# Docs

Good research code

Patrick Mineault

# Documentation

Write documentation

You will forget about 90% of what you worked on. If you write it down, you'll be in a good spot.

# A word of warning

- I covered testing before documentation
- But why?

# Testing before documentation

- It's more important that your code works (is correct) than it is easy to use
- Docs become stale, tests have a long shelf life
- If tests run, you can always copy and paste code if you can't remember how to use the code
- Relatedly: if something can be a check, a warning or an exception, it should be

# Documented

```
def conv(A, B, padding='valid'):
    """
    Convolves the 1d signals A and B.

    Args:
        A: a 1d numpy array
        B: a 1d numpy array
        padding (str): padding type (valid, mirror)
    """
    pass
```

# Defensive inline checks

```
def conv(A, B, padding='none'):
  assert A.ndim == 1
  assert B.ndim == 1
  if padding not in ('valid', 'mirror'):
    raise NotImplementedError(
        f"{padding} not implemented.")
```

# What should you document?

- References to papers
- Why you wrote tricky code the way you did instead of the obvious way
- TODOs (your Python editor will highlight these special comments)

```
# TODO(pmin): refactor this mess
```

- Usage, especially if other people will use your code.
- It's a gift from present you to future you

# How should we document functions?

- Numpy style or Google style.

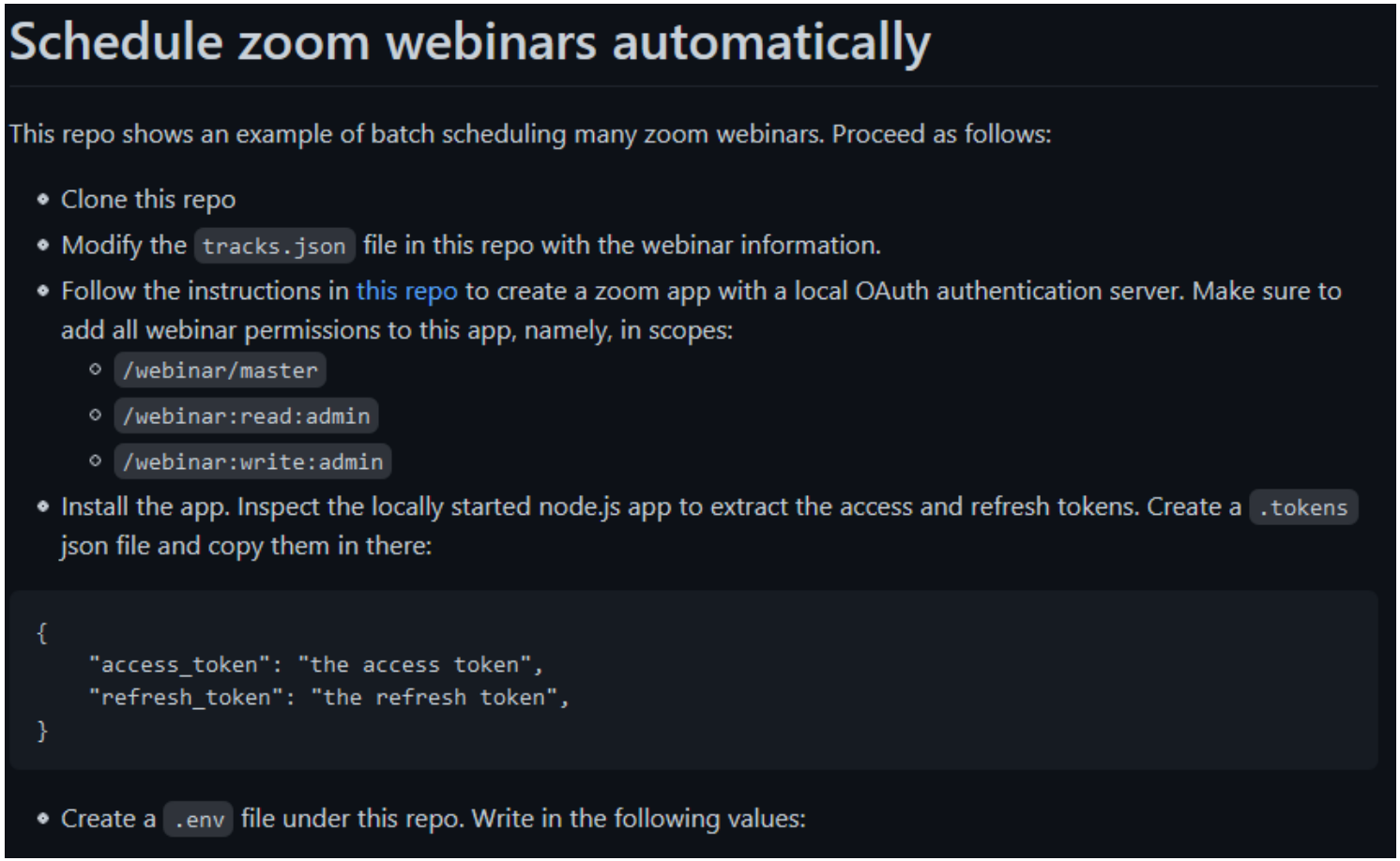
```
def my_doubler(x):
    """Doubles x.

    Args:
        x: the number to double

    Returns:
        Twice x
    """
    return x * 2
```

