RCM Cooperative
building sustainable research communities

Git Good

an Introduction to GitHub for Collaboration

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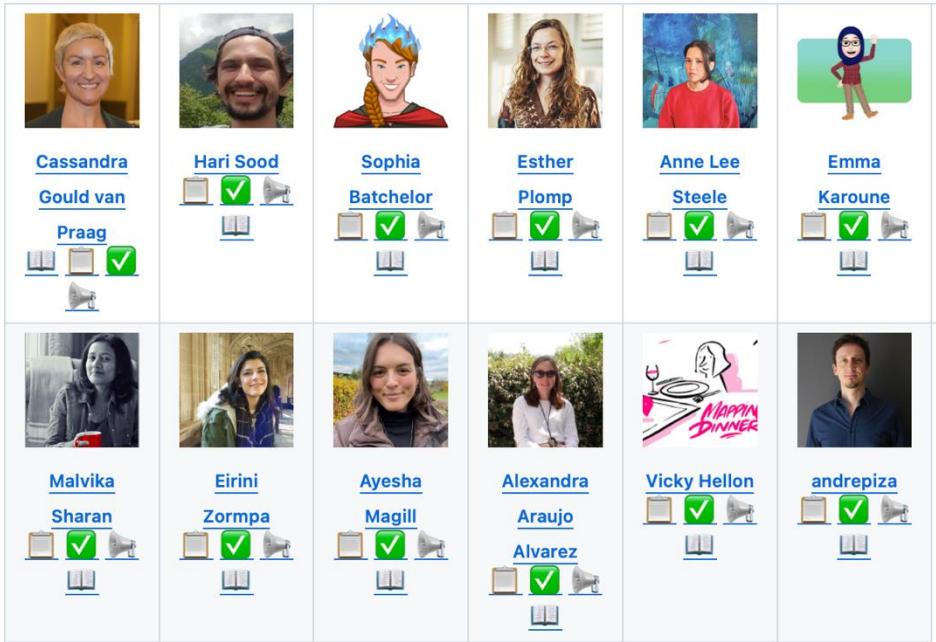
Contributors ✨

Thanks goes to these wonderful people (emoji key):



This project follows the all-contributors specification. Contributions of any kind welcome!

Housekeeping

- Slides and links available at:
  - https://github.com/the-turing-way/gitgood

- Recording: **Camera off / chat** if you don't want to be attributed
- Add questions to **zoom chat**
- Use **raise hands to speak** and **use zoom reactions** to let us know when you have finished an activity
- We are operating under the McGill Faculty of Medicine and Health Sciences **Code of Conduct**
  - "…demonstrate respect and appreciation for [your] colleagues…"
  - https://www.mcgill.ca/medhealthsci/about/our-vision-mission-values/code-conduct
  - See Appendix 1 for reporting procedures

- You will need a **github account** to follow along with the tutorials
  - **Make one now if you haven't got one already!**
  - http://github.com/signup
- All exercises will use the **online GitHub interface**
  - Does not require git to be installed or security set up

- Julia Pfarr (ORIGAMI Lab) Git/Hub 101 at Mtl BrainHack 2026:
  - https://julia-pfarr.github.io/git-gitlab_tutorial/
- Kendra Oudyk (ORIGAMI Lab) Intro to Git/GitHub OSHO Feb 2025
  - https://www.youtube.com/@OpenScienceOfficeHours

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Aims

- Feel more confident in:
  - Interacting with GitHub;
  - Contributing to other peoples GitHub materials;
  - Setting up your own repositories to receive contributions;
- Know where to find help with any of this!

Agenda

- Part 1: What is Git & Github?
- Exercise 1: Finding an Issue and contributing to a project
  - You will practice: Using issues to contribute and document decisions
- Part 2: What is open source?
- Part 3: Using GitHub online and in the terminal (demo)
- Exercise 2: Editing a file and making a Pull Request
  - You will practice: Markdown; contributing, pull requests
- Part 4: What can we make with Github? (Websites and Project Management)
- Exercise 3 (take home): Make your own website

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What is GitHub?

- **Sounds like it's only for programmers!**
- GitHub is also great for version control of your own materials and even better for working collaboratively!
- GitHub enables:
  - Making and sharing of something which looks professional;
  - Tracking of changes as your project grows;
  - Integration of contributions from friends, colleagues or strangers;
  - Maintenance of an open "To Do" list in the form of GitHub issues;
  - The assignment of a DOI to your materials, making them citable

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Git vs GitHub

- Software which enables for version control.
- Free and open source!
- Often pre-installed on your computer

- A popular service for hosting and sharing projects you have been tracking with git.
- Secure and flexible control of access to materials.

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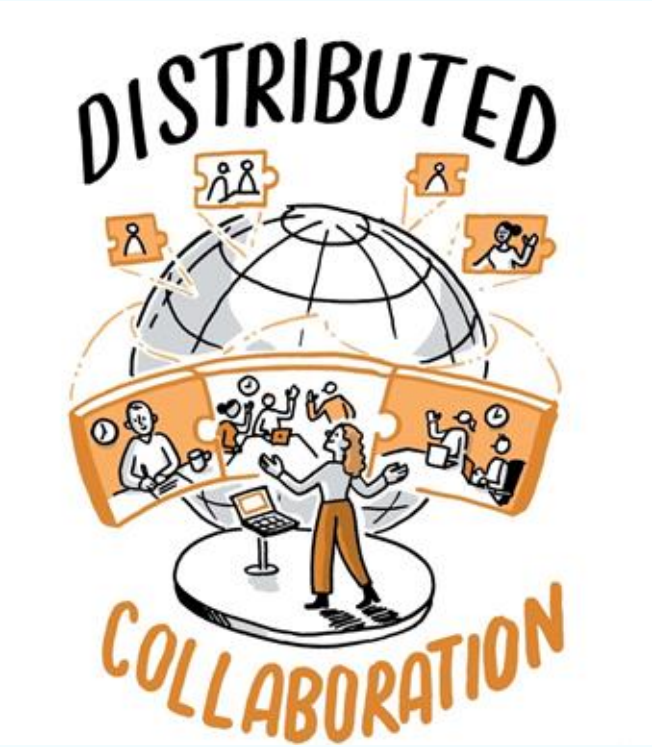
Collaborative docs



- Multiple people contributing to the same information from different times/places.

Hand/Chat: What might be challenges with distributed collaboration?

Hand/Chat: How could version control help?

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Making distributed collaboration possible

Version control

Reviewing & updating

Attribution to contributors

Transparency & accountability

Project management

Share globally

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Navigating

- Files:
  - README
  - CONTIBUTING
  - CODE_OF_CONDUCT
  - LICENSE
- Issues
- Pull requests
- Projects
- Contributors
- File views:
  - Preview
  - Code
  - Blame
  - History
  - Commits
  - Diff
- Repo vs organization
- Organisation members
- Repo collaborators

Chat: Any buttons you want to see or understand?

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Exercise 1: Commenting

- Got to the practice space repo issues and complete issue #3
- Use zoom reaction ✅ when you are done

Collaboration practice!

