The Alan Turing Institute

How can we get better at coding in the open?

Kirstie Whitaker
Pronouns: she/her
@TuringWay @kirstie_j
https://doi.org/10.5281/zenodo.10215177

Research Programme Director for Tools, Practices & Systems

The Alan Turing Institute

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The Turing Way is an **open source book project** that involves and supports a **diverse research community** in ensuring that reproducible and ethical **data science** is accessible and comprehensible **for everyone**.

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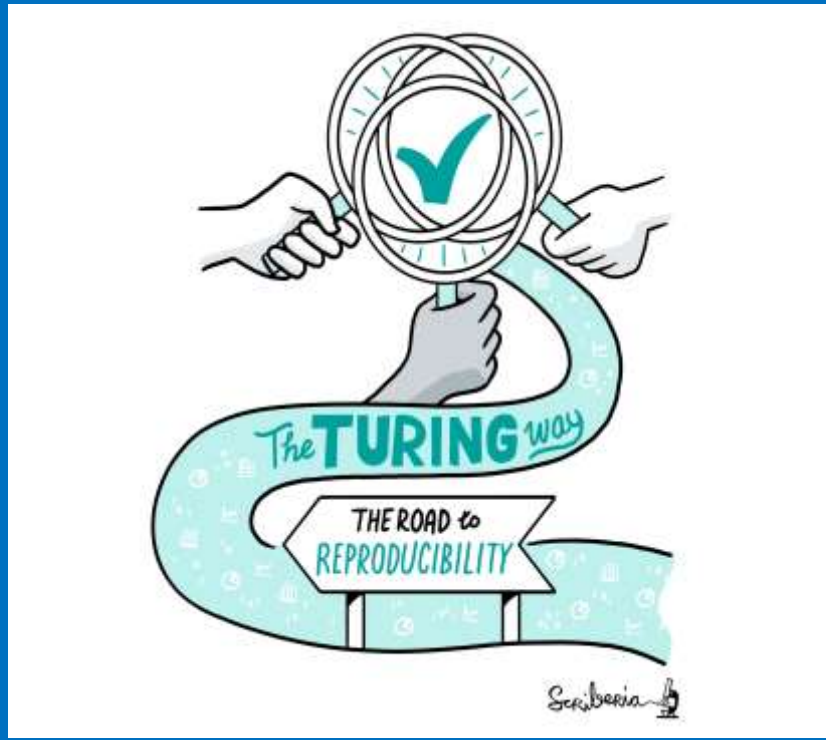
The Turing Way is:

