Wooey Documentation

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Contents

Wooey is a simple web interface to run command line Python scripts. Think of it as an easy way to get your scripts up on the web for routine data analysis, file processing, or anything else.

The project was inspired by how simply and powerfully sandman could expose users to a database and by how Gooey turns ArgumentParser-based command-line scripts into WxWidgets GUIs. Originally two separate projects (Django-based djangui by Chris Mitchell and Flask-based Wooey by Martin Fitzpatrick) it has been merged to combine our efforts.

Both of our tools were based on our needs as data scientists to have a system that could:

1. Autodocument workflows for data analysis (simple model saving).
2. Enable fellow lab members with no command line experience to utilize python scripts.
3. Enable the easy wrapping of any program in simple python instead of having to use language specific to existing tools such as Galaxy.

CHAPTER 1

Getting Started

1.1 Installation

```
pip install wooey
```

Currently, Wooey supports Django versions 1.8+. To use Wooey in a project which is still running Django 1.6 or 1.7, you must may install version 0.9.8.

1.1.1 A Wooey only project

There is a bootstrapper included with wooey, which will create a Django project and setup most of the needed settings automagically for you.

```
1. wooify -p ProjectName
2. Follow the instructions at the end of the bootstrapper
   to create the admin user and access the admin page
3. Login to the admin page wherever the project is
   being hosted (locally this would be localhost:8000/admin)
```

1.1.2 Installation with existing Django Projects

```
1. Add 'wooey' to INSTALLED_APPS in settings.py (and optionally, djcelery unless you␣
↪wish to tie into an existing celery instance)
2. Add the following to your urls.py:
   url(r'^', include('wooey.urls')),
   (Note: it does not need to be rooted at your site base,
    you can have r'^wooey/'... as your router):

3. Migrate your database:
    # Django 1.8 and above
```

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```
    ./manage.py makemigrations
    ./manage.py migrate

4. Ensure the following are in your TEMPLATE_CONTEXT_PROCSSORS variable:
    TEMPLATE_CONTEXT_PROCESSORS = [
    ...
    'django.contrib.auth.context_processors.auth',
    'django.core.context_processors.request'
    ...]

5. If necessary, setup static file serving. For non-production servers, Django
   can be setup to do this for you by adding the following to your urls.py:

    from django.conf import settings
    from django.conf.urls.static import static
    urlpatterns += static(settings.MEDIA_URL, document_root=settings.MEDIA_ROOT)
    urlpatterns += static(settings.STATIC_URL, document_root=settings.STATIC_ROOT)

6. You may also need to define a MEDIA_ROOT, MEDIA_URL, STATIC_ROOT, and STATIC_URL
   if these are not setup already.
```

1.1.3 Installation on remote servers

We have provided guides for several available services that host sites, as well as guides for steps common to multiple services (such as using Amazon Web Services). For examples not listed here, you are free to open up an issue. (or document it and send a pull request!).

Configuration on Heroku

Installing Wooey

Wooey can be installed by the simple command:

```
pip install wooey
```

or if you want to be on the bleeding-edge for some reason, from the github repo by:

```
pip install git+https://github.com/wooey/Wooey.git
```

Bootstrapping Wooey

The wooey project can be boostraped, which will create a full-fledged django app for you. This can be accomplished with the command:

```
wooify -p project_name
```

For the rest of this guide, the wooey instance will be called wooey_heroku.

Setup Heroku and git

Of course, you will at this point need to have an app on Heroku.

- Create an app on Heroku
- Login to heroku on the command line

Next, setup git:

- cd woeey_heroku
- git init
- heroku git:remote -a wooey

Setup dependencies

For the bootstrapping, we have included a requirements file to assist in getting newer users up and running. This can be found here:

```
wooey_heroku/wooey_heroku/requirements.txt
```

We want to add one more dependency to this, which we will use momentarily. To the bottom of this, add:

```
django-heroku-postgresify
```

You will want to move this file to the same location as manage.py

Setup a Procfile

Create a file, called Procfile, which tells Heroku how to run your app, with the following contents:

```
web: waitress-serve --connection-limit 2000 --channel-timeout=300 --port=$PORT wooey_
↪heroku.wsgi:application
worker: celery -A your_project_name worker -c 1 --beat -l info
```

Setup Environment Vars on Heroku

You will need to add a few settings to your heroku config at this point to tell Heroku where to find your Django settings. This can be done by the command line or through the settings gui.

```
heroku config:set -a wooey DJANGO_SETTINGS_MODULE=wooey_heroku.settings
```

Storage

Heroku uses an ephemeral file system, so you will need to create your own persistent storage. Amazon S3 services is a natural place for this. To start, complete the steps found here.

Celery

The last bit to setup is celery. For this, we will use the free AMPQ services from heroku, such as RabbitMQ Bigwig. After enabling this in your heroku dashboard, complete the guide found *here*.

Production Settings

At this point, your wooey app is insecure – so we will edit your settings to fix this as well as make it more production-ready by changing our database.

You will want to edit user_settings.py, which is found in wooey_heroku/wooey_heroku/settings/user_settings.py

In here, there are comments indicating what each variable means. You will want to change the DATABASES variable to:

```
DATABASES = postgresify()
```

and add the following import:

```
from postgresify import postgresify
```

Finally, you want to disable the DEBUG setting by adding

```
DEBUG = False
```

Add everything to git and push it upstream

```
git add .
git commit -m 'initial commit'
git push -u heroku master
```

At the last step, the -u indicates to create the branch master if it does not exist on the remote.

Migrate your database and sync static assets

You need to migrate your database now, setup your admin access, and put our static files on the S3 server. An easy way to do this is through heroku:

```
heroku run -a wooey bash
python manage.py migrate
python manage.py createsuperuser
python manage.py collectstatic
```

Check out your app

Now, your app should be online. You can check it at <appname>.herokuapp.com.

Configuration on DigitalOcean

How to get Wooey up and running on a DO box. I followed these instructions on a Ubuntu 14.04 LTS box. For security purposes we want it to be running only on HTTPS.

Download Wooey

Download and install Wooey, by any of the standard methods. For this tutorial this was run in the home directory i.e. /home/user/

This means manage.py will be in /home/user/ProjectName

Install Nginx & uWSGI

Next we need to install Nginx, which will make setting up SSL easy and uWSGI which is how Django and Nginx talk.

There are instructions on how to install the stable branch of Nginx here.

uWSGI you can install with *pip*.

Getting Wooey to listen on Port 80

You could at this point have Wooey listen to port 80 (assuming it's open) with the following command, run from the folder containing manage.py:

```
python manage.py runserver 0.0.0.0:80
```

But this leaves us widly insecure, because all our passwords will be transmitted over HTTP. I had problems working with non-standard ports on UFW so for the purposes of this tutorial, so I set-up my ports using this iptables linode tutorial.

Getting Wooey to talk to Nginx & uWSGI

We will basically follow the tutorial here. If you installed Wooey in a virtualenv from the get go, then follow all those steps, if not you can ignore that set:

Then we can follow the guide along with a couple changes:

1. Basic test
    - Because I was having trouble using non-standard ports, I replaced 8000 with 80 and ran the commands as root
2. Test your Django project
    - In order to get this step to work correctly I found I had to call uWSGI from the main folder where manage.py lives, in my case that was /home/user/ProjectName (I have no idea why, but otherwise it won't find the Wooey project correctly)
3. Deploying static files
    - So far I have ignored this altogether and no problems...
4. nginx and uWSGI and test.py
    - Again only got this to work on port 80 again because of non-standard port problems

Now if you want to run on a network socket, at this point you should be good to go. (Remember crucially this needs to be run from the same folder as manage.py).

```
uwsgi --socket 127.0.0.1:8000 --wsgi-file ProjectName/wsgi.py --chmod-socket=666
```

If you want to use a file socket, I then created an empty file in the Wooey project directory to be used as one (in this example named django.sock).

```
uwsgi --socket ProjectName/django.sock --wsgi-file ProjectName/test.py --chmod-
↪socket=666
```

At this point we should now have Wooey running on Port 80 through Nginx.

Forcing SSL with Nginx

I have forced SSL with the following settings. (I think I might be running two SSL redirects, one on the Nginx side and one on the Django side which is never necessary because Nginx comes first, any clarification would be welcome, however for those following along:)

I switched the main nginx block to HTTPS (there's a good tutorial here if you haven't done this before).

I also added an HTTPS header to the server block listening on 443 so Django knows it's HTTPS:

```
proxy_set_header X-Forwarded-Proto $scheme;
```

Then I set-up a second server block to listen on port 80 and rewrite to https:

```
server {
    listen   80;
    listen   [::]:80;

    server_name  enter_hostname;

    return 301 https://$server_name$request_uri;
}
```

Then on the Django side I added the following flags to my config in user_settings.py

```
SECURE_SSL_REDIRECT = True #this may be the double redirect which is unnecessary.
SECURE_PROXY_SSL_HEADER = ('HTTP_X_FORWARDED_PROTO', 'https')
SESSION_COOKIE_SECURE = True
CSRF_COOKIE_SECURE = True
```

Finally I then added HTTP authentication, there is a good tutorial on this here. You only need to reach the first part of step 3, adding the *auth_basic* lines to your HTTPs block.

Here's an example of what my final Nginx setup file in */etc/nginx/sites-available/django* looked like:

```
# the upstream component nginx needs to connect to
upstream django {
    server unix:///home/user/projectname/projectname/django.sock; # for a file socket
    #server 127.0.0.1:8000; # for a web port socket (we'll use this first)
}

# configuration of the server
server {
    # the port your site will be served on
    listen      443 ssl;
    # the domain name it will serve for
    server_name server_ip; # substitute your machine's IP address or FQDN
    charset     utf-8;

    #add basic auth to prevent crawling
    auth_basic "Restricted";
    auth_basic_user_file /etc/nginx/.htpasswd;

    #get the self signed certificate
    ssl_certificate /etc/nginx/ssl/nginx.crt;
    ssl_certificate_key /etc/nginx/ssl/nginx.key;

    #add header to django knows request came through HTTPS
```

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```
    proxy_set_header X-Forwarded-Proto $scheme;

    # max upload size
    client_max_body_size 75M;   # adjust to taste

    # Django media
    location /media  {
        alias /home/user/projectname/projectname/uploads;  # your Django project's␣
↪media files - amend as required
    }

    location /static {
        alias /home/user/projectname/projectname/static; # your Django project's␣
↪static files - amend as required
    }

    # Finally, send all non-media requests to the Django server.
    location / {
        uwsgi_pass  django;
        include     /etc/nginx/uwsgi_params;
    }
}

#http rewrite
server {
    listen   80;
    listen   [::]:80;

    server_name  server_ip;

    return 301 https://$server_name$request_uri;
}
```

Running Celery in the background

All this other set-up means you then can't use honcho to run celery, because it doesn't seem to like (that's a technical term) the uWSGI command which means instead, you have to run it as a background process. This however just seems to work. . .

nohup celery -A your_project_name worker -c 1 –beat -l info & #you probably want to pipe this output somewhere sensible

Which means you can then run the server with the command above uwsgi command shown above.

Contributed by dom-devel.

Configuration on OpenShift

OpenShift is considerably more involved than Heroku, but allows you to freely run an app that will not sleep.

Setup OpenShift

- Setup a Django gear, this will give you a basic structure for an app.