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Discussion

- What are the pros and cons of using a platform like GitHub for:

1. Your own code and documents?
2. Shared (private) code and documents?
3. Shared (public) code and documents?

- **What are your questions?**

Hands / Chat

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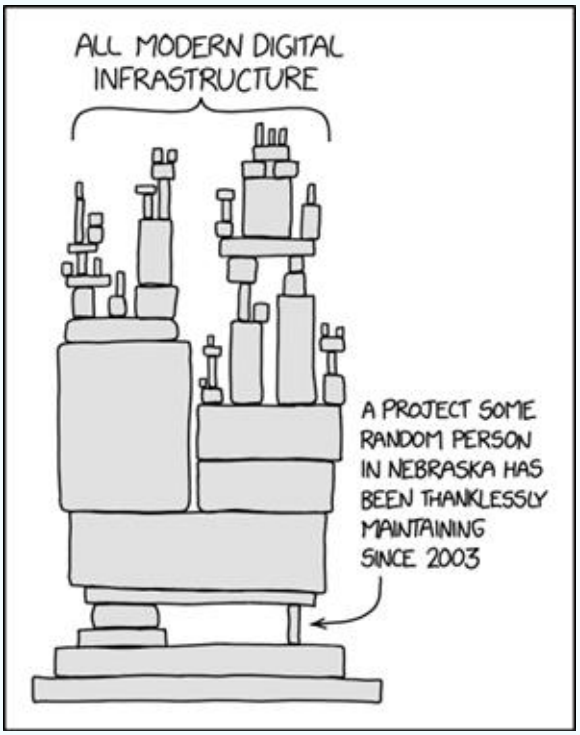
Part 2: Open Source



xkcd, 'Dependency': https://xkcd.com/2347/

Chat: What open source software do you use?

Open Source Initiative (OSI) Legal definition:

- The software is free to redistribute.
- The source code is included.
- "Derived works" (remixes) are allowed.
- There is no discrimination against persons, groups, or fields of endeavor (e.g., you cannot ban a specific company or country from using it).

- Roots in free software movement
- Developed into free and open source software (F/OSS) movement
- Influenced other 'open' movements: open knowledge, open data, open access, open science

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Why do we need licenses?

The Legal Default is "Closed"

- By international copyright law, any original work (code, text, or data) is **automatically protected by "All Rights Reserved"** the moment it is created.
- If you put materials on GitHub without a license, other researchers can look at it, but they cannot ***legally*** download, run, or build upon it.
- A license tells the world, "**I own this, but I am giving you legal permission to use it under these specific conditions**."

Safeguarding "Safe Sharing"

- Researchers often hesitate to share because they fear their work will be used in ways they didn't intend. Licenses create a contract.
- Liability Protection: Almost all open licenses include a "Disclaimer of Warranty." which protects you from being sued if someone else uses your code and it fails or produces an error.

Credit as The Currency of Academia

- Academia runs on citation and reputation.
- In traditional publishing, we have established norms for citing papers. For code and documentation, licenses like MIT or CC-BY turn "attribution" from a polite suggestion into a legal requirement.
- By licensing your "non-paper" outputs (datasets, software, tutorials), you are forcing the academic ecosystem to treat those contributions as valuable, citable objects.

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Licenses & copyright

Copyright	Open License	Public Domain
All Rights Reserved	Some Rights Reserved	No Rights Reserved
Reuse requires the permission from the copyright owner	Re-use is permitted without permission under the specific limitations of the license	May be used without permission **CC0**

- **Permissive Licenses**
  - "*You can do whatever you want with this, as long as you give me credit (attribution) and don't hold me liable.*"
  - Examples: **MIT, Apache 2.0, BSD, CC-BY-4.0**
  - Good: Encourage maximum adoption. No issues with IP or license stacking
  - Bad: Changes can be relicensed as closed
- **Copyleft (reciprocal) Licenses**
  - "*If you use my open materials, you must make your derived materials open too*"
  - Examples: **GNU GPL (v2 or v3), AGPL, CC-BY-SA**
  - Good: Prevents enclosure of the commons
  - Bad: Hesitancy to force openness

Go look for a software license

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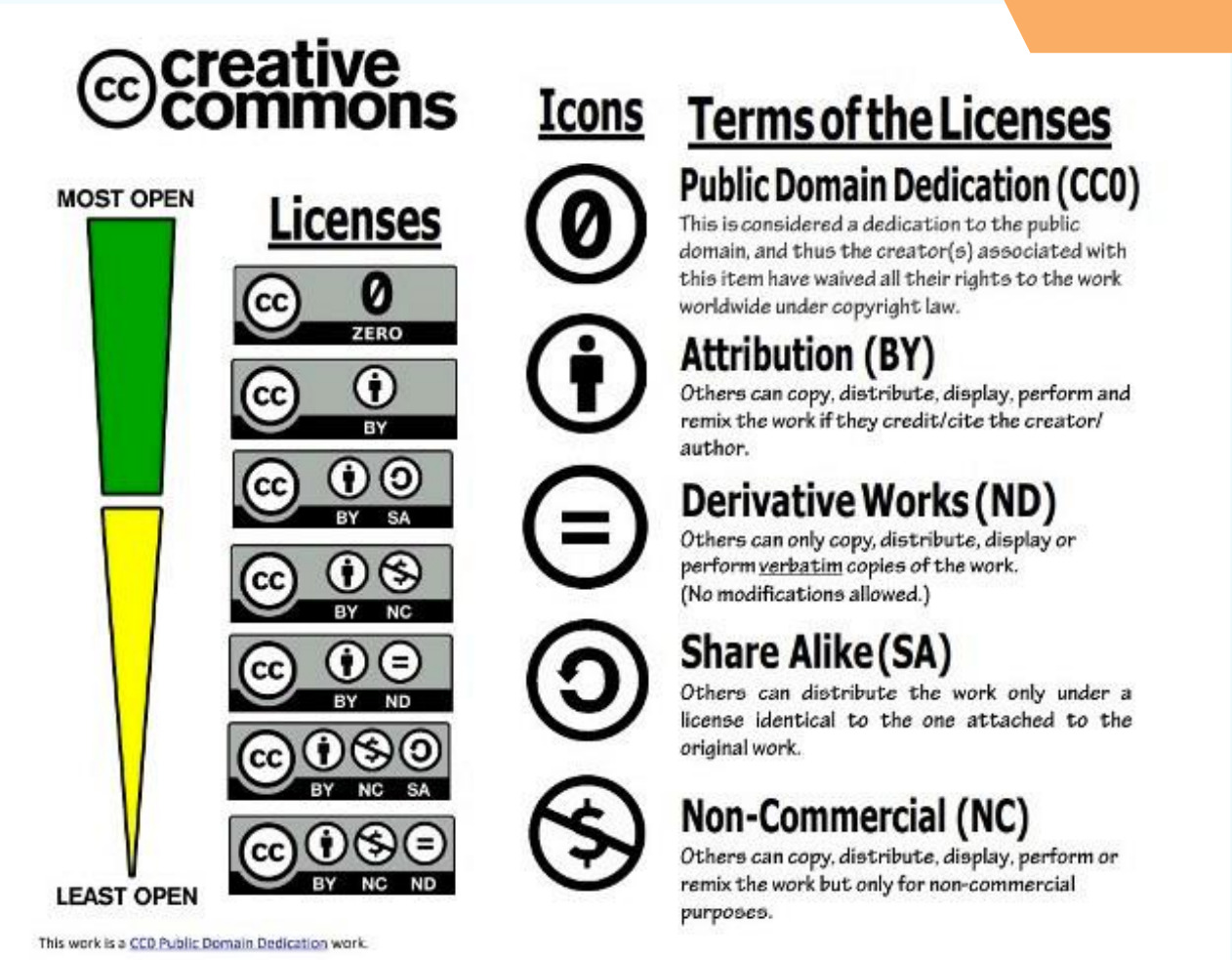
Licenses for docs

- When you publish in Neuroimage, you are asked to choose form one of Elsevier's approved "open access user licenses":
  - Creative Commons Attribution (**CC BY**)
  - Creative Commons Attribution-NonCommercial (**CC BY-NC**)
  - Creative Commons Attribution-NonCommercial-NoDerivatives (**CC BY-NC-ND**)
  - Copyright Elsevier or a Society
  - Elsevier user license

Which is most / least permissive?