- a book
- a community
- a global collaboration
- a whole tonne of work



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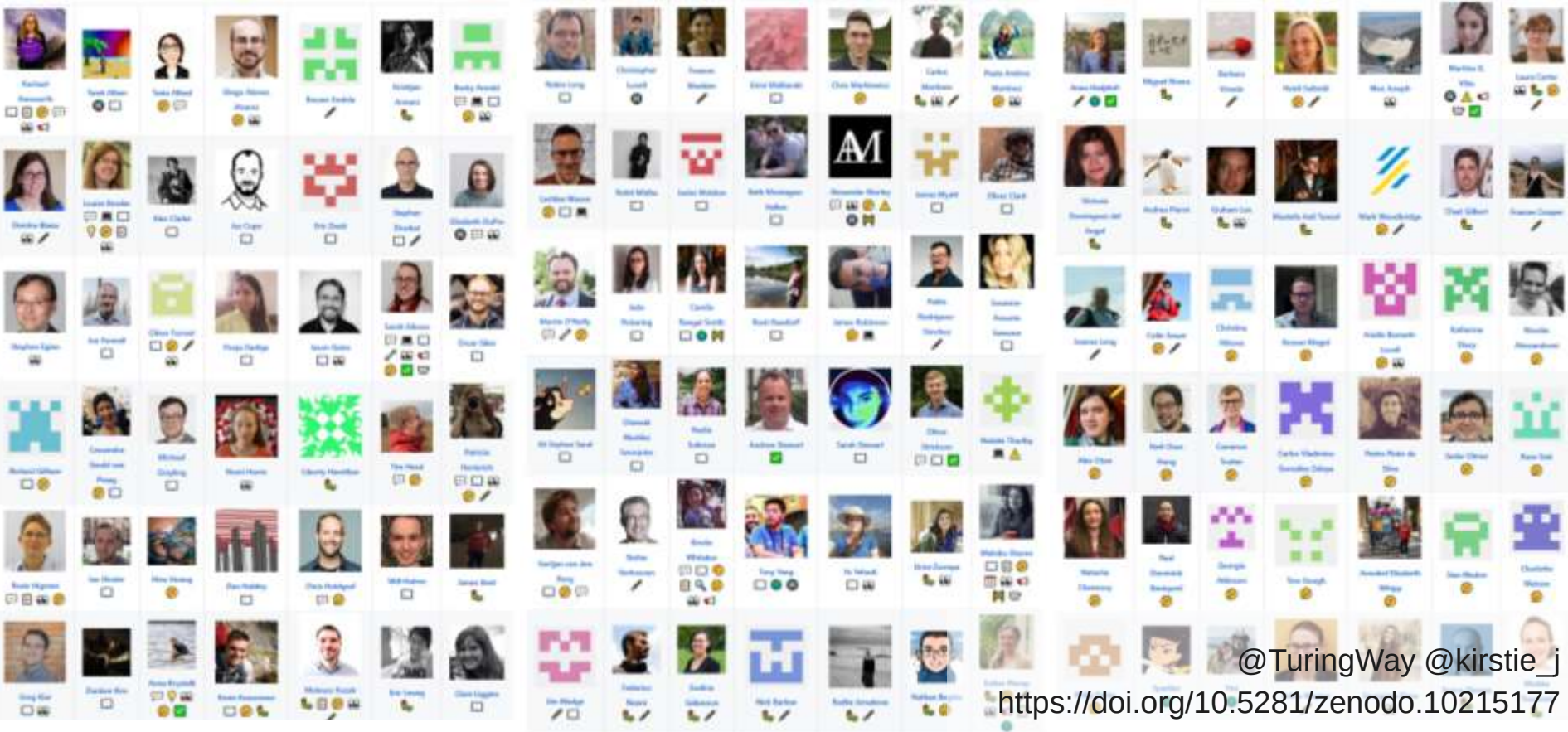
Thank you to our 400+ contributors



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Malvika Sharan

“No one can change research culture on their own. Scaling our community by empowering YOU to participate is how we will change the world.”

https://doi.org/10.5281/zenodo.10069243
https://doi.org/10.15131/shef.data.24162249.v1

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https://the-turing-way.netlify.app/index.html
https://github.com/the-turing-way/the-turing-way