- Clone the git repository for the app locally.

Installing Wooey

In the same local environment you cloned from, you can installed Wooey via:

```
pip install wooey
```

or if you want to be on the bleeding-edge for some reason, from the github repo by:

```
pip install git+https://github.com/wooey/Wooey.git
```

Bootstrapping Wooey

Next, you want to cd into your project root, which should be called wsgi. Here, you want to run to wooey bootstrapper, which will create a full-fledged django app for you. This can be accomplished with the command:

```
wooify -p project_name
```

Setup OpenShift Pt. 2

For the rest of this guide, the wooey instance will be called wooey_openshift. Next you will want to remove the old django project, called myproject and edit the *application* file and change all instances of myproject to YourProject-Name(wooey_openshift in this example).

Next, you want to setup a database and a message broker for Celery

1. Setting up a Database
   - Add a PostgreSQL instance cartridge to your app.
   - Add our database information. Openshift provides a few variables for us to use for the ip/port, but does not include one for the database name. Add that via:

     ```
     rhc env set -a YourAppName DATABASE_NAME=database_name
     ```

   - Uncomment our DATABASES variable in user_settings.py:

     ```
     DATABASES = {
         'default': {
             'ENGINE': 'django.db.backends.postgresql_psycopg2',
             # for production environments, these should be stored as environment␣
     ↪variables
             # I also recommend the django-heroku-postgresify package for a super␣
     ↪simple setup
             'NAME': os.environ.get('DATABASE_NAME', 'wooey'),
             'USER': os.environ.get('DATABASE_USER', 'wooey'),
             'PASSWORD': os.environ.get('DATABASE_PASSWORD', 'wooey'),
             'HOST': os.environ.get('DATABASE_URL', 'localhost'),
             'PORT': os.environ.get('DATABASE_PORT', '5432')
         }
     }
     ```

   - Next, we need to change the variables since OpenShift sets up different environment variables. Rename the above variables to:

```
DATABASE_USER -> OPENSHIFT_POSTGRESQL_DB_USERNAME
DATABASE_PASSWORD -> OPENSHIFT_POSTGRESQL_DB_PASSWORD
DATABASE_URL -> OPENSHIFT_POSTGRESQL_DB_HOST
DATABASE_PORT -> OPENSHIFT_POSTGRESQL_DB_PORT:
```

2. Setting up Celery
   - Add CloudAMPQ as a service, which can be done once again through the OpenShift Marketplace.
   - Update the user_settings.py file and uncomment the following:

```
CELERY_RESULT_BACKEND = 'amqp'
BROKER_URL = os.environ.get('AMQP_URL') or \
             os.environ.get('RABBITMQ_BIGWIG_TX_URL') or \
             os.environ.get('CLOUDAMQP_URL', 'amqp://
↪guest:guest@localhost:5672/')
BROKER_POOL_LIMIT = 1
CELERYD_CONCURRENCY = 1
CELERY_TASK_SERIALIZER = 'json'
ACKS_LATE = True
CELERY_IMPORTS = ('wooey.tasks',)
```

   - Change AMPQ_URL to CLOUDAMQP_URI, which is the environment variable setup in your app.
   - Next, we need to tell the server to start celery. We will make a new deployment hook for this. Create the file project_root/.openshift/action_hooks/post_start with the following content:

```
#!/bin/bash
cd $OPENSHIFT_REPO_DIR
cd wsgi
cd YourProjectName
rm worker1.pid
celery multi stop worker1
celery multi start worker1
```

   - To save our connections, we need to tell celery to stop when the app stops as well. Create another file, pre_stop with:

```
#!/bin/bash
cd $OPENSHIFT_REPO_DIR
cd wsgi
cd YourAppName
rm worker1.pid
celery multi stop worker1
```

3. Setup the requirements.txt file. The bootstrapper provides a requirements.txt file that already has all the apps needed to run Wooey. Just copy it from YourAppName/YourAppName/ to the top level directory of OpenShift (which has things like setup.py and openshiftlibs.py)
4. Edit wsgi/application and change:
   - alter myproject to YourProjectName
   - Change

```
os.environ['DJANGO_SETTINGS_MODULE'] = 'myproject.settings'
```

     to

```
os.environ['DJANGO_SETTINGS_MODULE'] = 'YourProjectName.settings'
```

5. Edit your git hooks to reflect the new project name:
   - There is a hidden directory at the project root, called .openshift. within it you want the directory action_hooks. cd into this, and make the following changes
   - In deploy, change myproject to YourProjectName
   - In secure_db, do the same.
6. Update where the static assets are being served from in user_settings.py (Optionally, you can follow the guide to not use OpenShift's static service and go through S3 instead here):

```
STATIC_ROOT = os.path.join(os.environ.get('OPENSHIFT_REPO_DIR'), 'wsgi', 'static',
↪ 'static')
MEDIA_ROOT = os.path.join(os.environ.get('OPENSHIFT_DATA_DIR'), 'user_uploads')
```

7. Remove DEBUG mode. In user_settings.py, add:

```
DEBUG=False
```

Migrate your database and sync static assets

You need to migrate your database now, setup your admin access, and sync our static files. An easy way to do this is through the ssh command:

```
rhc ssh -a YourAppName
python manage.py migrate
python manage.py createsuperuser
python manage.py collectstatic
```

Check out your app

Now, your app should be online.

Configuring Amazon S3 Storage for Wooey

Prerequisites

Before getting started, this guide assumes you have several things setup:

- An AWS account
- An S3 Bucket
- An IAM user/group with full access to the S3 bucket (remember to add your user to the IAM group controlling the bucket!)
- Are using a storage app in Django. We recommend django-storages.