Ohio State University, CC0

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Licenses for docs

Why do docs have different licenses than code?

"Software" vs. "Literary Works"

- Code Licenses (MIT, GPL): are designed for functional works. They deal with things like "compilation," "object code," and "execution."
- Creative Commons (CC): Are designed for literary and artistic works. They cover "reproduction," "adaptation," and "display."
- Most code licenses don't explicitly address the rights needed for documentation, such as the right to translate a book into another language or the right to print and sell physical copies.

The "Attribution" Problem

- In the MIT license, the requirement is to keep the "copyright notice and permission notice" in all copies of the software (LICENSE.md)
- In documentation, CC-BY gives you more flexibility on how you give credit (e.g., a "Credits" page or a footer).
- Using MIT for a book might legally require you to print the entire MIT license text on every single page or diagram.

How would you like your research outputs to be licensed?

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Licenses for hardware

- Follow similar permissive < > copyleft spectrum

The "Right to Manufacture"

- ”Copying" involves buying components, soldering, and assembly.
- A hardware license gives you the legal right to manufacture a physical version of the design.
- Without a hardware-specific license, someone might have the right to look at your circuit diagram (protected by copyright), but they might not technically have the right to build and sell the physical item if the "utility" isn't covered by the license.

The Patent "Safety Net"

- Copyright protects how ideas are written down. Patents protect how things work.
- If you share a new sensor design under a documentation license, a company could file a patent on the "invention," and then sue you for making your own device.
- Licenses like CERN-OHL or Solderpad include "Patent Grants." This means anyone who contributes to the project effectively says: "I promise not to sue anyone for using any patents I have that are part of this design."

The "Physical" Attribution

- Hardware licenses often include clauses about "Notice Retention" on the physical object.
- Hardware licenses specify where/how the license is identified on the physical item.

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Summary slide

- We want to **share our work** so our research can have the greatest impact!

- Sharing on GitHub enables the use of a well tested mechanism to receive the input of others
  - More contributions been **more robust** and potentially more impactful
  - Contributions are **attributed and version controlled**

- When we share, we should always apply a license so we can control **how our outputs are used on by whom**.
  - Licenses can be **more or less restrictive**
  - Software documentation and hardware all have specific license types which **legal terms appropriate** to different outputs

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Part 3: Using GitHub

- For some repos you might have a ‘local’ copy on your computer and a ‘remote’ copy on GitHub
- Personally, I have a local copy where I want to do more complicated editing

Pushing your local changes to your remote

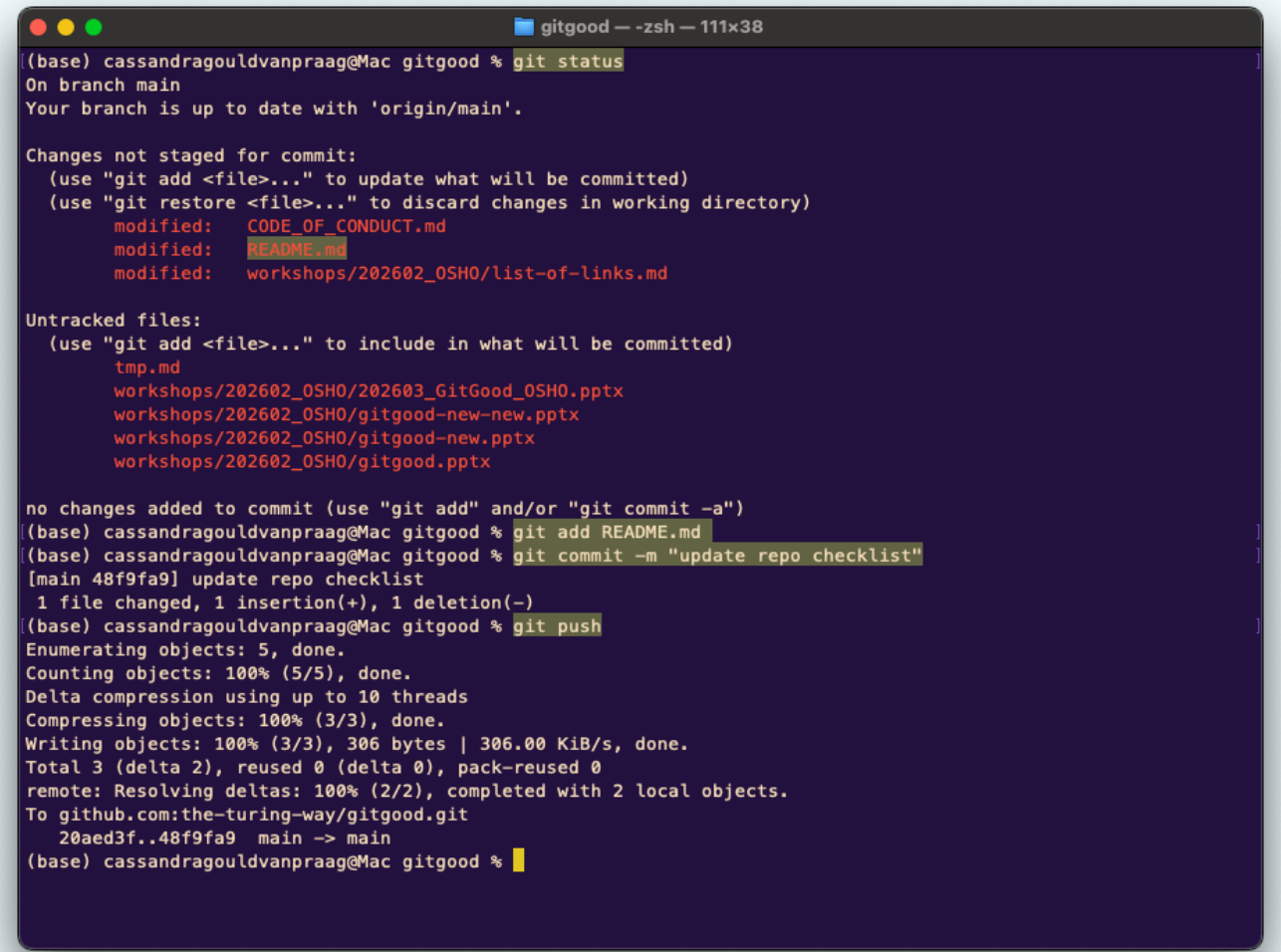
- Directory must first be initialised for git (ready to be tracked)

> git status

> git add [filename]

> git commit –m “[describe the change]”

