CFF & JSON for More Impactful RSE Training Materials

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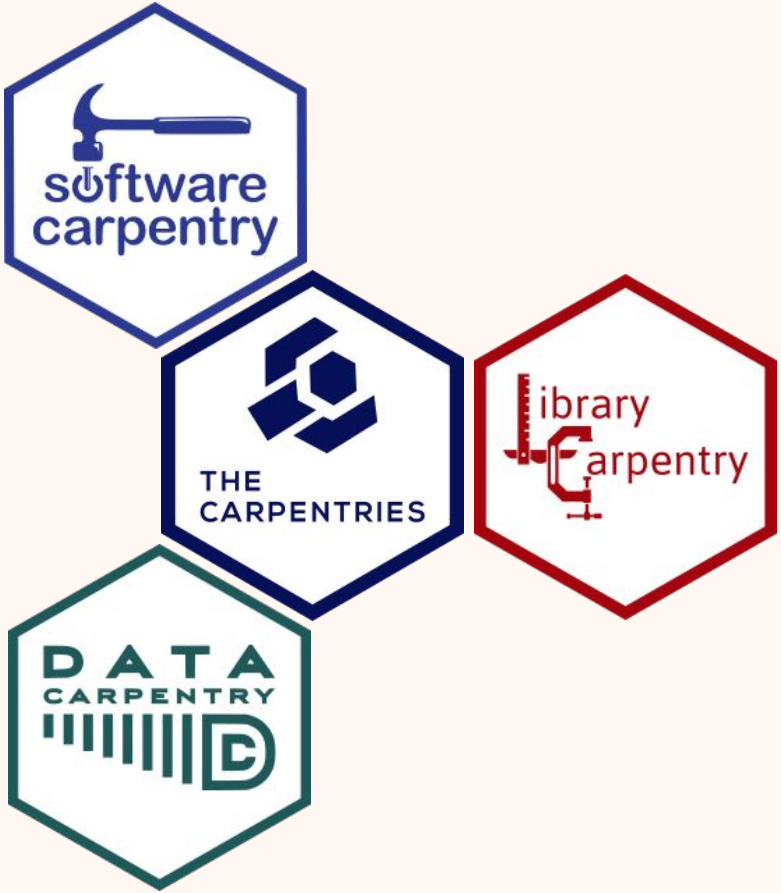
THE CARPENTRIES

