Python

Batch Iterating in Pandas

```
BATCH_SIZE=32


for k,grp in df.groupby(np.arange(len(df))//BATCH_SIZE):
    # grp is a tiny dataframe BATCH_SIZE rows long
    print(k,grp)
```

References

- python - How to iterate over consecutive chunks of Pandas dataframe efficiently - Stack Overflow

Times and Dates in Python

The built in datetime library in Python can be a bit rubbish/difficult to use.

- Pendulum provides an API kind of similar to moment.js although the parsing of text dates is not quite as flexible/powerful.

Python and Gitea

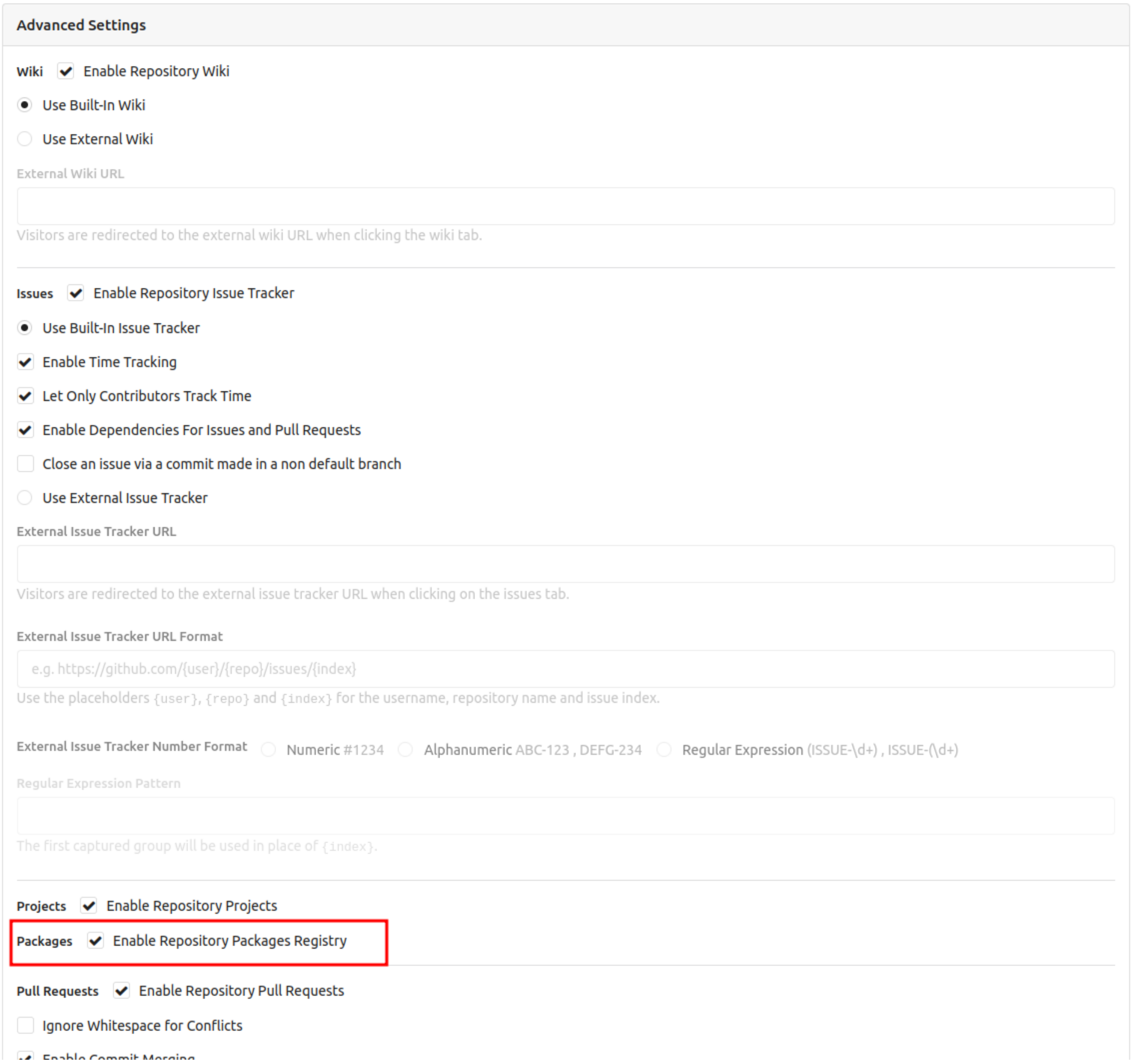
Tips and tricks for Python and Gitea and CI stuff.