> git push



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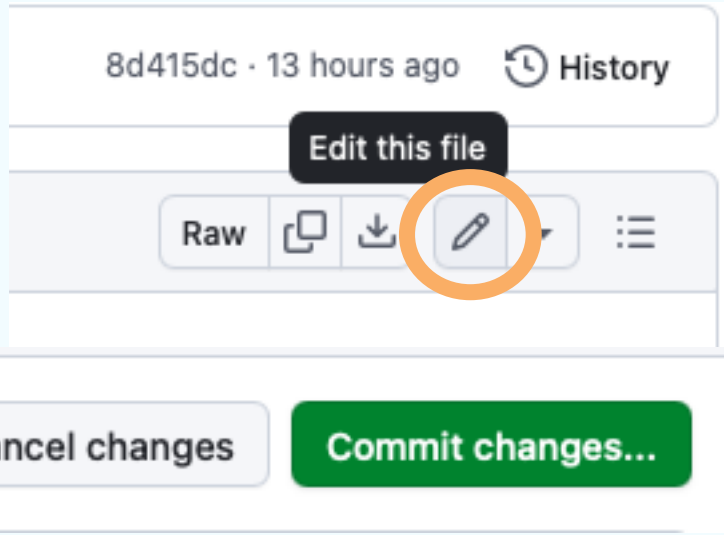
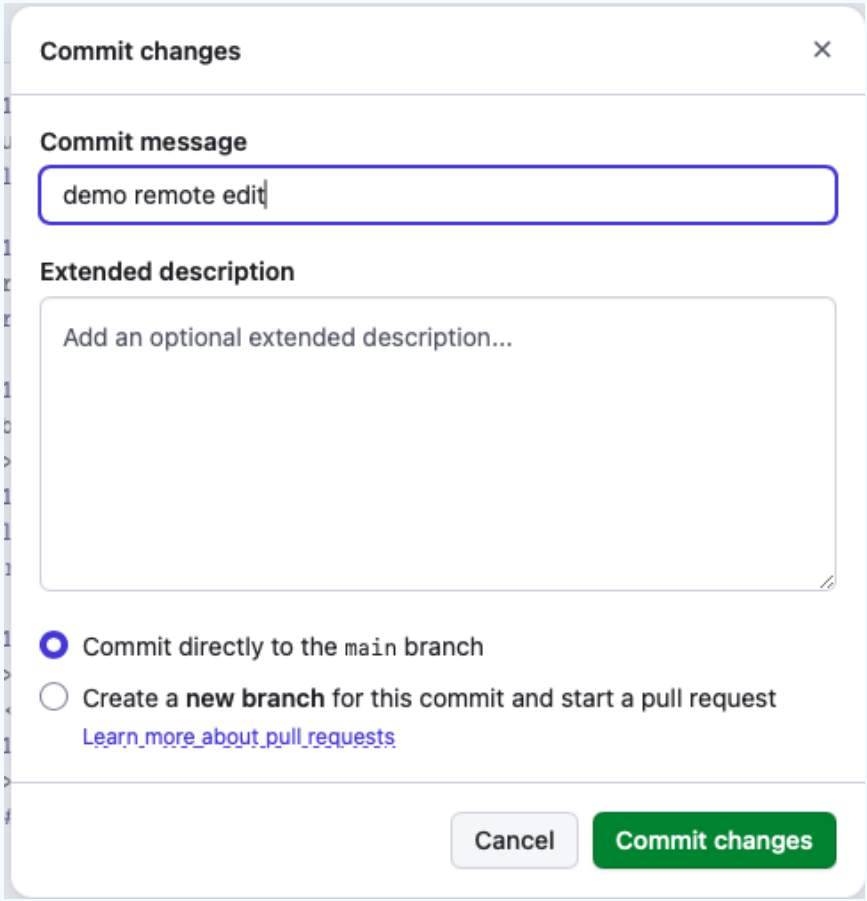
Part 3: Using GitHub

Making online changes to your remote

1. Find the file
2. <Edit this file>
3. Make the change
4. <Commit changes>





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Collaborating on someone else's repo

1. Make a copy of their repo (**fork**)
2. Make your changes in *your* online copy (**commit**)
3. Share your changes with the repo owner (**pull request**)
4. Changes are incorporated in the original repo (**merge**)

- Additional step of making your own copy of the repo preserves the fidelity of the original and give you space to play!

- We're going to practice this online only!

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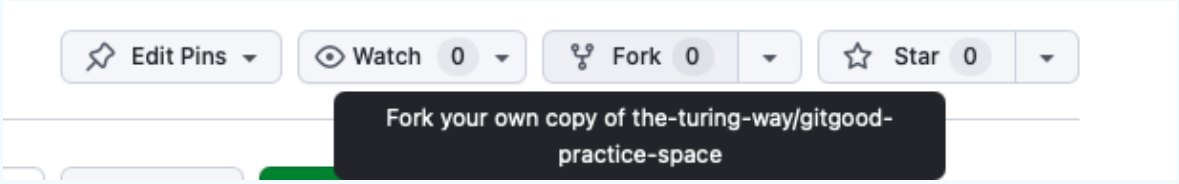
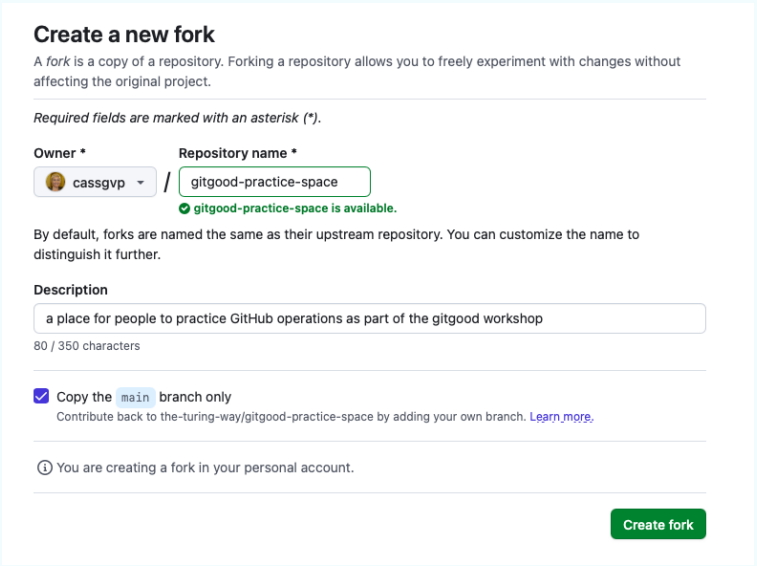
Collaborating on someone else's repo

