": "Alice"},
#     "meta": {"page": {"offset": 10}}
#   }
# }

```

2.1.5 Errors

`Schema.load` and `Schema.validate` will return JSON API-formatted `Error` objects.

```

from pprint import pprint

from marshmallow_jsonapi import Schema, fields
from marshmallow import validate, ValidationError

class AuthorSchema(Schema):
    id = fields.Str(dump_only=True)
    first_name = fields.Str(required=True)
    last_name = fields.Str(required=True)
    password = fields.Str(load_only=True, validate=validate.Length(6))
    twitter = fields.Str()

    class Meta:
        type_ = 'people'
        strict = True

schema = AuthorSchema()
input_data = {
    'data': {
        'type': 'people',
        'attributes': {
            'first_name': 'Dan',
            'password': 'short'
        }
    }
}

try:
    schema.validate(input_data)

```

```

except ValidationError as err:
    pprint(err.messages)
# {'errors': [{'detail': 'Shorter than minimum length 6.',
#               'source': {'pointer': '/data/attributes/password'}},
#             {'detail': 'Missing data for required field.',
#               'source': {'pointer': '/data/attributes/last_name'}}]}

```

Validating type

If an invalid “type” is passed in the input data, an *IncorrectTypeError* is raised.

```

from marshmallow_jsonapi.exceptions import IncorrectTypeError

input_data = {
    'data': {
        'type': 'invalid-type',
        'attributes': {
            'first_name': 'Dan',
            'last_name': 'Gebhardt',
            'password': 'verysecure'
        }
    }
}

try:
    schema.validate(input_data)
except IncorrectTypeError as err:
    pprint(err.messages)
# {'errors': [{'detail': 'Invalid type. Expected "people".',
#               'pointer': '/data/type'}]}

```

2.1.6 Inflection

You can optionally specify a function to transform attribute names. For example, you may decide to follow JSON API’s recommendation to use “dasherized” names.

```

from marshmallow_jsonapi import Schema, fields

def dasherize(text):
    return text.replace('_', '-')

class AuthorSchema(Schema):
    id = fields.Str(dump_only=True)
    first_name = fields.Str(required=True)
    last_name = fields.Str(required=True)

    class Meta:
        type_ = 'people'
        inflect = dasherize

result = AuthorSchema().dump(author)
result.data
# {
#   'data': {
#     'id': '9',
#     'type': 'people',

```

```
#         'attributes': {
#             'first-name': 'Dan',
#             'last-name': 'Gebhardt'
#         }
#     }
# }
```

2.1.7 Flask integration

marshmallow-jsonapi includes optional utilities to integrate with Flask.

A Flask-specific schema in `marshmallow_jsonapi.flask` can be used to auto-generate self-links based on view names instead of hard-coding URLs.

Additionally, the `Relationship` field in the `marshmallow_jsonapi.flask` module allows you to pass view names instead of path templates to generate relationship links.

```
from marshmallow_jsonapi import fields
from marshmallow_jsonapi.flask import Relationship, Schema

class ArticleSchema(Schema):
    id = fields.Str(dump_only=True)
    title = fields.Str()

    author = fields.Relationship(
        self_view='article_author',
        self_url_kwargs={'article_id': '<id>'},
        related_view='author_detail',
        related_view_kwargs={'author_id': '<author.id>'}
    )

    comments = Relationship(
        related_view='article_comments',
        related_view_kwargs={'article_id': '<id>'},
        many=True, include_resource_linkage=True,
        type_='comments'
    )

    class Meta:
        type_ = 'posts'
        self_view = 'post_detail'
        self_view_kwargs = {'post_detail': '<id>'}
        self_view_many = 'posts_list'
```

See [here](#) for a full example.

3.1 API Reference

3.1.1 Core

class `marshmallow_jsonapi.Schema` (*args, **kwargs)

Schema class that formats data according to JSON API 1.0. Must define the `type_class` Meta option.

Example:

```
from marshmallow_jsonapi import Schema, fields

def dasherize(text):
    return text.replace('_', '-')

class PostSchema(Schema):
    id = fields.Str(dump_only=True) # Required
    title = fields.Str()

    author = fields.HyperlinkRelated(
        '/authors/{author_id}',
        url_kwargs={'author_id': '<author.id>'},
    )

    comments = fields.HyperlinkRelated(
        '/posts/{post_id}/comments',
        url_kwargs={'post_id': '<id>'},
        # Include resource linkage
        many=True, include_resource_linkage=True,
        type_='comments'
    )

    class Meta:
        type_ = 'posts' # Required
        inflect = dasherize
```

class Meta

Options object for *Schema*. Takes the same options as `marshmallow.Schema.Meta` with the addition of:

- `type_` - required, the JSON API resource type as a string.
- `inflect` - optional, an inflection function to modify attribute names.
- `self_url` - optional, URL to use to `self` in links
- `self_url_kwargs` - optional, replacement fields for `self_url`. String arguments enclosed in `<` `>` will be interpreted as attributes to pull from the schema data.
- `self_url_many` - optional, URL to use to `self` in top-level links when a collection of resources is returned.

check_relations (*relations*)

Recursive function which checks if a relation is valid.

format_error (*field_name, message, index=None*)

Override-able hook to format a single error message as an Error object.

See: <http://jsonapi.org/format/#error-objects>

format_errors (*errors, many*)

Format validation errors as JSON Error objects.

format_item (*item*)

Format a single datum as a Resource object.

See: <http://jsonapi.org/format/#document-resource-objects>

format_items (*data, many*)

Format data as a Resource object or list of Resource objects.

See: <http://jsonapi.org/format/#document-resource-objects>

format_json_api_response (*data, many*)

Post-dump hook that formats serialized data as a top-level JSON API object.

See: <http://jsonapi.org/format/#document-top-level>

generate_url (*link, **kwargs*)

Generate URL with any kwargs interpolated.

get_resource_links (*item*)

Hook for adding links to a resource object.

get_top_level_links (*data, many*)

Hook for adding links to the root of the response data.

inflect (*text*)

Inflect *text* if the `inflect` class Meta option is defined, otherwise do nothing.

on_bind_field (*field_name, field_obj*)

Schema hook override. When binding fields, set `load_from` to the inflected form of `field_name`.

wrap_response (*data, many*)

Wrap data and links according to the JSON API

3.1.2 Fields

Includes all the fields classes from `marshmallow.fields` as well as fields for serializing JSON API-formatted hyperlinks.

class `marshmallow_jsonapi.fields.BaseRelationship` (*default=<marshmallow.missing>*,
attribute=None, *load_from=None*,
dump_to=None, *error=None*, *validate=None*, *required=False*, *allow_none=None*, *load_only=False*,
dump_only=False, *missing=<marshmallow.missing>*, *error_messages=None*, ***metadata*)

Base relationship field.

This is used by `marshmallow_jsonapi.Schema` to determine which fields should be formatted as relationship objects.

See: <http://jsonapi.org/format/#document-resource-object-relationships>

class `marshmallow_jsonapi.fields.Meta` (***kwargs*)
 Field which serializes to a “meta object” within a “resource object”.

Examples:

```
from marshmallow_jsonapi import Schema, fields

class UserSchema(Schema):
    id = fields.String()
    metadata = fields.Meta()

    class Meta:
        type_ = 'product'
        strict = True
```

See: <http://jsonapi.org/format/#document-meta>

class `marshmallow_jsonapi.fields.Relationship` (*related_url=''*, *related_url_kwargs=None*,
self_url='', *self_url_kwargs=None*,
include_resource_linkage=False,
schema=None, *many=False*, *type_=None*,
id_field=None, ***kwargs*)

Framework-independent field which serializes to a “relationship object”.

See: <http://jsonapi.org/format/#document-resource-object-relationships>

Examples:

```
author = Relationship(
    related_url='/authors/{author_id}',
    related_url_kwargs={'author_id': '<author.id>'},
)

