
django-smartfields Documentation

Release 1.0.9

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January 28, 2017

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Django Model Fields that are smart

This application introduces a totally new way of handling field's values through unique ways they are assigned and processed. It is so simple that nothing needs to be done in order to start using it, yet it is so powerful, that it can handle automatic image and video file conversions with a simple specification of a conversion function. Check it out, and it will forever change the way you handle Model Fields.

Installation

```
pip install django-smartfields
```

Latest build

Forkme on Github: [django-smartfields](#)

Introduction

Here is a short introduction of how this app works and a simple example how it can be used.

First of all, as name suggests, it mainly deals with Model Fields, hence it is supplied with a custom version of every Django's Field. There is no difference from original versions of fields in terms of interaction with database, forms or with any other Django codebase, so both kinds of fields can be used together safely and interchangeably. Main distinction from Django's fields is that all smartfields accept a keyword argument `dependencies`, which should be a list of *Dependency's* or *FileDependency's*.

Dependency is a concept that allows you to change the value of any field or an attribute attached to the model instance, including the field *Dependency* which it is specified for. Each *Dependency* handles the value from a field through *Processors* which are functions that can be accepted as `default`, `pre_processor` and `processor` kwargs. An actual model attribute or a field which a processed value will be assigned to is specified by one or none of the kwargs `suffix` and `atname`. More details on those see documentation in [Dependencies](#) and [Processors](#) sections, but for now let's see a couple of simple examples.

3.1 Example

Let's say we have a `Product` model where a slug needs to be automatically generated from product's name and also properly modified to look like a slug.

```
from django.db.models import models
from django.utils.text import slugify
from smartfields import fields
from smartfields.dependencies import Dependency

def name_getter(value, instance, **kwargs):
    return instance.name

class Product(models.Model):
    name = models.CharField(max_length=255)
    slug = fields.SlugField(dependencies=[
        Dependency(default=name_getter, processor=slugify)
    ])

```

Here is what will happen in above example whenever an instance of `Product` is created:

- Whenever `Product` is initialized and `slug` field is empty, it will attempt to get a value from `name` field. In case when it is still empty before model is being saved it will attempt to get the value again, all because of default function `name_getter`.

- Right before the model is saved processor function `slugify` will be invoked, and value of the field from `name` will be modified to look like a slug. Important part is, processor will be invoked only whenever the value of `slug` field has changed.

Important Peculiarities

- Fields are processed in order they are specified in a Model.
- Dependencies are processed in the order they are specified in the `dependencies` list, except the ones with `async` flag, these are processed last, but also in the order they were specified.

More Details

5.1 Dependencies

class smartfields.dependencies.**Dependency**

```
__init__ (attname=None, suffix=None, processor=None, pre_processor=None, async=False, default=NOT_PROVIDED, processor_params=None, uid=None)
```

Parameters

- **attname** (*str*) – Name of an attribute or an existing field that dependency will assign a value to. Cannot be used together with **suffix**.
- **suffix** (*str*) – Will be used together with a field name in generating an **attname** in format *field_name_suffix*. Generated name can refer to an attribute or an existing field that dependency will assign a value to. Cannot be used together with **attname**.
- **processor** – A function that takes field's value as an argument or an instance of a class derived from *BaseProcessor*. In a latter case it will receive all arguments: *value*, *instance*, *field*, *field_value*, *dependee*, *stashed_value* plus any custom kwargs. If a class is passed instead of it's instance it will be instantiated, to prevent a common mistake.
- **pre_processor** –
- **async** –
- **default** –
- **processor_params** –
- **uid** –

class smartfields.dependencies.**FileDependency**

Because FileFields are handled in a different way then regular fields we need a different type of dependency too.

```
__init__ (upload_to='', storage=None, keep_orphans=KEEP_ORPHANS, **kwargs)
```

keyword **upload_to**

keyword **storage**

keyword **keep_orphans**

5.2 Processors

```
class smartfields.processors.BaseProcessor
```

```
    __init__()
```

```
    process (value, instance=None, field=None, dependee=None, stashed_value=None, **kwargs)
```

Parameters

- **value** – New value that is being assigned to the field.
- **instance** – Model instance that a field is attached to.
- **field** – Field instance that the dependency, which holds this processor, was supplied to.
- **dependee** – Instance of a field that depends on the `field`. It is decided by the `attname` or `suffix` argument to the
- **stashed_value** – This is a previous value that a field was holding. Very useful for comparing it to new values.

```
class smartfields.processors.FFMPEGProcessor
```

```
    __init__()
```

```
    process (value, **kwargs)
```

Here is an example of how to convert a video to MP4 format. In this example every time `MediaModel` is instantiated `FileDependency` will automatically attach another field like attribute to the model `video_mp4`. Moreover, whenever a new video file is uploaded or simply assigned to a `video` field, it will use `FFMPEGProcessor` and `ffmpeg` to convert that video file to mp4 format and will assign it the same name as original video with `mp4` suffix and file extension. While converting a video file it will set progress between 0 and 1, which can be retrieved from field's status.

```
from django.db import models
from smartfields import fields, dependencies
from smartfields.processors import FFMPEGProcessor

class MediaModel(models.Model):
    video = fields.FileField(dependencies=[
        dependencies.FileDependency(suffix='mp4', processor=FFMPEGProcessor(
            vbitrate = '1M',
            maxrate = '1M',
            bufsize = '2M',
            width = 'trunc(oh*a/2)*2', # http://ffmpeg.org/ffmpeg-all.html#scale
            height = 720,
            threads = 0, # use all cores
            abitrage = '96k',
            format = 'mp4',
            vcodec = 'libx264',
            acodec = 'libfdk_aac'))]))
```

Project Info

6.1 Changelog

6.1.1 1.0.7

- added `gis` fields.
- made `lxml` a default parser for `HTMLProcessor`.

6.1.2 1.0.6

- added `RenameFileProcessor`

6.1.3 1.0.5

- minor bug fixes.

6.1.4 1.0.4

- Switched to MIT License
- Added `stashed_value` to processors.

6.1.5 1.0.3

- Added support for `Wand` with `WandImageProcessor`.
- Made it compatible with Django 1.8
- Updated compiled JavaScript file.

6.1.6 1.0.2

- Introduced `pre_processor`.
- Made `UploadTo` serializable.
- Got rid of custom handlers.

- Minor bugfixes.

6.1.7 1.0.0

- Initial release

6.2 Authors

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6.3 License

The MIT License (MIT)

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