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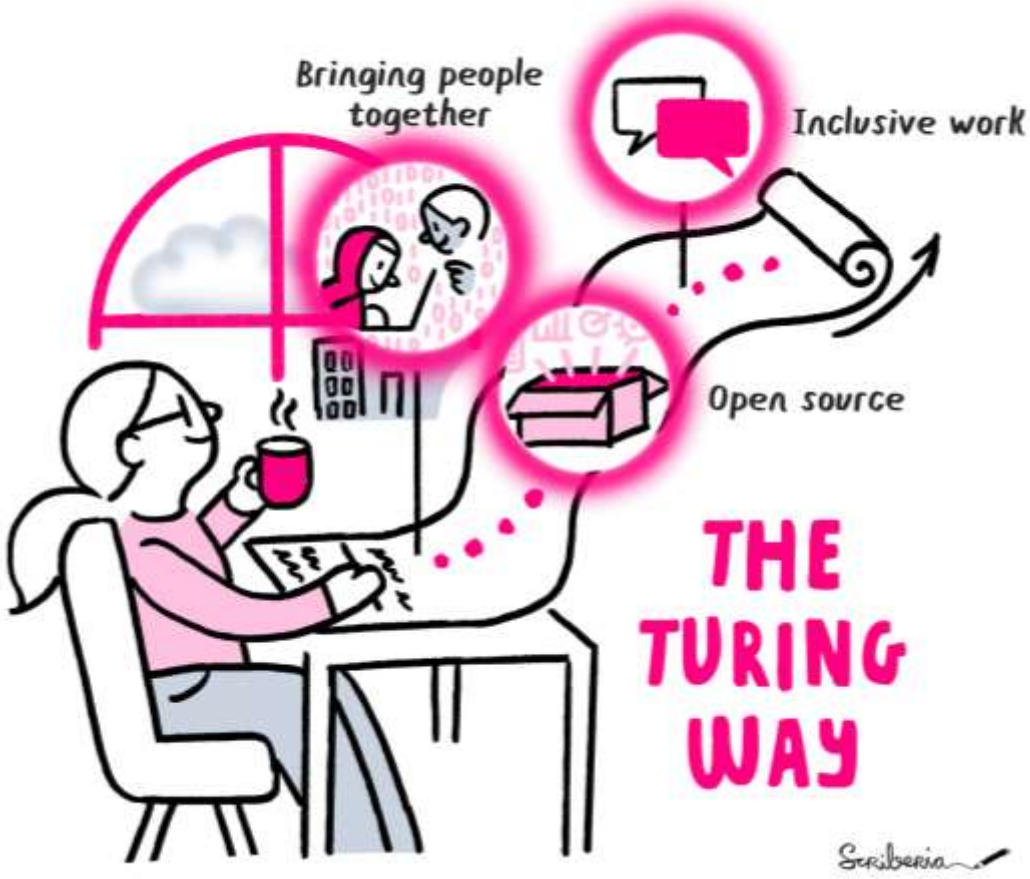

Personal experience of:

- File drawer effect
- Lack of reproducibility
- Imposter syndrome around coding
- Lonely
- Wasted time
- Hypocrisy of academia

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https://the-turing-way.netlify.app/reproducible-research/vcs
https://swcarpentry.github.io/git-novice

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#bropenscience is broken science

All elements of open scholarship should be in service of equity, diversity and inclusion.

Faster, more accessible
→ Better quality insights
→ A more just world

Whitaker & Guest, 2020.
https://www.bps.org.uk/psychologist/bropenscience-broken-science
https://hdl.handle.net/2066/226397

