django-geoip Documentation

Release 0.5dev

coagulant

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App to figure out where your visitors are from by their IP address.

Detects country, region and city, querying the database with geodata. Optional *high-level API* provides user location in request object.

Note: Currentrly `django-geoip` supports only ipgeobase.ru backend. It provides accurate geolocation in Russia and Ukraine only. There are plans to add other backends in future releases.

CHAPTER 1

Contents

Installation

This app works with python 2.7, 3.4+, Django 1.10 and higher.

Recommended way to install is via pip:

```
pip install django-geoip
```

Basic

- Add `django_geoip` to `INSTALLED_APPS` in settings.py:

```
INSTALLED_APPS = (...
                  'django_geoip',
                  ...
                 )
```

- Create application tables in database:

```
python manage.py migrate
```

- Obtain latest data to perform geoip detection by *running management command*:

```
python manage.py geoip_update
```

Advanced

In order to make *user's location detection automatic* several other steps are required:

- Add `LocationMiddleware` to `MIDDLEWARE_CLASSES`:

```
MIDDLEWARE = (...
    'django_geoip.middleware.LocationMiddleware',
    ...
)
```

- Provide a custom *location model* (inherited from `django_geoip.models.GeoLocationFacade`)
- Specify this model in *Settings*:

```
GEOIP_LOCATION_MODEL = 'example.models.Location' # just an example, replace with your own
```

- Include app urls into your urlconf if you want to *allow visitors to change their location*:

```
urlpatterns += [
    ...
    url(r'^geoip/', include('django_geoip.urls')),
    ...
]
```

- Add local ISO codes if you want to change or add countries in *Settings*:

```
GEOIP_CUSTOM_ISO_CODES = {
    "RU": " ",
}
```

Usage

The app provides both high and low-level APIs to work with geolocation. Low-level API works super-simple: it guesses geographic location by an IP adress. High-level API is more complex and deeply integrated in Django: it automatically detects user location in every request and makes it available as `request.location`.

Low-level API usage

Low-level API allows you to guess user's location by his IP address. This function returns a *database record*, associated with IP's city, region and country.

Here is a basic example:

```
from django_geoip.models import IpRange

ip = "212.49.98.48"

try:
    geoip_record = IpRange.objects.by_ip(ip)

    print geoip_record.city
    # >>   ( )

    print geoip_record.region
    # >>    ()

    print geoip_record.country
    # >> Russia ()

except IpRange.DoesNotExist:
    print 'Unknown location'
```

High-level API usage

The app provides a convenient way to detect user location automatically. If you've followed *advanced installation instructions*, user's location should be accessible via `request` object:

```
def my_view(request):
    """ Passing location into template """
    ...
    context['location'] = request.location
    ...
```

`request.location` is an instance of a custom model that you're required to create on your own (details below).

Location model rationale

Location model suites the basic needs for sites with different content for users, depending on their location. Ipgeobase forces Country-Region-City geo-hierarchy, but it's usually too general and not sufficient. Site content might depend on city only, or vary on custom areas, combining various cities, that don't match actual geographic regions.

In order to abstract geography from business logic, *django-geoip requires a model*, specific to your own app.

Creating custom location model

Create a django model, that inherits from `django_geoip.models.GeoLocationFacade`. It might be a proxy model that doesn't require a separate database table, but it might be handy in many cases.

Location should implement following classmethods:

`get_available_locations()`
    Returns a queryset of all active custom locations.

get_by_ip_range(*ip_range*)

Returns single instance of location model, corresponding to specified ip_range. Raises `DoesNotExist` if no location is associated with given IP address.

get_default_location()

Returns single instance of location model, acting as a fallback when `get_by_ip_range` fails.

New in version 0.3.1: It can return placeholder value `GEOIP_LOCATION_EMPTY_VALUE` to store empty location. This is useful if you want to mark the location is unknown.

Example of custom location model

Very basic implementation of `GeoLocationFacade` for demonstration purpose:

```
class MyCustomLocation(GeoLocationFacade):
    """ Location is almost equivalent of geographic City.
        Major difference is that only locations
        from this model are returned by high-level API, so you can
        narrow down the list of cities you wish to display on your site.
    """
    name = models.CharField(max_length=100)
    city = models.OneToOneField(City, related_name='my_custom_location')
    is_default = models.BooleanField(default=False)

    @classmethod
    def get_by_ip_range(cls, ip_range):
        """ IpRange has one to many relationship with Country, Region and City.
            Here we exploit the later relationship."""
        return ip_range.city.my_custom_location

    @classmethod
    def get_default_location(cls):
        return cls.objects.get(is_default=True)

    @classmethod
    def get_available_locations(cls):
        return cls.objects.all()
```

Switching user's location

Switching location from front-end is very much like changing language in Django (in fact the code is almost the same with a little bit of difference, docs are a nice rip-off).