1. Make a copy of their repo (**fork**)





2. Make your changes in *your* online copy (**commit**)
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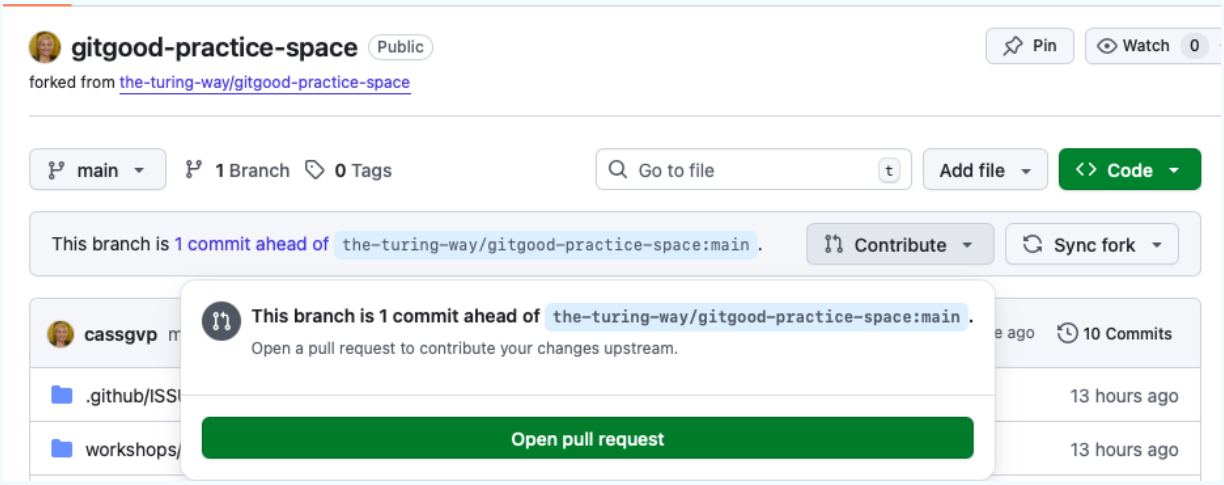

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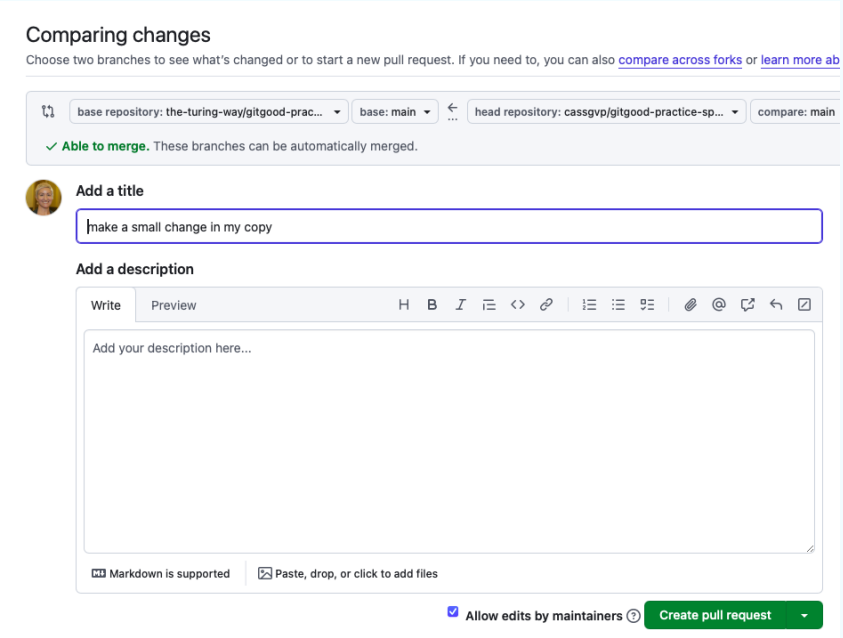
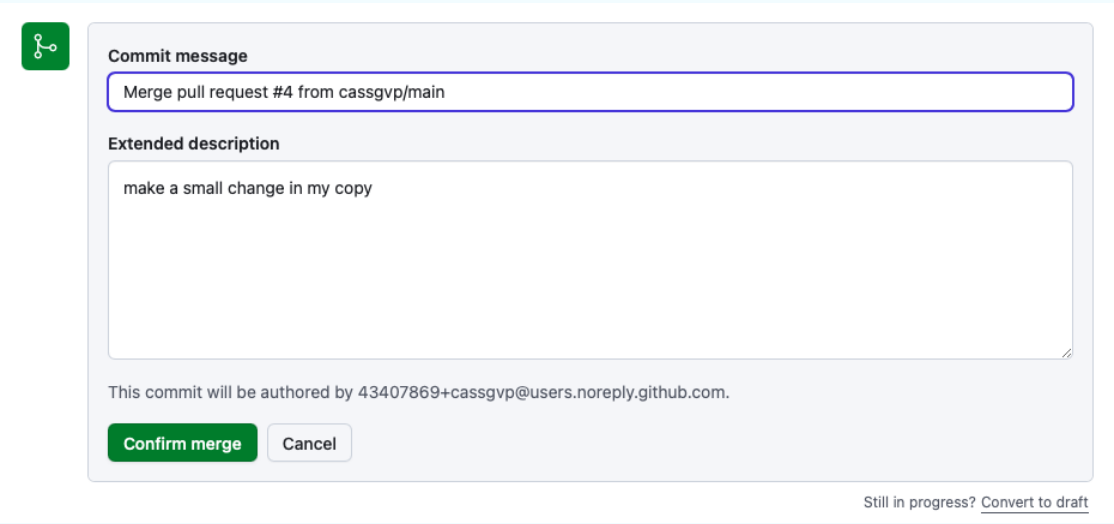
Collaborating on someone else's repo



4. Changes are reviewed by repo original repo owner (**merge**)



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Exercise 2: Pull request

- We're all going to submit a pull request to the practice repo!

1. Choose a line to edit from the framapad
2. Make a copy of the practice repo (**fork**)
3. Add your name; date today; a link to your research profile or some of your work to exercise-2.md (**commit**)
4. Share your changes with the repo owner (**pull request**)
5. Emma will review and incorporate your changes (**merge**)
6. Use zoom reaction ✅ when your changes have been merged!

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ubmitted a pull request!

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Discussion

- What are your fears / concerns about working on someone else's repo?
- How would you like people to interact with you / your repos? (CONTRIBUTING.md)