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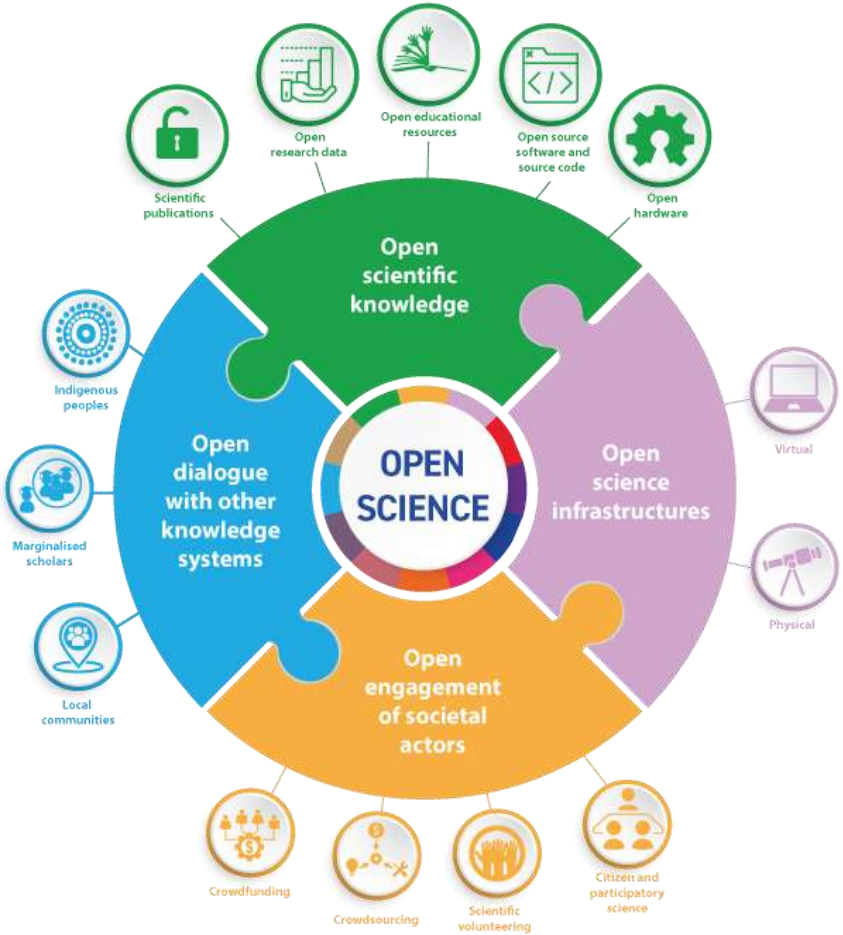
https://doi.org/10.5281/zenodo.10215177

“Opening science involves opening up the processes of creating, evaluating, sharing, exploring and storing scientific knowledge, practices and perspectives.”

“All scientific disciplines and aspects of scholarly practices, including basic and applied sciences, natural and social sciences and the humanities, are included.”



UNESCO, Understanding open science, 2022.
https://doi.org/10.54677/UTCD9302

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https://doi.org/10.5281/zenodo.10215177

Louis Brandeis
https://en.wiktionary.org/wiki/sunlight_is_the_best_disinfectant

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https://doi.org/10.5281/zenodo.10215177

Open practices are ready to deliver safe and ethical data science and AI

– Safety and sustainability
– Accountability
– Fairness
– Explainability
– Data stewardship

https://www.turing.ac.uk/research/research-projects/ai-ethics-and-governance-practice

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Open practices are ready to deliver safe and ethical data science and AI*

(*We just have a little more work to do to promote and normalise them!)

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Who is building open source AI?

21 September, 14:00 - 15:30 UTC+1

Register on Eventbrite

Arielle Bennett
Programme Manager
The Alan Turing Institute

Mophat Okinyi
Union Representative
African Content Moderators Union

Marzieh Fadaee
Senior Research Scientist
Cohere for AI

Abinaya Mahendiran
CTO
Nunnari Labs

David Gray Widder
Postdoctoral Fellow
Cornell Tech

Jennifer Ding
Senior Researcher
The Alan Turing Institute

https://www.youtube.com/watch?v=e8EBI1ocxt4
https://opensource.org/events/deep-dive-ai-webinar-series-2023

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https://doi.org/10.5281/zenodo.10215177

Open Source Initiative Deep Dive: Defining Open Source AI

The Alan Turing Institute

open source initiative®

Prof David Leslie
Director of Ethics and Responsible Research and Innovation

Victoria Kwan
Corporate Governance Research Ethics Manager

Dr Kirstie Whitaker
Director of Tools, Practices and Systems Research Programme

https://opensource.org/deepdive/webinars/operationalising-the-safe-d-principles-for-open-source-ai