comments = Relationship(
    related_url='/posts/{post_id}/comments/',
    related_url_kwargs={'post_id': '<id>'},
    many=True, include_resource_linkage=True,
    type_='comments'
)
```

This field is read-only by default.

Parameters

- **related_url** (*str*) – Format string for related resource links.
- **related_url_kwargs** (*dict*) – Replacement fields for `related_url`. String arguments enclosed in `< >` will be interpreted as attributes to pull from the target object.
- **self_url** (*str*) – Format string for self relationship links.
- **self_url_kwargs** (*dict*) – Replacement fields for `self_url`. String arguments enclosed in `< >` will be interpreted as attributes to pull from the target object.
- **include_resource_linkage** (*bool*) – Whether to include a resource linkage (<http://jsonapi.org/format/#document-resource-object-linkage>) in the serialized result.
- **schema** (`marshmallow_jsonapi.Schema`) – The schema to render the included data with.
- **many** (*bool*) – Whether the relationship represents a many-to-one or many-to-many relationship. Only affects serialization of the resource linkage.
- **type** (*str*) – The type of resource.
- **id_field** (*str*) – Attribute name to pull ids from if a resource linkage is included.

deserialize (*value, attr=None, data=None*)

Deserialize value.

Raises `ValidationError` – If the value is not type `dict`, if the value does not contain a data key, and if the value is required but unspecified.

extract_value (*data*)

Extract the id key and validate the request structure.

3.1.3 Flask

Flask integration that avoids the need to hard-code URLs for links.

This includes a Flask-specific schema with custom Meta options and a relationship field for linking to related resources.

```
class marshmallow_jsonapi.flask.Relationship (related_view=None,                                re-
                                             related_view_kwargs=None,  self_view=None,
                                             self_view_kwargs=None, **kwargs)
```

Field which serializes to a “relationship object” with a “related resource link”.

See: <http://jsonapi.org/format/#document-resource-object-relationships>

Examples:

```
author = Relationship(
    related_view='author_detail',
    related_view_kwargs={'author_id': '<author.id>'},
)