- **What are your questions?**

Hands / Chat

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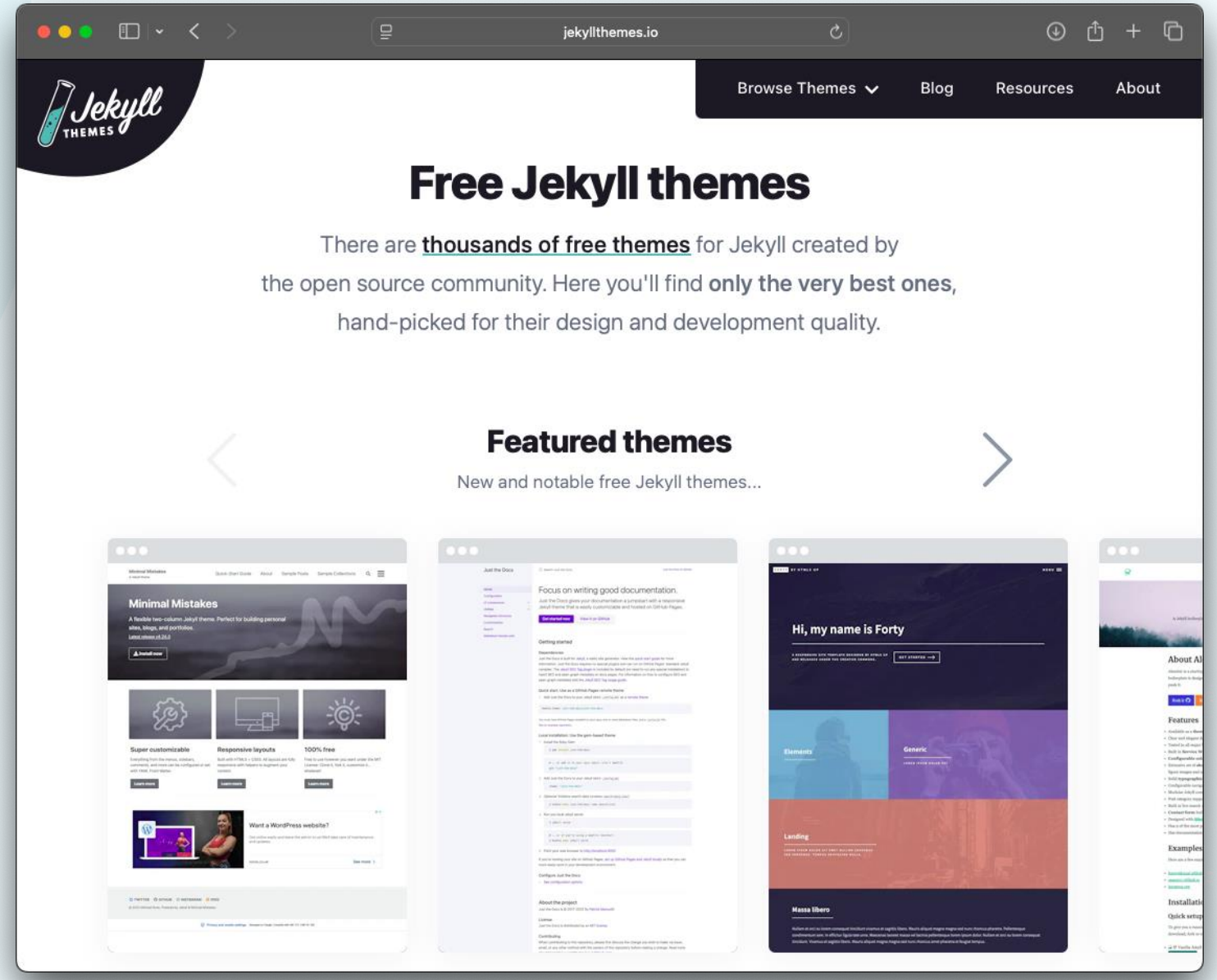
Part 4: What else can you do with GitHub

GitHub Pages (github.io)



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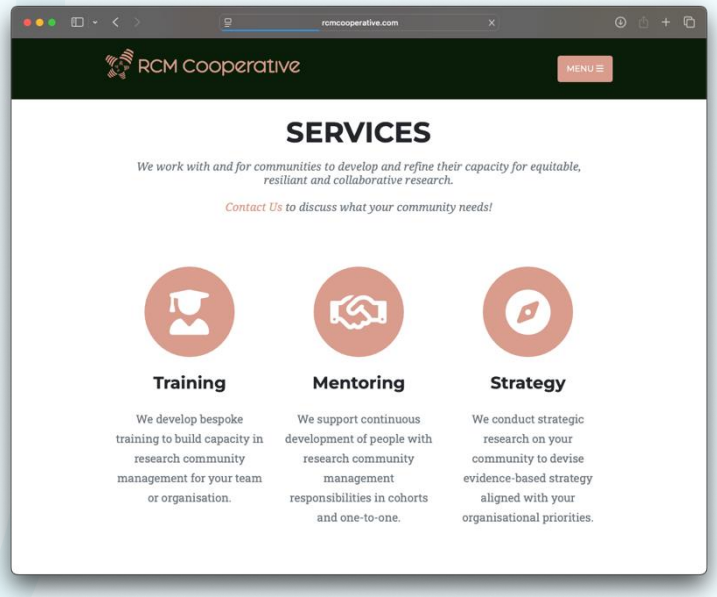
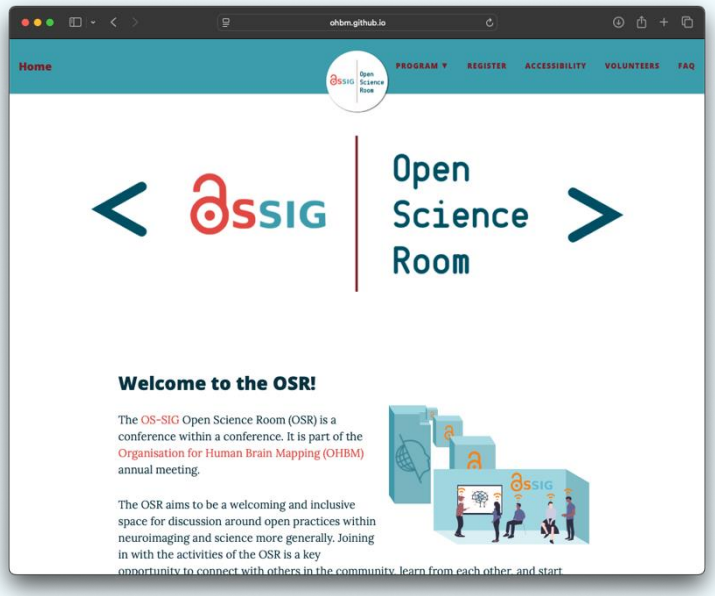
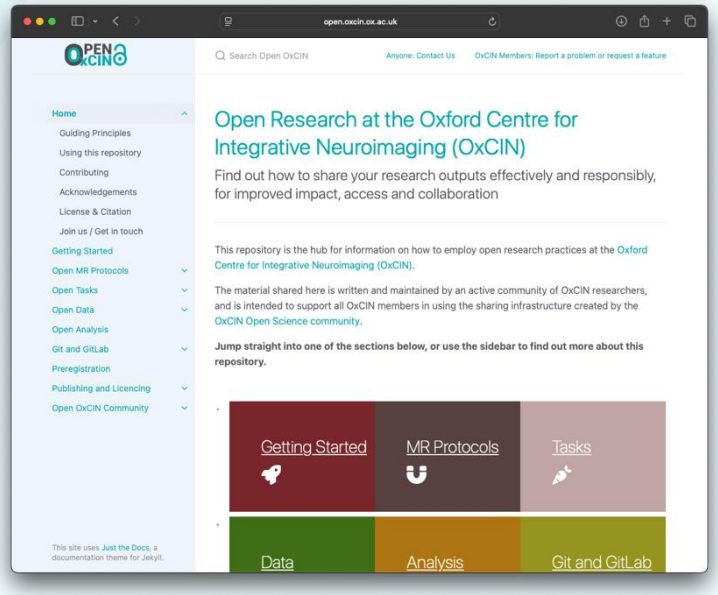
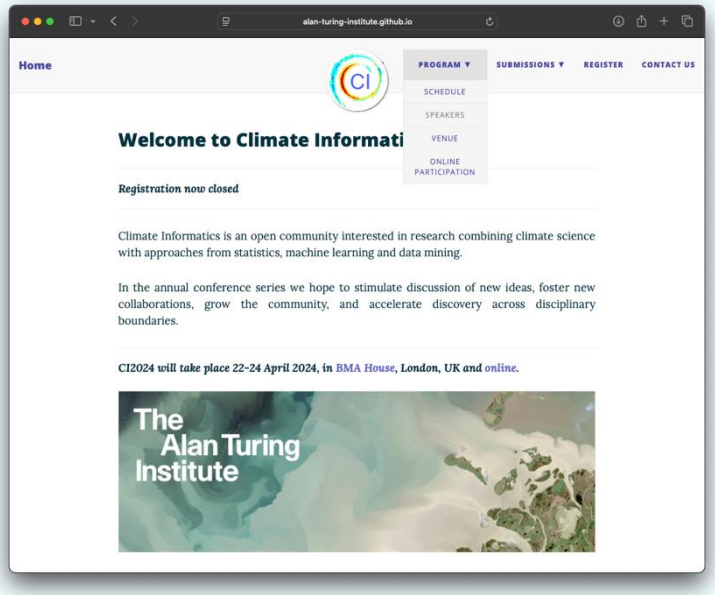
GitHub Pages









- Collaborative, version controlled, reproducible!