Steps to Follow

- Edit your CORS configuration for the bucket:

```
<?xml version="1.0" encoding="UTF-8"?>
<CORSConfiguration xmlns="http://s3.amazonaws.com/doc/2006-03-01/">
    <CORSRule>
        <AllowedOrigin>*</AllowedOrigin>
        <AllowedMethod>GET</AllowedMethod>
        <MaxAgeSeconds>3000</MaxAgeSeconds>
        <AllowedHeader>Authorization</AllowedHeader>
    </CORSRule>
    <CORSRule>
        <AllowedOrigin>wooey.herokuapp.com</AllowedOrigin>
        <AllowedMethod>GET</AllowedMethod>
        <AllowedMethod>POST</AllowedMethod>
        <AllowedMethod>PUT</AllowedMethod>
        <AllowedHeader>*</AllowedHeader>
    </CORSRule>
</CORSConfiguration>
```

- If using a bootstrapped Wooey, update user_settings.py and uncomment out the following section: (or add it for apps Wooey was added to)

```
from boto.s3.connection import VHostCallingFormat


INSTALLED_APPS += (
    'storages',
    'collectfast',
)


# We have user authentication -- we need to use https (django-sslify)
if not DEBUG:
    MIDDLEWARE_CLASSES = ['sslify.middleware.SSLifyMiddleware'] + list(MIDDLEWARE_
↪CLASSES)
    SECURE_PROXY_SSL_HEADER = ('HTTP_X_FORWARDED_PROTO', 'https')


ALLOWED_HOSTS = (
    'localhost',
    '127.0.0.1',
    "wooey.herokuapp.com",  # put your site here
)


AWS_CALLING_FORMAT = VHostCallingFormat


AWS_ACCESS_KEY_ID = environ.get('AWS_ACCESS_KEY_ID', '')
AWS_SECRET_ACCESS_KEY = environ.get('AWS_SECRET_ACCESS_KEY', '')
AWS_STORAGE_BUCKET_NAME = environ.get('AWS_STORAGE_BUCKET_NAME', '')
AWS_AUTO_CREATE_BUCKET = True
AWS_QUERYSTRING_AUTH = False
AWS_S3_SECURE_URLS = True
AWS_FILE_OVERWRITE = False
```

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```
AWS_PRELOAD_METADATA = True
AWS_S3_CUSTOM_DOMAIN = environ.get('AWS_S3_CUSTOM_DOMAIN', '')


GZIP_CONTENT_TYPES = (
    'text/css',
    'application/javascript',
    'application/x-javascript',
    'text/javascript',
)


AWS_EXPIREY = 60 * 60 * 7
AWS_HEADERS = {
    'Cache-Control': 'max-age=%d, s-maxage=%d, must-revalidate' % (AWS_EXPIREY,
        AWS_EXPIREY)
}


STATIC_URL = 'http://%s.s3.amazonaws.com/' % AWS_STORAGE_BUCKET_NAME
MEDIA_URL = '/user-uploads/'
STATICFILES_STORAGE = DEFAULT_FILE_STORAGE = 'wooey.wooeystorage.
↪CachedS3BotoStorage'
WOOEY_EPHEMERAL_FILES = True
```

In the above step, make sure you change wooey.herokuapp.com to your app's address.

Configuration Settings

Next, as part of any good app – you should be storing your secret information in environmental variables instead of hard-coding them into the app. You will want to set these variables:

```
AWS_ACCESS_KEY_ID=access_key
AWS_SECRET_ACCESS_KEY=secret_key
AWS_STORAGE_BUCKET_NAME=bucket_name
```

If you are using Heroku, you can set them as follows:

```
heroku config:set -a wooey AWS_ACCESS_KEY_ID=access_key
heroku config:set -a wooey AWS_SECRET_ACCESS_KEY=secret_key
heroku config:set -a wooey AWS_STORAGE_BUCKET_NAME=bucket_name
```

Wooey Celery Configuration

Celery

Celery is an app designed to pass messages. This has broad implications, such as the ability to have a distributed setup where workers perform the work, with a central node delegating the tasks (without halting the server to perform these tasks).

The backend

There are several backends to use, here we can use a database backend or a server as a backend. By default, Wooey uses the database as a backend. If you wish to move to a more robust system, there are several options such as AMPQ or redis. Here, we detail how to use AMPQ.

If you are coming from a bootstrapped project, to switch to an AMPQ backend, it is a matter of uncommenting the following lines in your production settings:

```
CELERY_RESULT_BACKEND = 'amqp'BROKER_URL = os.environ.get('AMQP_URL') or \
             os.environ.get('RABBITMQ_BIGWIG_TX_URL') or \
             os.environ.get('CLOUDAMQP_URL', 'amqp://guest:guest@localhost:5672/')
BROKER_POOL_LIMIT = 1
CELERYD_CONCURRENCY = 1
CELERY_TASK_SERIALIZER = 'json'
ACKS_LATE = True
```

If you are coming from a project which has wooey installed as an additional app, you want to add the above to your settings.

Additional Heroku Options

For heroku, you will want to add AMPQ to your app through the dashboard, which should give you a AMPQ url compatible with the above options.

1.2 Configuration

1.2.1 Wooey Settings

`WOOEY_ALLOW_ANONYMOUS`: Boolean, whether to allow submission of jobs by anonymous users. (Default: `True`)

By default, Wooey has a basic user account system. It is very basic, and doesn't confirm registrations via email.

`WOOEY_AUTH`: Boolean, whether to use the authorization system of Wooey for simple login/registration. (Default: `True`)

`WOOEY_CELERY`: Boolean, whether or not celery is enabled. If disabled, tasks will run locally and block execution. (Default: `True`)

`WOOEY_CELERY_TASKS`: String, the name of the celery tasks for Wooey. (Default: `'wooey.tasks'`)

`WOOEY_DEFAULT_SCRIPT_GROUP`: String, the group scripts should be added to if no group is specified. (Default: `'Scripts'`)

`WOOEY_EPHEMERAL_FILES`: Boolean, if your file system changes with each restart (e.g. files are stored on S3). (Default: `False`)

`WOOEY_FILE_DIR`: String, where the files uploaded by the user will be saved (Default: `wooey_files`)

`WOOEY_JOB_EXPIRATION`: Dictionary, A dictionary with two keys: `user` and `anonymous`. The values for each is a timedelta specifying how much time should be elapsed before a job is automatically deleted. If a key is not provided or `None`, the job for that user type wll not be deleted.

`WOOEY_LOGIN_URL`: String, if you have an existing authorization system, the login url: (Default: `settings.LOGIN_URL`)

`WOOEY_REALTIME_CACHE`: String, the name of the cache to use for storing real time updates from running jobs.

`WOOEY_REGISTER_URL`: String, if you have an existing authorization system, the registration url: (Default: `'/accounts/register/'`)

`WOOEY_SCRIPT_DIR`: String, the folder to save scripts under. It should be a short, relative path to the storage root. (Defalt: `wooey_scripts`)

`WOOEY_SHOW_LOCKED_SCRIPTS`: Boolean, whether to show locked scripts as disabled or hide them entirely. (Defalt: `True` – show as disabled)

`WOOEY_SITE_NAME`: String, the name of the site to display. (Defalt: `Wooey!`)

`WOOEY_SITE_TAG`: String, the tagline for the site. (Defalt: `A web UI for Python Scripts`)

1.2.2 Internationlization (i18n)

Wooey supports the use of Django internationalization settings to present the interface in your own language. Currently we provide limited support for French, German, Dutch, Japanese, and Simplifed Chinese. We welcome contributions for translation extensions, fixes and new languages from our users.

To specify the default language for your installation, you can specify this using the `LANGUAGE_CODE` setting in `django_settings.py`. For example to set the interface to French, you would use:

```
LANGUAGE_CODE = 'fr'
```

For German you would use:

```
LANGUAGE_CODE = 'de'
```

If you want the user interface to automatically change to the preferred language for your visitors, you must use the Django internationalization middleware. By default, the bootstrapped version of Wooey will add in the necessary middleware, but for projects using Wooey as a separate app, these projects will need to add `django.middleware.locale.LocaleMiddleware` to their `MIDDLEWARE_CLASSES` block in `django_settings.py`. Note that it must come *after* the Session middleware, and before the CommonMiddleware e.g.

```
MIDDLEWARE_CLASSES = (
    'django.contrib.sessions.middleware.SessionMiddleware',
    'django.middleware.locale.LocaleMiddleware', # <- HERE
    'django.middleware.common.CommonMiddleware',
    'django.middleware.csrf.CsrfViewMiddleware',
    'django.contrib.auth.middleware.AuthenticationMiddleware',
    'django.contrib.auth.middleware.SessionAuthenticationMiddleware',
    'django.contrib.messages.middleware.MessageMiddleware',
    'django.middleware.clickjacking.XFrameOptionsMiddleware',
    'django.middleware.security.SecurityMiddleware',
)
```

For more information on the internationlization middelware see the Django documentation.

Note that if a user's browser does not request an available language the language specified in `LANGUAGE_CODE` will be used.

1.3 Running Wooey

Wooey depends on a distributed worker to handle tasks, you can disable this by setting **WOOEY_CELERY** to False in your settings, which will allow you to run Wooey through the simple command:

```
python manage.py runserver
```

However, this will cause the server to execute tasks, which will block the site.

The recommended ways to run Wooey are:

1.3.1 Through two separate processes

You can run Wooey by calling two commands (you will need a separate process for each):

```
celery -A your_project_name worker -c 1 --beat -l info
python manage.py runserver
```

On Windows, the `--beat` option may not be supported and the *eventlet* pool will need to be specified. This looks like:

```
celery -A your_project_name worker --pool=eventlet -l info
```

1.3.2 Through a Procfile

A simple way to run Wooey on a server such as Heroku is through a Procfile using honcho, which can be installed via pip. Make a file, called Procfile in the root of your project (the same place as manage.py) with the following contents:

```
web:  python manage.py runserver
worker: celery -A your_project_name worker -c 1 --beat -l info
EOM
```

Your server can then be run by the simple command:

```
honcho start
```

On Windows, the `--beat` option may not be supported.

1.3.3 With Docker

Docker is a great way to get Wooey up and running quickly, especially for development. To get Wooey up and running with Docker and docker-compose, follow these commands:

```
git clone git@github.com:wooey/Wooey.git
cd Wooey/docker
./wooey-compose build wooey
./wooey-compose run wooey python manage.py createsuperuser
... fill in info ...
./wooey-compose up wooey celery
```

Now, a local Wooey server will be available at http://localhost:8081/ (or change the port in docker-compose.override.yml).

1.4 Adding & Managing Scripts

Scripts may be added in two ways, through the Django admin interface as well as through the *addscript* command in manage.py.

1.4.1 Script Guidelines

The easiest way to make your scripts compatible with Wooey is to define your ArgParse class in the global scope. For instance:

```
import argparse
import sys

parser = argparse.ArgumentParser(description="Find the sum of all the numbers below a␣
↪certain number.")
parser.add_argument('--below', help='The number to find the sum of numbers below.',␣
↪type=int, default=1000)

def main():
    args = parser.parse_args()
    s = sum((i for i in range(args.below)))
    print("Sum =", s)
    return 0

if __name__ == "__main__":
    sys.exit(main())
```

If you have failing scripts, please open an issue with their contents so we can handle cases as they appear and try to make this as all-encompasing as possible. One known area which fails currently is defining your argparse instance inside the `if __name__ == "__main__"` block

1.4.2 The admin Interface

Within the django admin interface, scripts may be added to through the 'scripts' model. Here, the user permissions may be set, as well as cosmetic features such as the script's display name, description (if provided, otherwise the script name and description will be automatically populated by the description from argparse if available).

1.4.3 The command line