# Package docs

If you create a useful package, you can generate docs for it using Sphinx and publish them on readthedocs.

There are other many kinds of *documentation*

# README.md



## Schedule zoom webinars automatically

This repo shows an example of batch scheduling many zoom webinars. Proceed as follows:

- Clone this repo
- Modify the `tracks.json` file in this repo with the webinar information.
- Follow the instructions in this repo to create a zoom app with a local OAuth authentication server. Make sure to add all webinar permissions to this app, namely, in scopes:
  - `/webinar/master`
  - `/webinar:read:admin`
  - `/webinar:write:admin`
- Install the app. Inspect the locally started node.js app to extract the access and refresh tokens. Create a `.tokens` json file and copy them in there:

```
{
    "access_token": "the access token",
    "refresh_token": "the refresh token",
}
```

- Create a `.env` file under this repo. Write in the following values:

Figure 1: NMC3: We survived

# Console usage

```
def main():
    parser = argparse.ArgumentParser(description='Manage sendgrid email batches with confidence')
    subparser = parser.add_subparsers(dest='verb')

    list_parser = subparser.add_parser('list', help='List batches')
    list_parser.add_argument("which", nargs='?', default='active', help='Which batches to list (active, all,

    create_parser = subparser.add_parser('create', help='Create a new batch')
    create_parser.add_argument("batch_id", help='Batch id')
    create_parser.add_argument("template_key", help='Template key')

    add_parser = subparser.add_parser('add', help='Adds a set of information to a batch')
    add_parser.add_argument("batch_id", help='Batch id')
    add_parser.add_argument("csv", help='CSV file')

    template_parser = subparser.add_parser('templates', help='List templates')

    test_parser = subparser.add_parser('test', help='Sends a test email')
    test_parser.add_argument("batch_id", help='Batch id')
    test_parser.add_argument("to_email", help='Email')

    remove_parser = subparser.add_parser('remove', help='Deletes an email batch')
    remove_parser.add_argument("batch_id", help='Batch id')
```

Figure 2: NMC3: We survived

# Console usage

```
(py3) $ python sendit.py
usage: sendit.py [-h] {list,create,add,templates,test,remov

Manage sendgrid email batches with confidence

positional arguments:
  {list,create,add,templates,test,remove,send}
    list                  List batches
    create                Create a new batch
    add                   Adds a set of information to a batc
    templates             List templates
    test                  Sends a test email
    remove                Deletes an email batch
    send                  Sends an email batch

optional arguments:
```

# Lab book & blogs

- I like notion.so as a labbook
- Blog: jekyll hosted on Github pages or wordpress.com
- I have had a wordpress.com blog for the last 12 years. Two weeks ago I copied and pasted from a blog post that I wrote in 2009.