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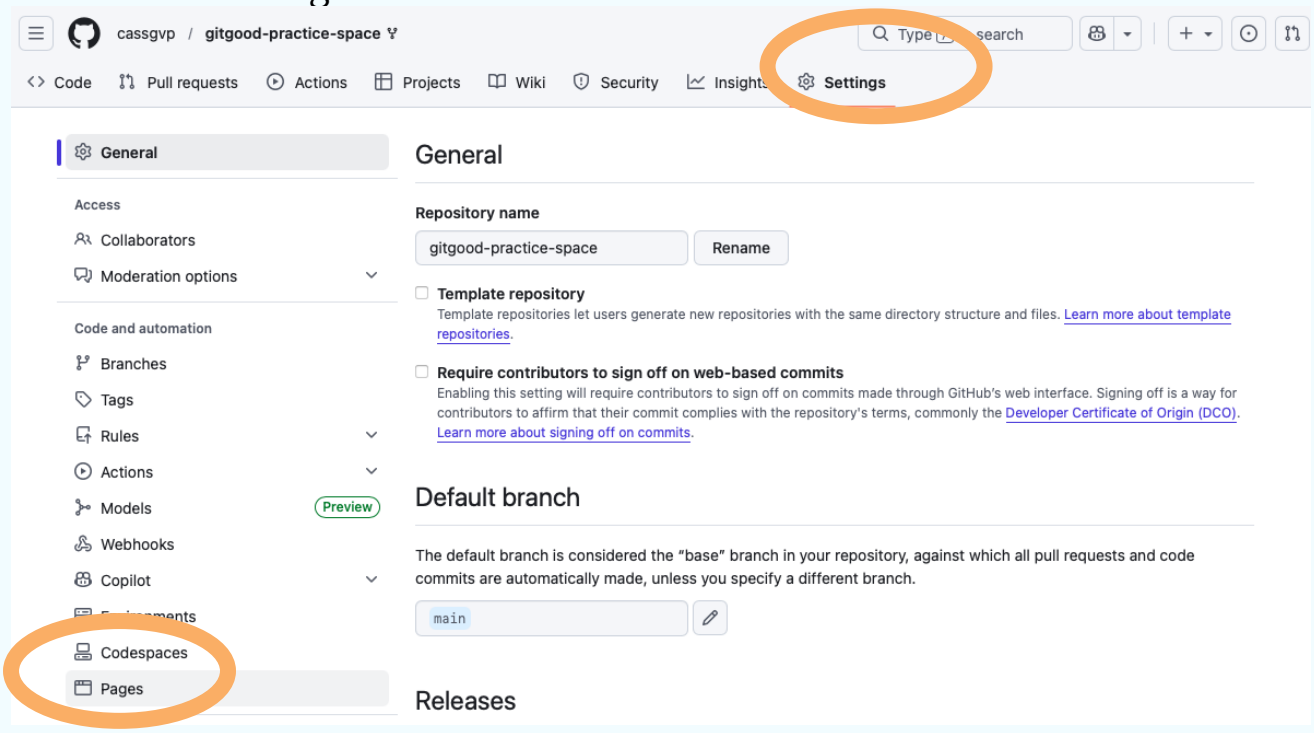
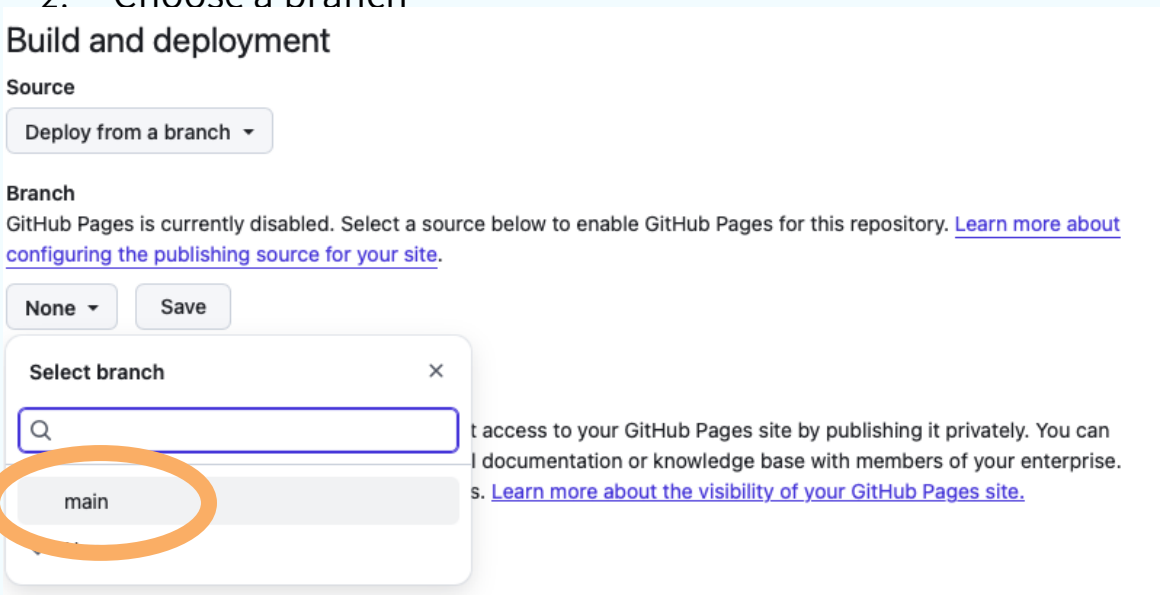
GitHub Pages