```
./manage.py addscript
```

This will add a script or a folder of scripts to Wooey (if a folder is passed instead of a file). By default, scripts will be created in the 'Wooey Scripts' group.

1.4.4 Script Organization

Scripts can be viewed at the root url of Wooey. The ordering of scripts, and groupings of scripts can be altered by changing the 'Script order' or 'Group order' options within the admin.

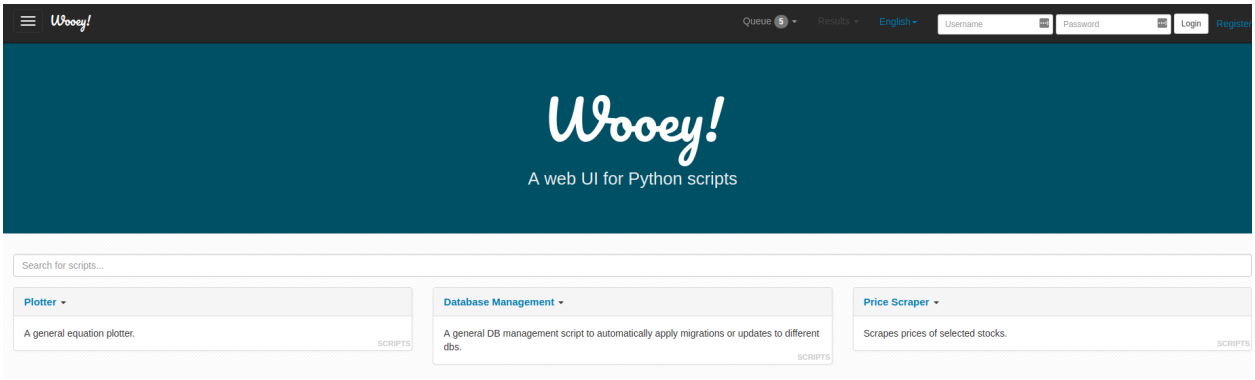
1.4.5 Script Permissions

Scripts and script groups can be relegated to certain groups of users. The 'user groups' option, if set, will restrict script usage to users within selected groups.

Scripts and groups may also be shutoff to all users by unchecked the 'script/group active' option.

1.5 Wooey UI

Wooey's homepage provides a list of all scripts available to a user.



From here, a user can choose a script to configure for execution. On all pages a header menu is available that provides the number of running scripts, the number of queued scripts, and the number of scripts that has finished executing. Users can select these header items for further inspection of pending or completed jobs. Additionally, there is a *scrapbook* where a user can save results from previous jobs for easy access and a language menu item for translation of Wooey's interface to various languages (If your language is not currently supported, we would love to add it!).

1.5.1 Running scripts

Scripts may be accessed via the homepage or by searching for scripts in the script search. Searching for scripts is accssible via the left menu sidebar that is viewable by clicking the menu button on the left side of the header. From the script panel, scripts can be parameterized and executed by Wooey. If a script has subparsers, they are accessible via a dropdown menu on the upper left of the script parameter panel (in a script with subparsers, this simply has the text *Settings*). Because most subparsers have a "main" parser, such as Django's *manage.py*, these settings can be specified via the *Main Parser Parameter* button. To select and parameterize a given subparser, the subparser command and its parameters are available by selecting it via the dropdown menu.

1.5.2 Running previous versions of a script

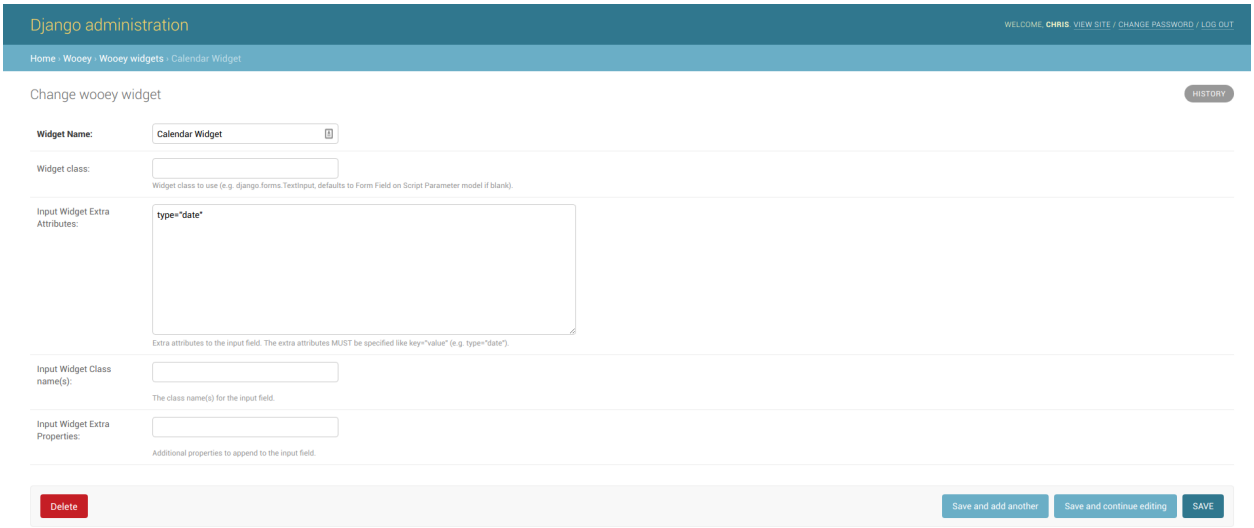
Previously uploaded scripts are kept in Wooey, providing a mechanism for to evaluate script changes and give end-users an opportunity to provide feedback. In the admin interface, there is an option to set a script version as the *default* version to use, but previous versions are accessible from the main UI via the black down array next to the script name. There are 2 deliniations specified here – the *Script Version*, and the *Script Iteration*. If a command line generating tool supports versioning (and Wooey is able to parse this information), updates to the script version will result in a new version being created. If a command line library doesn't support versioning or the version has not been updated in a script, the Script Iteration counter will be incremented.