Use Drone CI for Gitea

I use Drone + Gitea for code versioning and automation - I talk about it here

Gitea Package Management

Gitea recently added package management which means that compiled packages and docker containers can be stored alongside code - super useful. By default package hosting is turned off but you can turn it on per-project in the advanced settings section in your project settings:



Advanced Settings

Wiki [✓] Enable Repository Wiki

(●) Use Built-In Wiki

( ) Use External Wiki

External Wiki URL

Visitors are redirected to the external wiki URL when clicking the wiki tab.

Issues [✓] Enable Repository Issue Tracker

(●) Use Built-In Issue Tracker

[✓] Enable Time Tracking

[✓] Let Only Contributors Track Time

[✓] Enable Dependencies For Issues and Pull Requests

[ ] Close an issue via a commit made in a non default branch

( ) Use External Issue Tracker

External Issue Tracker URL

Visitors are redirected to the external issue tracker URL when clicking on the issues tab.

External Issue Tracker URL Format

e.g. https://github.com/{user}/{repo}/issues/{index}

Use the placeholders `{user}`, `{repo}` and `{index}` for the username, repository name and issue index.

External Issue Tracker Number Format ( ) Numeric #1234 ( ) Alphanumeric ABC-123 , DEFG-234 ( ) Regular Expression (ISSUE-\d+) , ISSUE-(\d+)

Regular Expression Pattern

The first captured group will be used in place of `{index}`.

Projects [✓] Enable Repository Projects

Packages [✓] Enable Repository Packages Registry

Pull Requests [✓] Enable Repository Pull Requests

[ ] Ignore Whitespace for Conflicts

CLI Development

Simon Willison has some really interesting/useful advice for building command lines (mirror).

I took a copy of his cookie cutter template and put it here

FastAPI

FastAPI Logging

Inspired by https://stackoverflow.com/questions/63510041/adding-python-logging-to-fastapi-endpoints-hosted-on-docker-doesnt-display-api

Set up your logger configuration

```
from pydantic import BaseModel


class LogConfig(BaseModel):
    """Logging configuration to be set for the server"""

    LOGGER_NAME: str = "mycoolapp"
    LOG_FORMAT: str = "%(levelprefix)s | %(asctime)s | %(message)s"
    LOG_LEVEL: str = "DEBUG"

    # Logging config
    version = 1
    disable_existing_loggers = False
    formatters = {
        "default": {
            "()": "uvicorn.logging.DefaultFormatter",
            "fmt": LOG_FORMAT,
            "datefmt": "%Y-%m-%d %H:%M:%S",
        },
    }
    handlers = {
        "default": {
            "formatter": "default",
            "class": "logging.StreamHandler",
            "stream": "ext://sys.stderr",
        },
    }
    loggers = {
        LOGGER_NAME: {"handlers": ["default"], "level": LOG_LEVEL},
    }
```

Import the configuration and use it:

```
from logging.config import dictConfig
import logging
from .config import LogConfig

dictConfig(LogConfig().dict())
logger = logging.getLogger("mycoolapp")

logger.info("Dummy Info")
logger.error("Dummy Error")
logger.debug("Dummy Debug")
logger.warning("Dummy Warning")
```

SQLAlchemy and MySQL

Install dependencies for SQLalchemy and MySQL:

```
pip install sqlalchemy pymysql python-dotenv
```