# Dashboards

- If you have a project that relies on tracking and improving a metric, use a dashboard
  - Lots of machine learning projects are set up this way
- Not only acts as a LTM, acts as an information radiator
- Many ways to do this (most of these are commercial cloud offerings with a free tier):
  - R Shiny
  - Streamlit
  - Panel
  - Plotly dash
  - Google Data Studio
  - W&B

# Sample dashboard

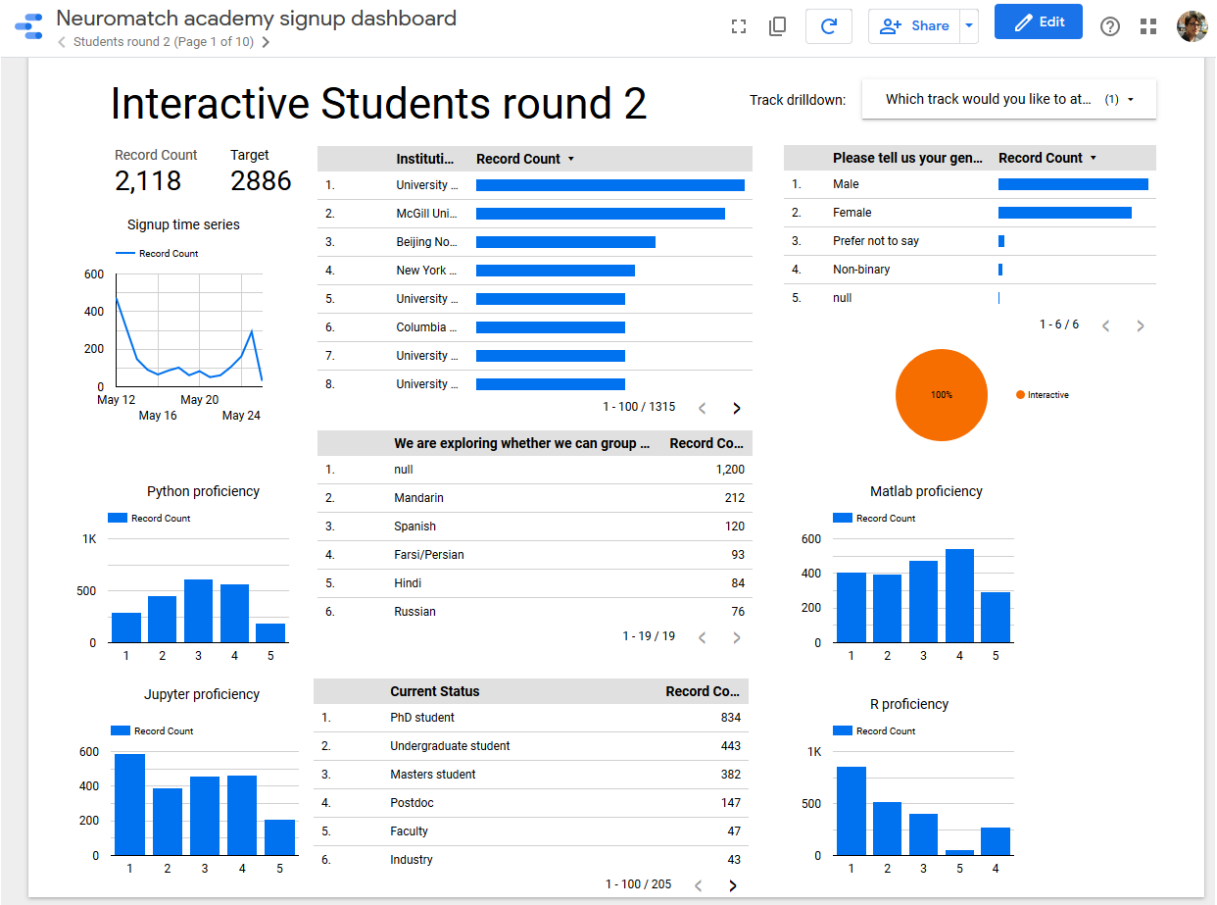



Figure 3: NMA dashboard

# Lesson 4

- Write documentation
- Write the right kind of documentation
- Save your long-term memory and offload it to digital store
- 5-minute exercise: make a `README.md` file and push it to Github