1.6 Wooey Customizations

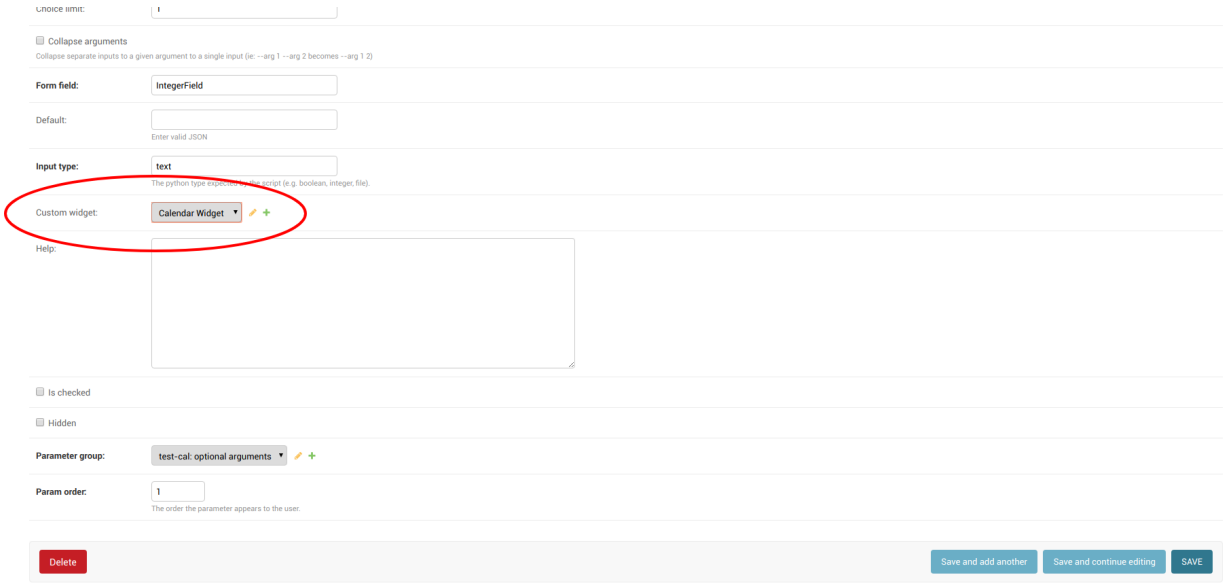
Wooey provides a number of ways to customize both the look and feel of Wooey, with the easiest mechanisms for customization being various *Configuration* settings. Here, one can customize the site name, tag line, and other text throughout.

1.6.1 Form Widgets

Advanced users can add custom form elements, which can be used for advanced input elements such as a calendar. These can be set by creating a WooeyWidget via the Wooey admin page:



Widgets are made to be usable and generally useful components. As such, they need to be associated with the form input elements in a separate step, which may be accessed through the script-parameters-admin page within the Wooey admin page. Here, the widget to utilize for a given parameter can be set by associating a given WooeyWidget with a Script Parameter:



1.7 Remote File Systems

Wooey has been tested on heroku with S3 as a file storage system. Settings for this can be seen in the user_settings.py, which give you a starting point for a non-local server. In short, you need to change your storage settings like such:

STATICFILES_STORAGE = DEFAULT_FILE_STORAGE = 'wooey.wooeystorage.CachedS3BotoStorage'
WOOEY_EPHEMERAL_FILES = True

1.8 Upgrade Help

This document exists to help document changes between versions of Wooey and what existing bootstrap projects may need to migrate to recent versions. The official changelog for releases is curated in github releases, which will document any major changes. Though every attempt is made to test upgrades, it is recommended to backup your database prior to an upgrade in case your particular usage of Wooey is not something the creators test. If an error arises, please open an issue on github.

1.8.1 General Upgrade Information

As with all app upgrades, after installing a newer version, you should ensure the app models are up to date with *python manage.py migrate*. Generally, this command should be baked in with the startup script of your webserver to ensure no instance is running with unapplied migrations.

1.8.2 0.9.11 To 0.10

0.10 adds in support for Django 1.10 as well as Django 1.11. Django versions prior to 1.8 are no longer officially supported.

1) ***Celery Changes*:** Celery was upgraded to version 4.x and several changes are required:

    1) First, celery is no longer executed through