comments = Relationship(
    related_view='posts_comments',
    related_view_kwargs={'post_id': '<id>'},
    many=True, include_resource_linkage=True,
    type_='comments'
)
```

This field is read-only by default.

Parameters

- **related_view** (*str*) – View name for related resource link.
- **related_view_kwargs** (*dict*) – Path kwargs fields for `related_view`. String arguments enclosed in `< >` will be interpreted as attributes to pull from the target object.
- **self_view** (*str*) – View name for self relationship link.
- **self_view_kwargs** (*dict*) – Path kwargs for `self_view`. String arguments enclosed in `< >` will be interpreted as attributes to pull from the target object.
- ****kwargs** – Same keyword arguments as `marshmallow_jsonapi.fields.Relationship`.

class `marshmallow_jsonapi.flask.Schema` (**args, **kwargs*)

A Flask specific schema that resolves self URLs from view names.

class Meta

Options object that takes the same options as `marshmallow_jsonapi.Schema`, but instead of `self_url`, `self_url_kwargs` and `self_url_many` has the following options to resolve the URLs from Flask views:

- `self_view` - View name to resolve the self URL link from.
- `self_view_kwargs` - Replacement fields for `self_view`. String attributes enclosed in `< >` will be interpreted as attributes to pull from the schema data.
- `self_view_many` - View name to resolve the self URL link when a collection of resources is returned.

OPTIONS_CLASS

alias of `SchemaOpts`

generate_url (*view_name, **kwargs*)

Generate URL with any kwargs interpolated.

class `marshmallow_jsonapi.flask.SchemaOpts` (*meta, *args, **kwargs*)

Options to use Flask view names instead of hard coding URLs.

3.1.4 Exceptions

Exception classes.

exception `marshmallow_jsonapi.exceptions.IncorrectTypeError` (*message=None, actual=None, expected=None*) ex-

Raised when client provides an invalid `type` in a request.

messages

JSON API-formatted error representation.

exception `marshmallow_jsonapi.exceptions.JSONAPIError`

Base class for all exceptions in this package.

3.1.5 Utilities

Utility functions.

This module should be considered private API.

`marshmallow_jsonapi.utils.resolve_params` (*obj*, *params*, *default=<marshmallow.missing>*)

Given a dictionary of keyword arguments, return the same dictionary except with values enclosed in `< >` resolved to attributes on *obj*.

`marshmallow_jsonapi.utils.tpl` (*val*)

Return value within `< >` if possible, else return `None`.

4.1 Changelog

4.1.1 0.16.0 (2017-11-08)

Features:

- Add support for excluding or including nested fields on relationships (#94). Thanks @scottwernert for the PR.

Other changes:

- *Backwards-incompatible*: Drop support for marshmallow<2.8.0

4.1.2 0.15.1 (2017-08-23)

Bug fixes:

- Fix pointer for `id` in error objects (#90). Thanks @rgant for the catch and patch.

4.1.3 0.15.0 (2017-06-27)

Features:

- `Relationship` field supports deserializing included data (#83). Thanks @anuragarwal561994 for the suggestion and thanks @asteinlein for the PR.

4.1.4 0.14.0 (2017-04-30)

Features:

- `Relationship` respects its passed Schema's `get_attribute` method when getting the `id` field for resource linkages (#80). Thanks @scmmmh for the PR.

4.1.5 0.13.0 (2017-04-18)

Features:

- Add support for including deeply nested relationships in compound documents (#61). Thanks @mrhanky17 for the PR.

4.1.6 0.12.0 (2017-04-16)

Features:

- Use default attribute value instead of raising exception if relationship is None on Relationship field (#75). Thanks @akira-dev.

4.1.7 0.11.1 (2017-04-06)

Bug fixes:

- Fix formatting JSON pointer when serializing an invalid object at index 0 (#77). Thanks @danpoland for the catch and patch.

4.1.8 0.11.0 (2017-03-12)

Bug fixes:

- Fix compatibility with marshmallow 3.x.

Other changes:

- *Backwards-incompatible*: Remove unused `utils.get_value_or_raise` function.

4.1.9 0.10.2 (2017-03-08)

Bug fixes:

- Fix format of error object returned when `data` key is not included in input (#66). Thanks @RazerM.
- Fix serializing compound documents when Relationship is passed a schema class and `many=True` (#67). Thanks @danpoland for the catch and patch.

4.1.10 0.10.1 (2017-02-05)

Bug fixes:

- Serialize None and empty lists ([]) to valid JSON-API objects (#58). Thanks @rgant for reporting and sending a PR.

4.1.11 0.10.0 (2017-01-05)

Features:

- Add `fields.Meta` for (de)serializing meta data on resource objects (#28). Thanks @rubdos for the suggestion and initial work. Thanks @RazerM for the PR.

Other changes:

- Test against Python 3.6.

4.1.12 0.9.0 (2016-10-08)

Features:

- Add Flask-specific schema with class Meta options for self link generation: `self_view`, `self_view_kwargs`, and `self_view_many` (#51). Thanks @asteinlein.

Bug fixes:

- Fix formatting of validation error messages on newer versions of marshmallow.

Other changes:

- Drop official support for Python 3.3.

4.1.13 0.8.0 (2016-06-20)

Features:

- Add support for compound documents (#11). Thanks @Tim-Erwin and @woodb for implementing this.
- *Backwards-incompatible*: Remove `include_data` parameter from `Relationship`. Use `include_resource_linkage` instead.

4.1.14 0.7.1 (2016-05-08)

Bug fixes:

- Format correction for error objects (#47). Thanks @ZeeD26 for the PR.

4.1.15 0.7.0 (2016-04-03)

Features:

- Correctly format `messages` attribute of `ValidationError` raised when `type` key is missing in input (#43). Thanks @ZeeD26 for the catch and patch.
- JSON pointers for error objects for relationships will point to the data key (#41). Thanks @cmanallen for the PR.

4.1.16 0.6.0 (2016-03-24)

Features:

- `Relationship` deserialization improvements: properly validate to-one and to-many relationships and validate the presence of the `data` key (#37). Thanks @cmanallen for the PR.
- `attributes` is no longer a required key in the data object (##39, #42). Thanks @ZeeD26 for reporting and @cmanallen for the PR.
- Added `id` serialization (#39). Thanks again @cmanallen.

4.1.17 0.5.0 (2016-02-08)

Features:

- Add relationship deserialization (#15).
- Allow serialization of foreign key attributes (#32).
- Relationship IDs serialize to strings, as is required by JSON-API (#31).
- Relationship field respects `dump_to` parameter (#33).

Thanks @cmanallen for all of these changes.

Other changes:

- The minimum supported marshmallow version is 2.3.0.

4.1.18 0.4.2 (2015-12-21)

Bug fixes:

- Relationship names are inflected when appropriate (#22). Thanks @angelosarto for reporting.

4.1.19 0.4.1 (2015-12-19)

Bug fixes:

- Fix serializing null and empty relationships with `flask.Relationship` (#24). Thanks @floqqi for the catch and patch.

4.1.20 0.4.0 (2015-12-06)

- Correctly serialize null and empty relationships (#10). Thanks @jo-tham for the PR.
- Add `self_url`, `self_url_kwargs`, and `self_url_many` class Meta options for adding self links. Thanks @asteinlein for the PR.

4.1.21 0.3.0 (2015-10-18)

- *Backwards-incompatible*: Replace `HyperlinkRelated` with `Relationship` field. Supports related links (`related`), relationship links (`self`), and resource linkages.
- *Backwards-incompatible*: Validate and deserialize JSON API-formatted request payloads.
- Fix error formatting when `many=True`.
- Fix error formatting in strict mode.

4.1.22 0.2.2 (2015-09-26)

- Fix for marshmallow 2.0.0 compat.

4.1.23 0.2.1 (2015-09-16)

- Compatibility with marshmallow \geq 2.0.0rc2.

4.1.24 0.2.0 (2015-09-13)

Features:

- Add framework-independent `HyperlinkRelated` field.
- Support inflection of attribute names via the `inflect` class `Meta` option.

Bug fixes:

- Fix for making `HyperlinkRelated` read-only by default.

Support:

- Docs updates.
- Tested on Python 3.5.

4.1.25 0.1.0 (2015-09-12)

- First PyPI release.
- Include Schema that serializes objects to resource objects.
- Flask-compatible `HyperlinkRelate` field for serializing relationships.
- Errors are formatted as JSON API error objects.

4.2 Authors

4.2.1 Lead

- Steven Loria @sloria

4.2.2 Contributors (chronological)

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- Anders Steinlein @asteinlein
- @floqqi
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- Dominik Steinberger @ZeeD26
- Tim Mundt @Tim-Erwin
- Brandon Wood @woodb
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- J Rob Gant @rgant
- Dan Poland @danpoland

- Pierre CHAISY @akira-dev
- @mrhanky17
- Mark Hall @scmmmh
- Scott Werner @scottwernervt

4.3 Contributing Guidelines

4.3.1 In General

- PEP 8, when sensible.
- Test ruthlessly. Write docs for new features.
- Even more important than Test-Driven Development—*Human-Driven Development*.

4.3.2 In Particular

Questions, Feature Requests, Bug Reports, and Feedback. . .

. . . should all be reported on the [Github Issue Tracker](#) .

Setting Up for Local Development

1. Fork marshmallow-jsonapi on Github.