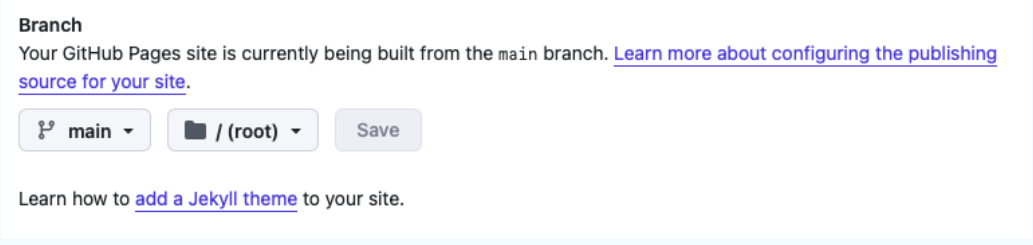
1. Enable Pages



2. Choose a branch



3. Apply a (remote) theme



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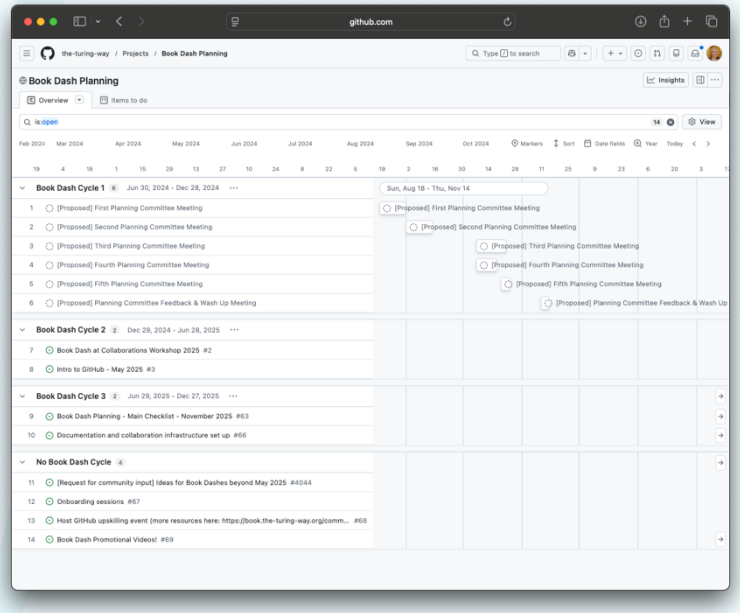
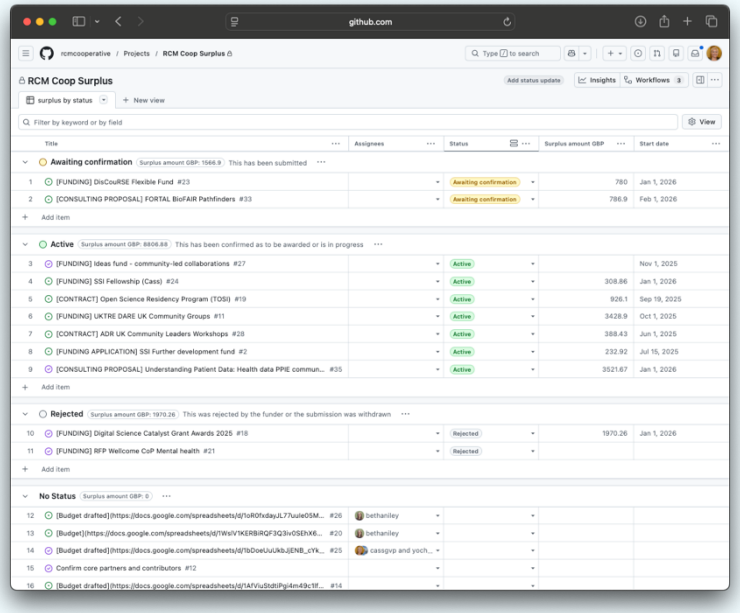
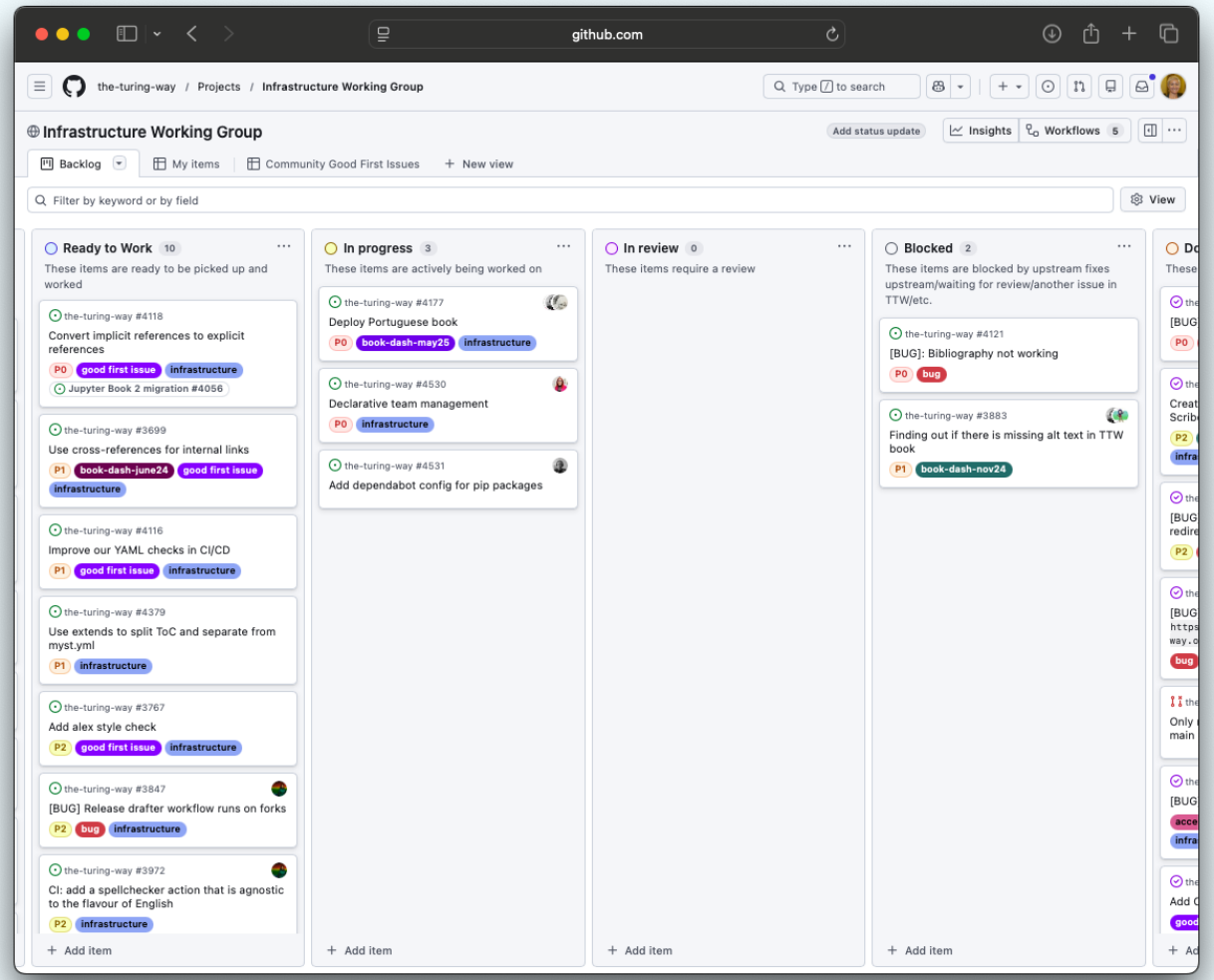
Project Management







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Discussion

- What are you going to try next with GitHub?
- What are your questions?
- **Please fill in the feedback form now** 😊

Hands / Chat

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Summary slide

- We want to **share our work** so our research can have the greatest impact!
- Sharing on GitHub enables the use of a well tested **mechanism to collaborate with attribution**
- We know why and how to **license our materials**
- We know how to **submit and receive contributions**
- We know that we can **publish collaborative webpages** with GitHub
- We know that GitHub can be used to **manage collaborative projects**

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Closing

- Thanks to TTW GitGood contributors and TTW infrastructure team!
- Thanks to OSHO for brining us together!
- Thank you for engaging!

- Book time with Cass to discuss anything related to this workshop, open science / reproducibility, collaboration / research community management!

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