deRSE25 2025-02-25

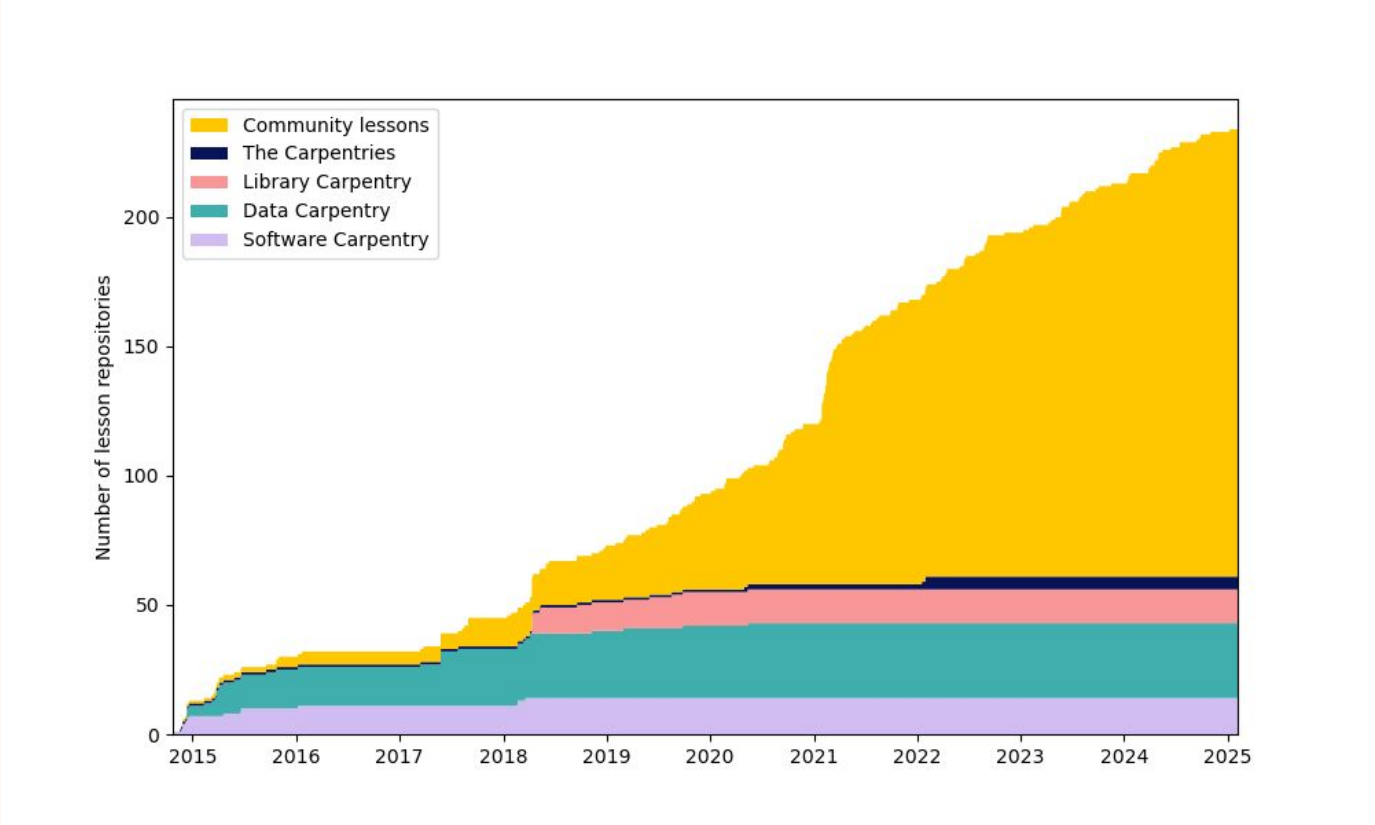


The Carpentries

A global community teaching essential software and data skills.

- empower a diverse global community by equipping individuals with essential data and computational skills.
- promote efficient, open, and reproducible research practices.
- foster collaborative development of openly available lessons and research-informed teaching methods
- build an inclusive network of practitioners and advocates who emphasise the critical role of software and data in advancing research.

Three official lesson programs + >120 community-owned lessons.