As a convenience, the app comes with a view, `django_geoip.views.set_location`, that sets a user's location and redirects back to the previous page.

Activate this view by adding the following line to your URLconf:

```
    # Note that this example makes the view available at /geoip/change/
    (r'^geoip/', include('django_geoip.urls')),
```

The view expects to be called via the POST method, with a location identifier `location_id` set in request. It saves the location choice in a cookie that is by default named `geoip_location_id`. (The name can be changed through the `GEOIP_COOKIE_NAME` setting.)

After setting the location choice, Django redirects the user, following this algorithm:

- Django looks for a `next` parameter in the POST data.

- If that doesn't exist, or is empty, Django tries the URL in the `Referrer` header.
- If that's empty – say, if a user's browser suppresses that header – then the user will be redirected to / (the site root) as a fallback.

Here's example part of a view rendering a form to change location:

```
def get_context(self, **kwargs):
    return {'LOCATIONS': location_model.get_available_locations()}
```

Here's example HTML template code:

```
{% load url from future %}

<form action="{% url 'geoip_change_location' %}" method="post">
<input name="next" type="hidden" value="/next/page/" />
    <select name="location_id">
    {% for location in LOCATIONS %}
    <option value="{{ location.id }}">{{ location.name }}</option>
    {% endfor %}
</select>
<input type="submit" value="Change" />
</form>
```

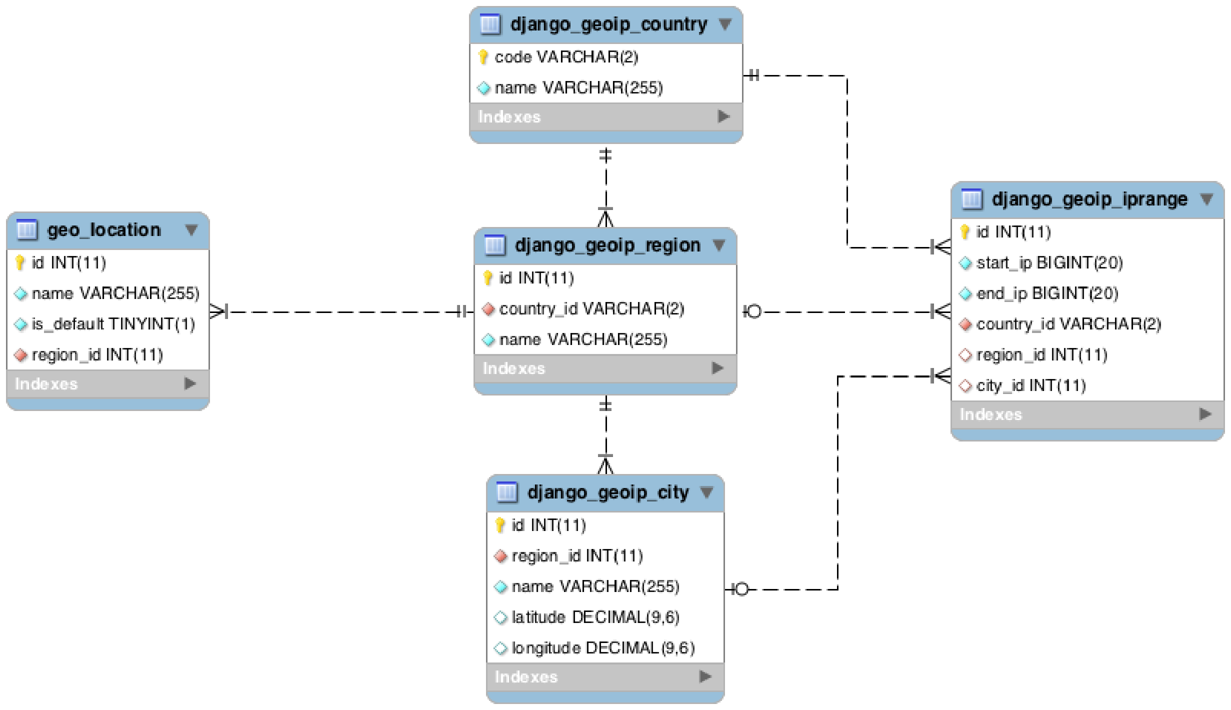
Under the hood

Data storage

All geoip data, including geography and geoip mapping is stored in the database. To avoid unnecessary database hits user location id is stored in a cookie.