```
$ git clone https://github.com/marshmallow-code/marshmallow-jsonapi.git
$ cd marshmallow-jsonapi
```

2. Install development requirements. It is highly recommended that you use a virtualenv.

```
# After activating your virtualenv
$ pip install -r dev-requirements.txt
```

3. Install marshmallow-jsonapi in develop mode.

```
$ pip install -e .
```

Git Branch Structure

Marshmallow abides by the following branching model:

dev Current development branch. **New features should branch off here.**

pypi Current production release on PyPI.

Always make a new branch for your work, no matter how small. Also, **do not put unrelated changes in the same branch or pull request**. This makes it more difficult to merge your changes.

Pull Requests

1. Create a new local branch.

```
$ git checkout -b name-of-feature dev
```

2. Commit your changes. Write **good commit messages**.

```
$ git commit -m "Detailed commit message"
$ git push origin name-of-feature
```

3. Before submitting a pull request, check the following:

- If the pull request adds functionality, it is tested and the docs are updated.
- You've added yourself to `AUTHORS.rst`.

4. Submit a pull request to `marshmallow-code:dev` or the appropriate maintenance branch. The [Travis CI](#) build must be passing before your pull request is merged.

Running tests

To run all tests:

```
$ invoke test
```

To run tests on Python 2.7, 3.4, and 3.5 virtual environments (must have each interpreter installed):

```
$ tox
```

Documentation

Contributions to the documentation are welcome. Documentation is written in [reStructured Text \(rST\)](#). A quick rST reference can be found [here](#). Builds are powered by [Sphinx](#).

To install the packages for building the docs:

```
$ pip install -r docs/requirements.txt
```

To build the docs:

```
$ invoke docs -b
```

The `-b` (for “browse”) automatically opens up the docs in your browser after building.

4.4 License

```
Copyright 2015-2017 Steven Loria
```

```
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CHAPTER 5

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- [marshmallow-jsonapi @ PyPI](#)
- [Issue Tracker](#)

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