Set up a `.env` file containing your DB creds:

```
SQL_HOST=localhost
SQL_PASSWORD=blahblah
SQL_USER=readonly
SQL_DB=my_database_name
```

Once you have set up your .env file you can load it into your python script

```
import os
import sqlalchemy
import dotenv

dotenv.load_dotenv()

engine =
sqlalchemy.create_engine(f"mysql+pymysql://{env['SQL_USER']}:{env['SQL_PASSWORD']}@{env['SQL_HOST']}
/{env['SQL_DB']}")

query = """SELECT * FROM table_name WHERE col1="blah" LIMIT 1000"""

with engine.connect() as conn:
  df = pd.read_sql(query, conn)



df.head()
```

Django

Working with the Django web framework and associated libraries

Django

Deploying Django Apps

Packaging a Django App in Docker

I wrote a blog about packaging django apps up for shipping in docker.

Check Utility

Use the `manage.py check` command to ensure that your site is ready for prod usage.

Resources

Deploy A Site Live - Matt Layman (mirror)

Django and PostgreSQL

When working with Django and PostgreSQL it is typically best to use the `psycopg[binary]` package:

```
pip install psycopg[binary]
```

Migrating From Integer to Duration

If you need to migrate from an integer to a duration column you need to manually tell Postgres what unit of time to use - it won't assume that you mean seconds or minutes etc. Here is an example excerpt from a Gastronaut migration.

```
class Migration(migrations.Migration):

    dependencies = [
        migrations.swappable_dependency(settings.AUTH_USER_MODEL),
        ('recipe_app', '0002_nurishifyprofile'),
    ]

    operations = [
        migrations.AlterField(
            model_name='nurishifyprofile',
            name='user',
            field=models.OneToOneField(on_delete=django.db.models.deletion.CASCADE, related_name='profile',
to=settings.AUTH_USER_MODEL),
        ),
        # workaround for migrating postgres
        migrations.RunSQL(
            "ALTER TABLE recipe_app_recipe ALTER COLUMN cooking_time TYPE interval USING cooking_time *
interval '1 second'",
            reverse_sql=migrations.RunSQL.noop
        ),
        migrations.AlterField(
            model_name='recipe',
            name='cooking_time',
            field=models.DurationField(),
        ),
```

Testing with Django and Postgres in Gitea Actions

I wrote a blog post about testing Postgres-based django apps in Gitea. The TL;DR is effectively to install and configure the postgresql server in the runner image like so:

```
name: Run Tests
run-name: ${{ gitea.actor }} is testing out Gitea Actions □□
on: [push]
jobs:
  run_tests:
    runs-on: ubuntu-latest
    container: catthehacker/ubuntu:act-latest
    steps:
      - name: Checkout Codebase
        uses: actions/checkout@v3
      - name: Configure and install postgres
        run: |
         apt update
         apt install -y postgresql
         service postgresql start
         sudo -u postgres -s psql -U postgres -d postgres -c "alter user postgres with password 'test123';"
      - uses: pdm-project/setup-pdm@v3
        with:
          python-version: 3.10
          token: ${{ secrets.GH_TOKEN }}
      - name: Install dependencies
        run: cd ${{ gitea.workspace }} && pdm install

      - name: Run Django tests
        env:
          DB_HOST: 127.0.0.1
          DB_NAME: gastronaut
          DB_USER: postgres
          DB_PASSWORD: test123
        run: |
          cd ${{ gitea.workspace }} && pdm run manage.py test
```

Python Packaging

Overview

Historically Python packaging has been a bit of a mess. There were lots of different tools that did some things well and other things very poorly and distributing applications that use Python was a pain.

In 2021, I wrote a detailed post about Python package managers and environment managers and the pros and cons of each. At the time, I made recommendations around Miniconda, PDM and Poetry. For pure Python projects (that didn't require specialised C libraries or Nvidia toolkits) Poetry remained the best tool until very recently.

UV: The Modern Solution

Within the last 12 months the whole landscape has shifted. uv is now the reigning champion when it comes to all things Python packaging related.