Geography

Django-geoip supports only ipgeobase geography, which consist of following entities: Country, Region, City. Database maintains normalized relationships between all entities, i.e. Country has many Regions, Region has many Cities.



IP ranges

Backends

There is currently no infrastructure to use alternative geoip backends, but it's planned for future releases. Pull requests are also welcome.

Ipgeobase backend

ipgeobase.ru is a database of russian and ukranian IP networks mapped to geographical locations.

It's maintained by RuCenter and updated daily.

As of 30 June 2013 it contains info on 990 cities and 193666 Ip Ranges (some networks doesn't belong to CIS).

Here a is demo of ip detection: http://ipgeobase.ru/

Updating GeoIP database

Note: Currentrly `django-geoip` supports only ipgeobase.ru backend.

To update your database with fresh entries (adds new geography and completely replaces all IpRegions with fresh ones):

```
python manage.py geoip_update
```

Warning: This is irreversible operation, do not use on production!
If you wish to clear all geodata prior the sync (deletes all Cities, Regions, Countries and IpRanges):

```
python manage.py geoip_update --clear
```

New in version 0.3.1: To reduce the size of indexes and database you can exclude countries from import. It's achieved by specifying only needed county codes in settings:

```
IPGEOBASE_ALLOWED_COUNTRIES = ['RU', 'UA']
```

Note: If you're having `2006, 'MySQL server has gone away'` error during database update, setting `max_allowed_packet` to a higher value might help. E.g. `max_allowed_packet=16M`

Settings

`django-geoip` has some public configuration:

class `django_geoip.settings.geoip_settings.`**`GeoIpConfig`**`(**kwargs)`
GeoIP configuration

`COOKIE_DOMAIN` = **''**
Cookie domain for LocationCookieStorage class.

`COOKIE_EXPIRES` = **31622400**
Cookie lifetime in seconds (1 year by default) for LocationCookieStorage class.

`COOKIE_NAME` = **'geoip_location_id'**
Cookie name for LocationCookieStorage class (stores *custom location's* primary key).

`LOCATION_EMPTY_VALUE` = **0**
Empty value for location, if location not found in ranges. This value must be returned in a *custom location model* in get_default_location class method if necessary.

`LOCATION_MODEL` = **'django_geoip.models.GeoLocationFacade'**
A reference to a *model* that stores custom geography, specific to application.

`STORAGE_CLASS` = **'django_geoip.storage.LocationCookieStorage'**
Persistent storage class for user location

Reference

This section contains documentation to module internals, useful for `django-geoip` developers.

GeoLocationFacade

Locator

location_model

`django_geoip.base.location_model` – SimpleLazyObject to get current *location model*.

Integrating with django-hosts

Django-hosts routes requests for specific hosts to different URL schemes defined in modules called "hostconfs". Django-geoip plays nice with django-hosts, allowing to redirect user to specific geodomain.

In this example `www.site.com` will redirect to `asia.site.com` for users from the East and `us.site.com` for american ones. For european users in will remain `www.site.com`` without redirect (default location).

0. *Install and setup django-geoip* Let's assume we have defined this custom location model:

```
# app/models.py
from django_geoip.models import Country, GeoLocationFacade

class Location(GeoLocationFacade):
    slug = models.SlugField('Site kwarg')
    country = model.ForeignKey(Country)
```

   This model is referenced in `settings.py`:

```
GEOIP_LOCATION_MODEL = 'app.models.Location'
```

   We also need to change default user location storage mechanism, because it's fully determined by hostname:

```
GEOIP_STORAGE_CLASS = 'django_geoip.storage.LocationDummyStorage'
```

1. Install and setup django-hosts

```
pip install django-hosts==0.4.2
```

   Make sure you also followed other steps: adding to INSTALLED_APPS, adding a middleware, creating `hosts.py`, setting up ROOT_HOSTCONF and DEFAULT_HOST.

   Note: `django_geoip.middleware.LocationMiddleware` should come before `django_hosts.middleware.HostsMiddleware` in `MIDDLEWARE_CLASSES` to make things work together.