The Carpentries community has >150 lessons in the Incubator + Lab

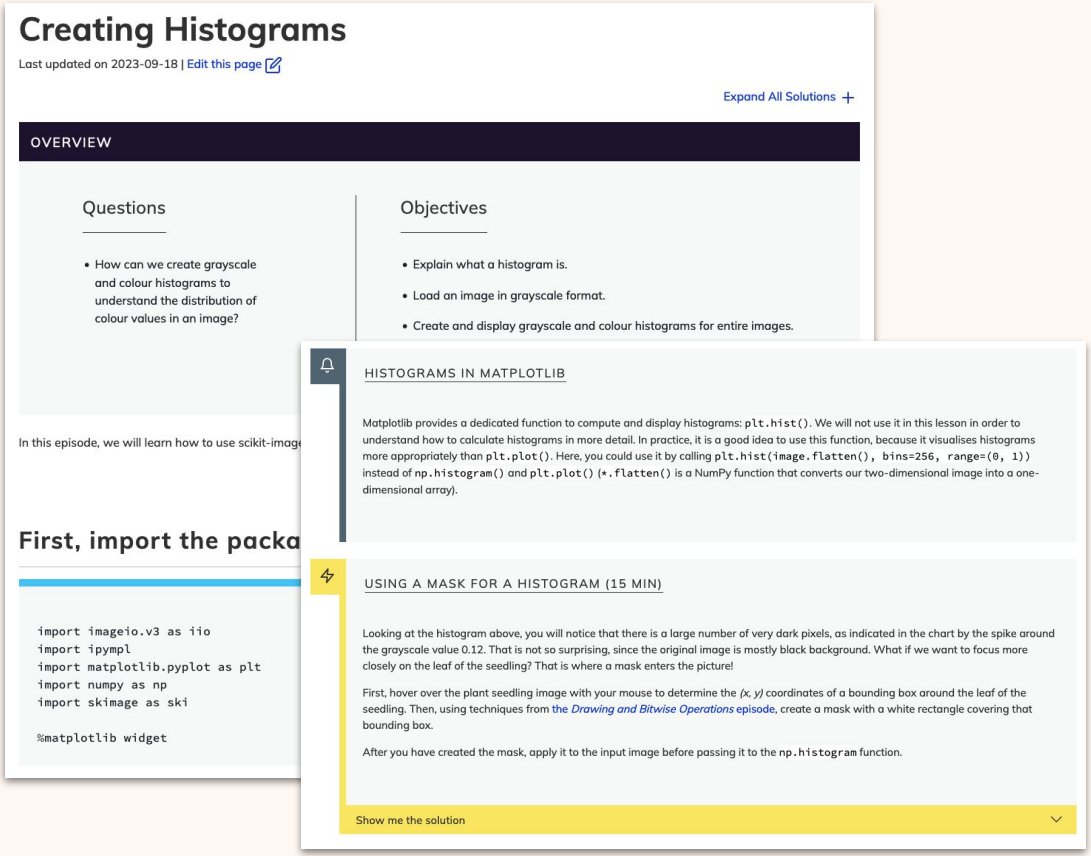
RSEng-related lessons in the Incubator + Lab

- Intermediate RSEng with Python
- Introduction to Containerised Computing with Docker|Singularity
- Programming with Julia
- Parallel Programming
- GPU Programming
- Workflow Management
- Packaging and Publishing with R|Python
- many Machine Learning + genAI lessons
- ...