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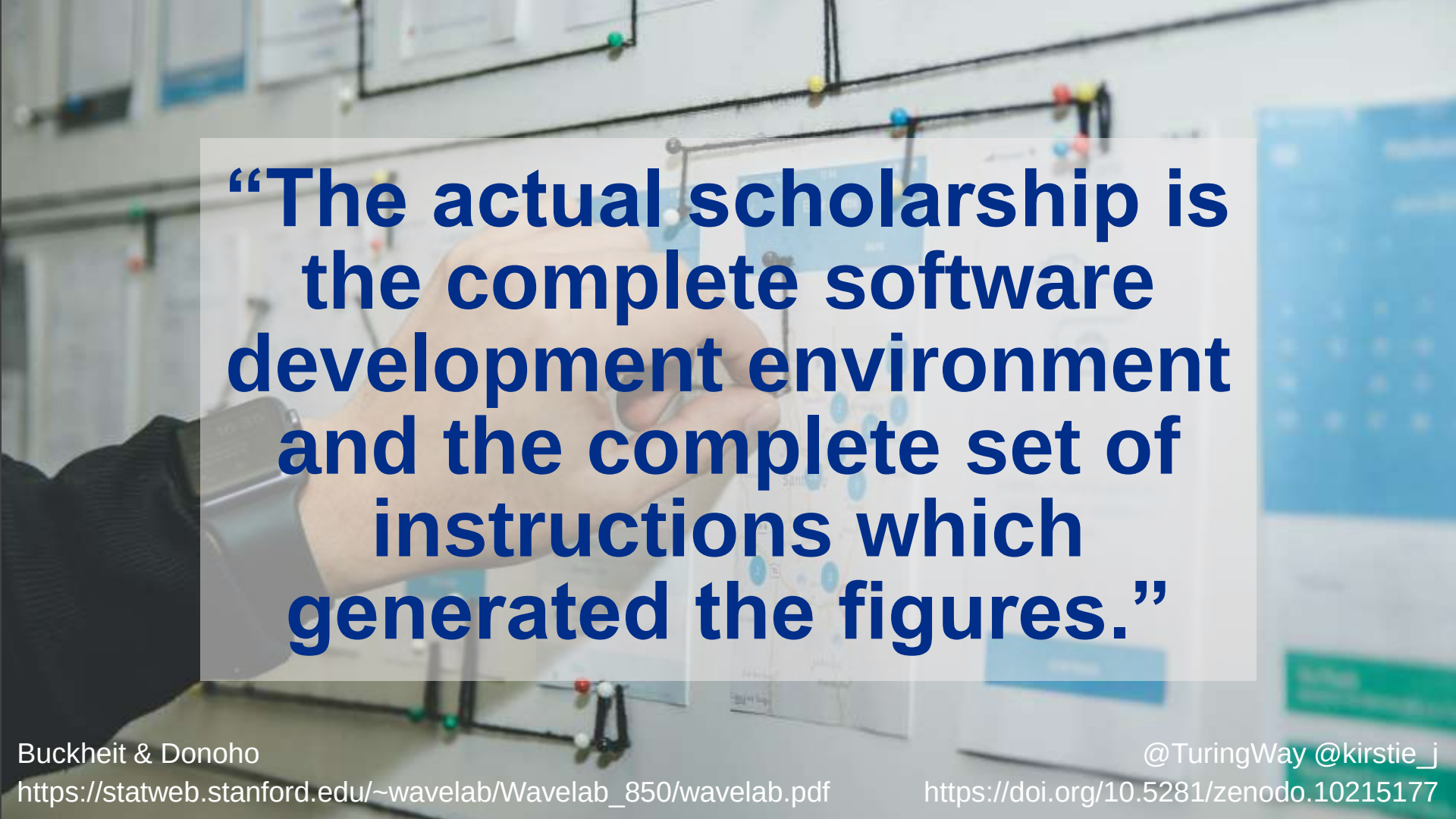