2. Configure `host_patterns` in *hosts.py*:

```
host_patterns = patterns('',
    # Default www.sitename.com pattern that redirects users to <location>.sitename.com
    # depending on their IP address
    host(r'www', settings.ROOT_URLCONF, name='www', callback=detect_location),

    # Geodomain for specific region: <location>.sitename.com, doesn't redirect
    host(r'(?P<site_slug>[\w-]+)', settings.ROOT_URLCONF, name='location', callback=save_locatic
)
```

3. Define `detect_location` callback:

```
from django_geoip.base import location_model, Locator
from django_hosts.reverse import reverse_host

def detect_location(request):
    """ Callback takes request object and redirects to specific location domain if appropriate '

    default_location = location_model.get_default_location()

    # User is a first-timer and doesn't have a cookie with detected location
```

```
        if Locator(request).is_store_empty():
            # If we're at www-address, but not from default location, then do redirect.
            if request.location != default_location:
                return _redirect(request, domain=reverse_host('location', kwargs={'site_slug': reque
        request.location = default_location
```

4. Define `save_location` callback:

```
    def save_location(request, site_slug):
        """ Store location in request, overriding geoip detection """
        request.location = get_object_or_404(Location, slug=site_slug)
```

Contributing

Most of the `django-geoip` code is covered with tests, so if you wish to contribute (which is highly appreciated) please add corresponding tests. Running tests:

```
make test
```

This command runs only unittests, which is preferred behavior. However, you might need to run system tests too (might take some time and requires internet connection):

```
make test_system
```

Checking coverage (requires `coverage` package):

```
make coverage
```

Finally, if you want to run tests against all python-django combinations supported:

```
tox
```

Changelog

0.5.2 (2015-02-04)

- Fix update command to handle regions with same name in different countries

0.5.1 (2014-09-03)

- Fix packaging issues

0.5 (2014-08-31)

- Django 1.7 support (if you're using `Django<1.7` with `South`, you'll need to upgrade South to latest version).
- Fix ipgeobase update edge case when `IPGEOBASE_ALLOWED_COUNTRIES` is not empty

0.4 (2014-01-13)

- ***BACKWARDS INCOMPATIBLE*** Fixed latitude and longitude being mixed up during import
- Django 1.6 support
- Support for pip 1.5

0.3.1 (2013-06-30)

- Ability to exclude countries on import via `IPGEOBASE_ALLOWED_COUNTRIES` option (thnx, @saippuakauppias)
- Store explicit empty location when no location matches (thnx, @saippuakauppias)
- Restored Django 1.3 support

0.3.0 (2013-01-29)

- Added python 3 support (3.2+)
- Minimum required django 1.4.2, use version 0.2.8, if you don’t want to upgrade.
- `GeoLocationFascade` alias removed

0.2.8 (2012-12-10)

- Cookie storage ignores non-integer location_id

0.2.7 (2012-08-28)

- Fixed country names to be verbal names rather than iso3166 codes
- Minor docs improvements
- Fixed handling of invalid ips passed to geoip

0.2.6 (2012-05-10)

- Fixed a bug, introduced in 0.2.5, causing old facade name not work as expected.
- `set_location` view now accepts both `location` and `location_id`.
- ***BACKWARDS INCOMPATIBLE*** Removed magic `_get_cookie_domain` behavior in favor of configuring `GEOIP_COOKIE_DOMAIN`.

0.2.5 (2012-04-17)

- `GeoLocationFascade` renamed to `GeoLocationFacade`, old name will work till 0.3

0.2.4 (2012-04-15)

- Proper datamigration for countrynames
- `GeoLocationFascade` defines abstract classmethods
- `bulk_create` support for Django 1.4
- Default view url renamed from `change` to `setlocation`
- Improved docs a lot more
- Short tutorial for django-hosts integration

0.2.3 (2012-04-11)

- Added country names
- Management update command renamed from `ipgeobase_update` to `geoip_update`
- Management command verbose output with progressbar
- Dropped django 1.2 support
- Documentation improved

0.2.2 (2012-01-25)

- Fixed middleware behavior when `process_request` never ran (redirects)
- Improved location storage validation, fixed cookie domain detection
- Added `Locator.is_store_empty` function to reveal if geoip detection was made

0.2.1 (2012-01-25)

- Fixed middleware behavior when request.location is None
- Added `GEOIP_STORAGE_CLASS` setting to override default user location storage
- Introduced `LocationDummyStorage` class to avoid cookie storage

0.2 (2012-01-20)

- Major refactoring of the app, added more tests
- Fixed a typo in `get_availabe_locations`

0.1 (2012-01-18)

- Initial release

Authors

Django-geoip is written and maintained by Ilya Baryshev.

Contributors

- Denis Veselov (@saippuakauppias)

CHAPTER 2

Contributing

You can grab latest code on `dev` branch at Github.

Feel free to submit issues, pull requests are also welcome.

Good contributions follow *simple guidelines*

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