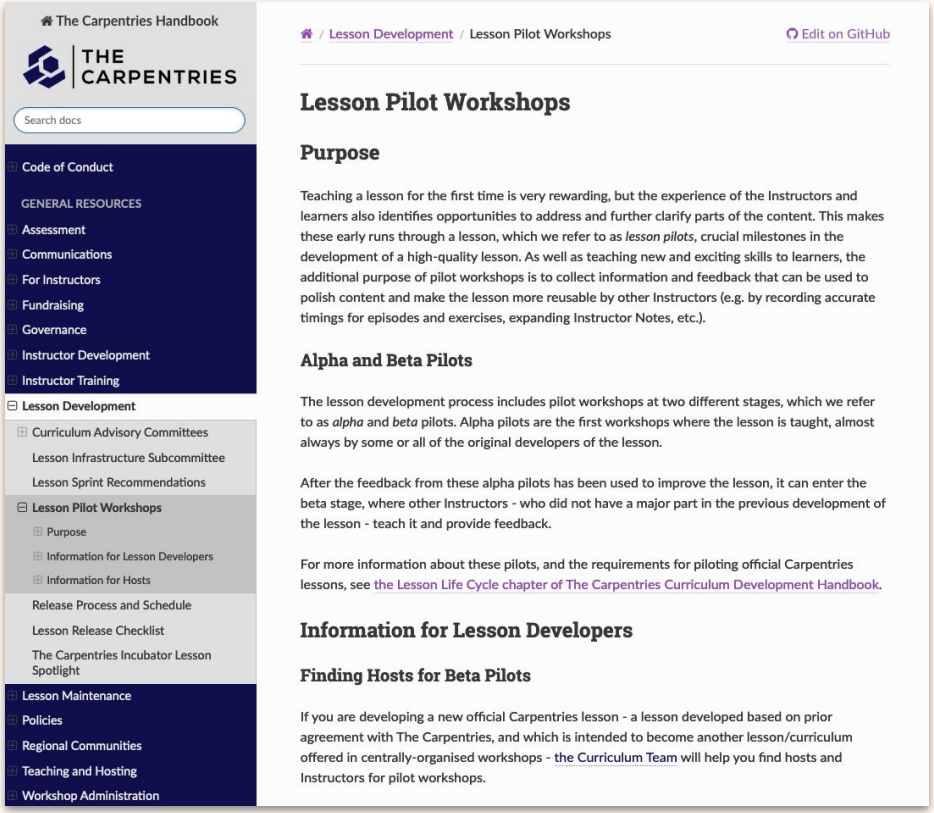
Support for Lesson Development

Infrastructure

- Open source, MIT licensed
- Write lessons with (R) Markdown
- Accessible: WCAG AA+
- Automated a11y testing
- Simple local setup



Support for Lesson Development



Communications

- Lesson & issue listings
- Blog posts
- Slack channel
- Mailing list

Resources

- Lesson Developer Handbook
- Documentation
- Templates

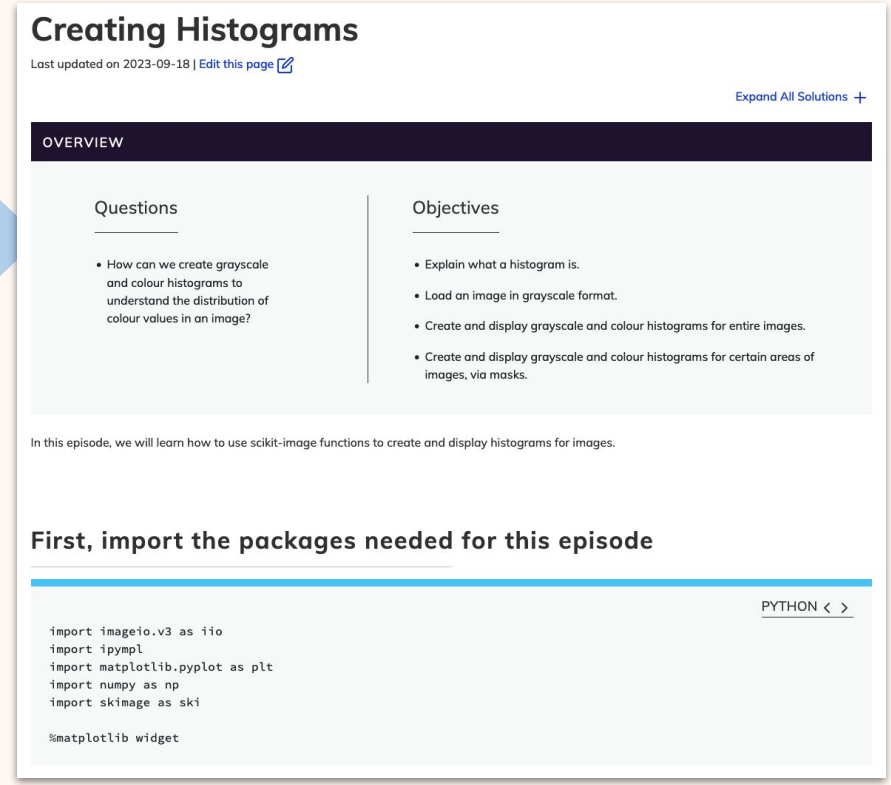
Training...


THE
CARPENTRIES
COLLABORATIVE
LESSON DEVELOPMENT
TRAINING

Lesson Metadata

TrainingMaterial

- id, name description
- date created/modified/published
- url
- keywords, language



Creating Histograms

Last updated on 2023-09-18 | Edit this page

Expand All Solutions +

OVERVIEW

Questions

- How can we create grayscale and colour histograms to understand the distribution of colour values in an image?

Objectives

- Explain what a histogram is.
- Load an image in grayscale format.
- Create and display grayscale and colour histograms for entire images.
- Create and display grayscale and colour histograms for certain areas of images, via masks.

In this episode, we will learn how to use scikit-image functions to create and display histograms for images.