```
python manage.py celery
```

but instead via:

```
celery -A your_project_name worker -l info (and any other arguments)
```

2) Because *django-celery* is now deprecated and incompatible with newer Django and Celery versions, several settings in *settings/user_settings.py* must be updated:

```
INSTALLED_APPS += (
    'djcelery',
    'kombu.transport.django',
)
```

must be changed to:

```
INSTALLED_APPS += (
    'django_celery_results',
    'kombu.transport.filesystem',
)
```

If the django-celery task result backend was in use, the backend must be changed from:

```
CELERY_RESULT_BACKEND = 'djcelery.backends.database:DatabaseBackend'
```

to:

```
CELERY_RESULT_BACKEND = 'django-db'
```

If a broker was never specified, the default broker url must be changed from

```
BROKER_URL = 'django://'
```

to

```
CELERY_BROKER_URL = 'filesystem://'
# This function exists just to ensure the filesystem has the␣
↪correct folders
def ensure_path(path):
    import errno
    try:
        os.makedirs(path)
    except Exception as e:
        if e.errno == errno.EEXIST:
            pass
        else:
            raise
    return path

broker_dir = ensure_path(os.path.join(BASE_DIR, '.broker'))
CELERY_BROKER_TRANSPORT_OPTIONS = {
    "data_folder_in": ensure_path(os.path.join(broker_dir, "out")),
    "data_folder_out": ensure_path(os.path.join(broker_dir, "out")),
    "data_folder_processed": ensure_path(os.path.join(broker_dir,
↪"processed")),
}
```

Note: It is **highly** recommended to not use this broker and use something such as rabbitmq or redis.

3) The celery app instance, located in *your_project_name/wooey_celery_app.py* must be updated to:

```
from __future__ import absolute_import
import os

from celery import Celery


os.environ.setdefault('DJANGO_SETTINGS_MODULE', 'your_project_name.
↪settings')

app = Celery('your_project_name')

# Using a string here means the worker will not have to
# pickle the object when using Windows.
app.config_from_object('django.conf:settings', namespace='CELERY')
app.autodiscover_tasks()

@app.task(bind=True)
def debug_task(self):
    print('Request: {0!r}'.format(self.request))
```

2) ***Django Upgrades*:** Additional tweaks may be required for if a Django upgrade is performed, such as changing *MIDDLEWARE_CLASSES* to *MIDDLEWARE*. For these issues, the official Django Documentation should be referenced.

1.9 Security

Wooey is run with Django, which has a great record with respect to security, and the production deployment settings utilizes many of the best practices espoused in the 12-factor-app.

Scripts run by Wooey must be uploaded by users with administrator privileges. Thus, only scripts you are comfortable users running should be available (and scripts can be isolated to a given set of users).

CHAPTER 2

Developers

2.1 API Reference

The API reference is intended for developers of Wooey. It lists the internal classes and methods that make up Wooey. If you

2.1.1 Admin

2.1.2 Apps

class wooey.apps.**WooeyConfig**(*app_name*, *app_module*)

name = 'wooey'

ready()
Override this method in subclasses to run code when Django starts.

verbose_name = 'Wooey'

2.1.3 Backend

wooey.backend.utils.**add_wooey_script**(*script_version=None*, *script_path=None*, *group=None*, *script_name=None*)

wooey.backend.utils.**create_job_fileinfo**(*job*)

wooey.backend.utils.**create_wooey_job**(**args*, ***kwargs*)

wooey.backend.utils.**get_checksum**(*path=None*, *buff=None*, *extra=None*)

wooey.backend.utils.**get_current_scripts**()

wooey.backend.utils.**get_file_info**(*filepath*)

wooey.backend.utils.**get_file_previews**(*job*)

wooey.backend.utils.**get_file_previews_by_ids**(*ids*)

wooey.backend.utils.**get_form_groups**(*script_version=None*, *pk=None*, *initial_dict=None*, *render_fn=None*)

wooey.backend.utils.**get_grouped_file_previews**(*files*)

wooey.backend.utils.**get_job_commands**(*job=None*)

wooey.backend.utils.**get_master_form**(*script_version=None*, *pk=None*)

wooey.backend.utils.**get_query**(*query_string*, *search_fields*)
Returns a query as a combination of Q objects that query the specified search fields.

wooey.backend.utils.**get_storage**(*local=True*)

wooey.backend.utils.**get_storage_object**(**args*, ***kwds*)

wooey.backend.utils.**get_upload_path**(*filepath*, *checksum=None*)

wooey.backend.utils.**mkdirs**(*path*)

wooey.backend.utils.**normalize_query**(*query_string*, *findterms=<built-in method findall of _sre.SRE_Pattern object>*, *normspace=<built-in method sub of _sre.SRE_Pattern object>*)
Split the query string into individual keywords, discarding spaces and grouping quoted words together.

```
>>> normalize_query('  some random  words "with   quotes  " and   spaces')
['some', 'random', 'words', 'with quotes', 'and', 'spaces']
```

wooey.backend.utils.**purge_output**(*job=None*)

wooey.backend.utils.**reset_form_factory**(*script_version=None*)

wooey.backend.utils.**sanitize_name**(*name*)

wooey.backend.utils.**sanitize_string**(*value*)

wooey.backend.utils.**test_delimited**(*filepath*)

wooey.backend.utils.**test_fastx**(*filepath*)

wooey.backend.utils.**test_image**(*filepath*)

wooey.backend.utils.**tokenize_html_attributes**(*attributes*)

wooey.backend.utils.**valid_user**(*obj*, *user*)

wooey.backend.utils.**validate_form**(*form=None*, *data=None*, *files=None*)

2.1.4 Django Backwards-Compatibility

2.1.5 Forms

2.1.6 Management

2.1.7 Models

2.1.8 Settings

wooey.settings.**get**(*key*, *default*)

2.1.9 Signals

2.1.10 Tasks

class wooey.tasks.**WooeyTask**

```
ignore_result = False
rate_limit = None
reject_on_worker_lost = None
request_stack = <celery.utils.threads._LocalStack object>
serializer = u'json'
store_errors_even_if_ignored = False
track_started = False
typing = True
```

wooey.tasks.**configure_workers**(**args*, ***kwargs*)

wooey.tasks.**enqueue_output**(*out*, *q*)

wooey.tasks.**output_monitor_queue**(*queue*, *out*)

wooey.tasks.**update_from_output_queue**(*queue*, *out*)

2.1.11 Test Settings

2.1.12 Test URLs

2.1.13 Tests

2.1.14 URLs

2.1.15 Views

2.1.16 Wooey Storage

class wooey.wooeystorage.**FakeRemoteStorage**(**args*, ***kwargs*)

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