First, import the packages needed for this episode

PYTHON

```
import imageio.v3 as iio
import ipympl
import matplotlib.pyplot as plt
import numpy as np
import skimage as ski

%matplotlib widget
```

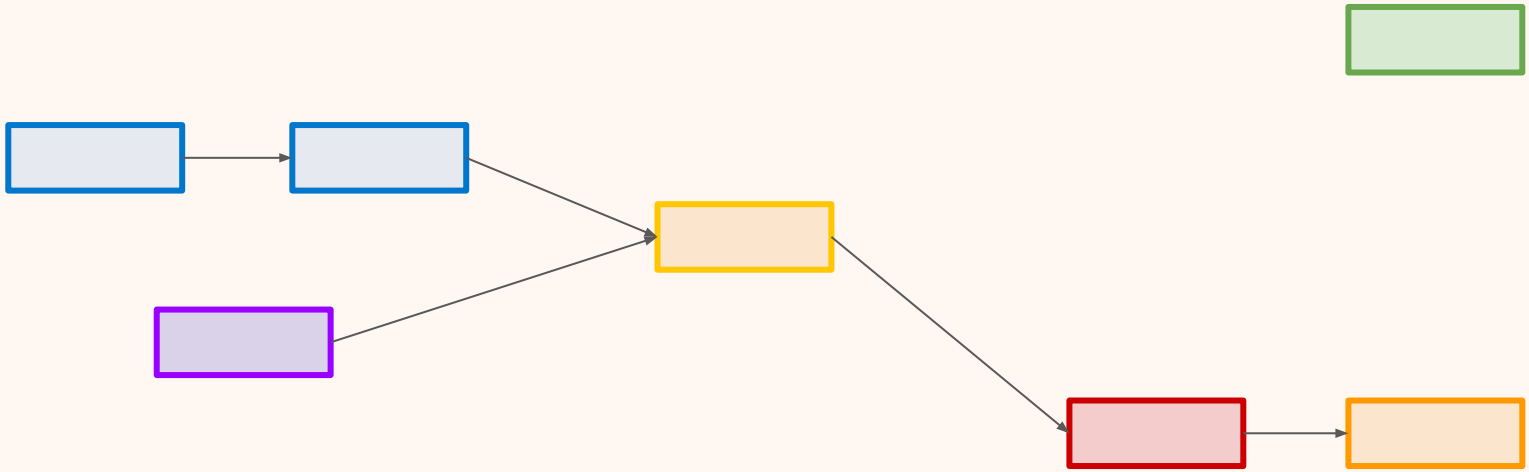
Bioschemas

Why Care About Metadata?

Lessons with **good** metadata are more findable and more interoperable.

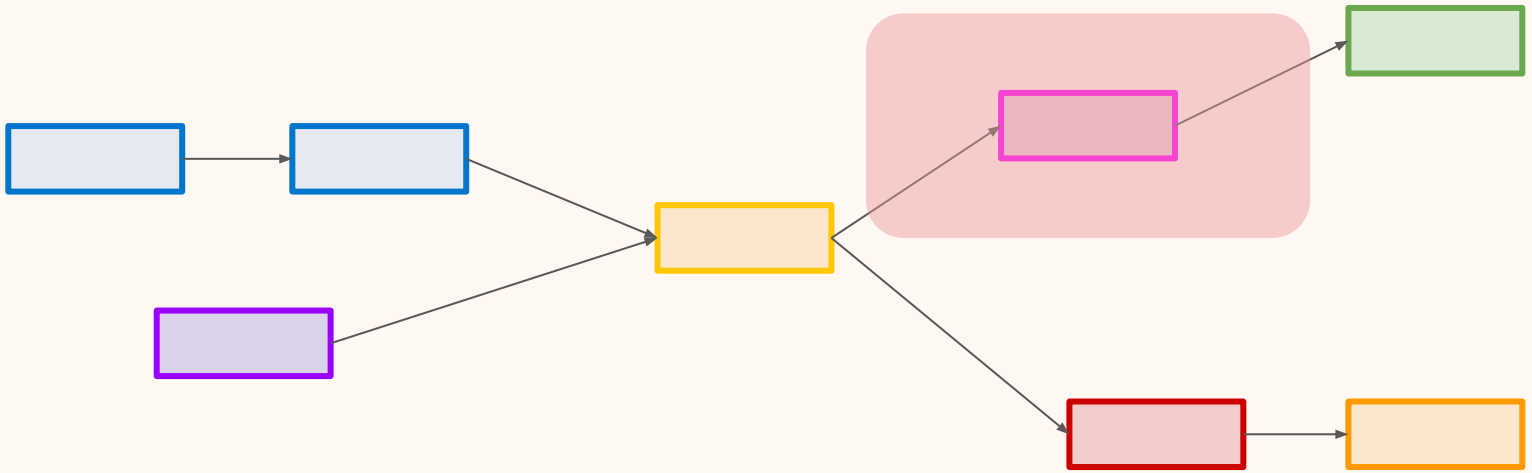
Image by Sayan Majhi on Unsplash

For example...



We could automatically present pathways through available resources…

For example...



… and identify gaps in these pathways

We should standardise how we describe the skills we want to teach and learn.

CFFs for Lessons

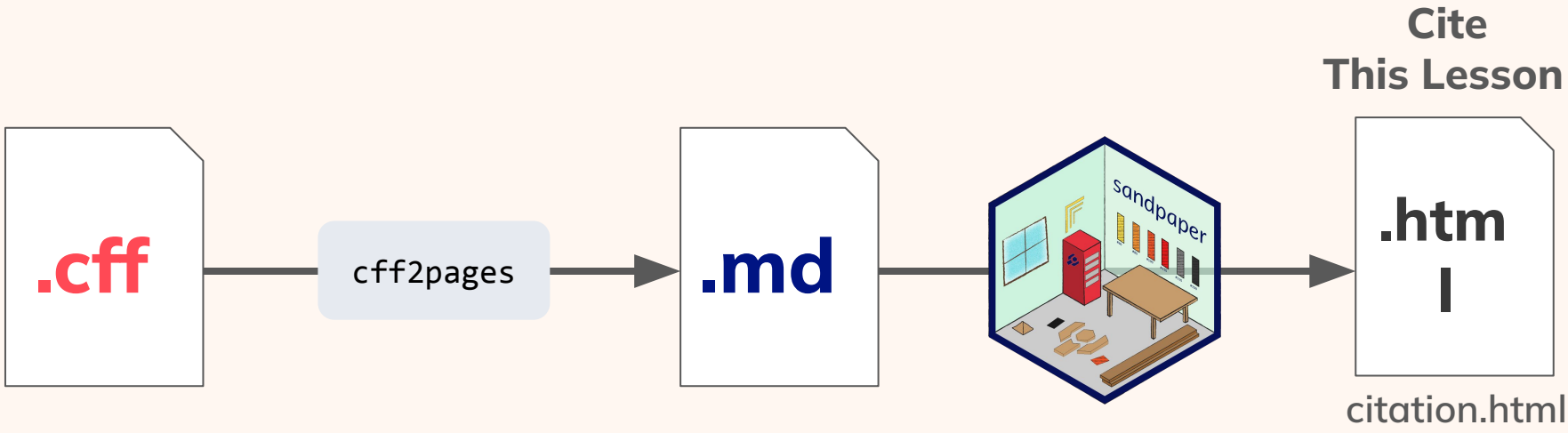
CFF can provide some metadata currently missing...

abstract	license
authors	message
cff-version	preferred-citation
contact	references
date-released	repository-code
doi	title
identifiers	type
keywords	version

description	contributor
keywords	identifier
name	inLanguage
about	datePublished
abstract	license
audience	mentions
author	teaches
competencyRequired	version

...and enable ***Cite This Lesson*** pages!

Integrating CFF into The Carpentries Workbench



Please visit Poster 101! ***cff2pages: Expanding Workflows with Markdown Export*** *– Jan Bernoth*

Thanks for listening!