Buckheit & Donoho
https://statweb.stanford.edu/~wavelab/Wavelab_850/wavelab.pdf

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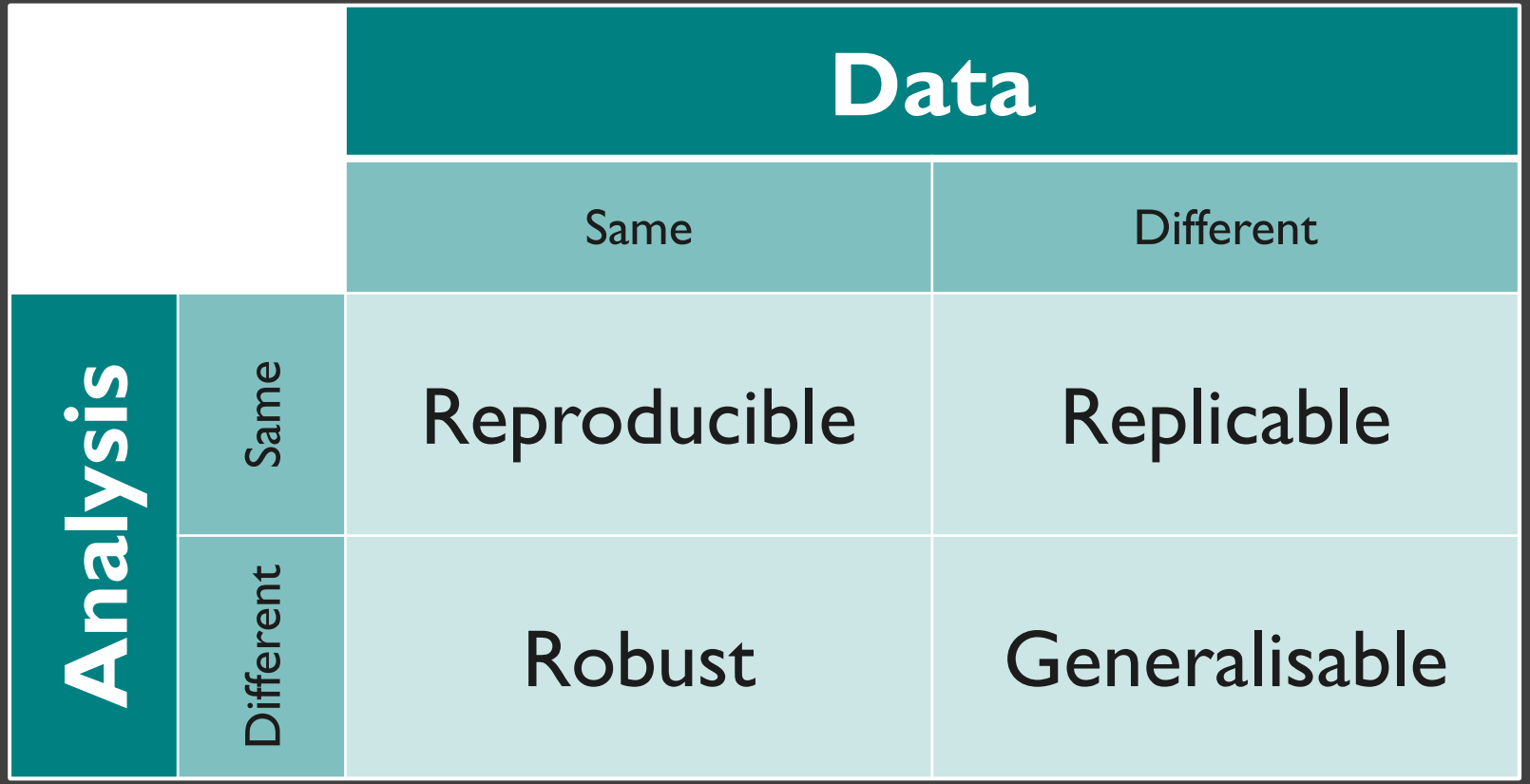

https://the-turing-way.netlify.app/reproducible-research/overview/overview-definitions.html

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Is your code doing what you think its doing?

https://the-turing-way.netlify.com/reproducible-research/testing.html
https://www.toptal.com/qa/how-to-write-testable-code-and-why-it-matters

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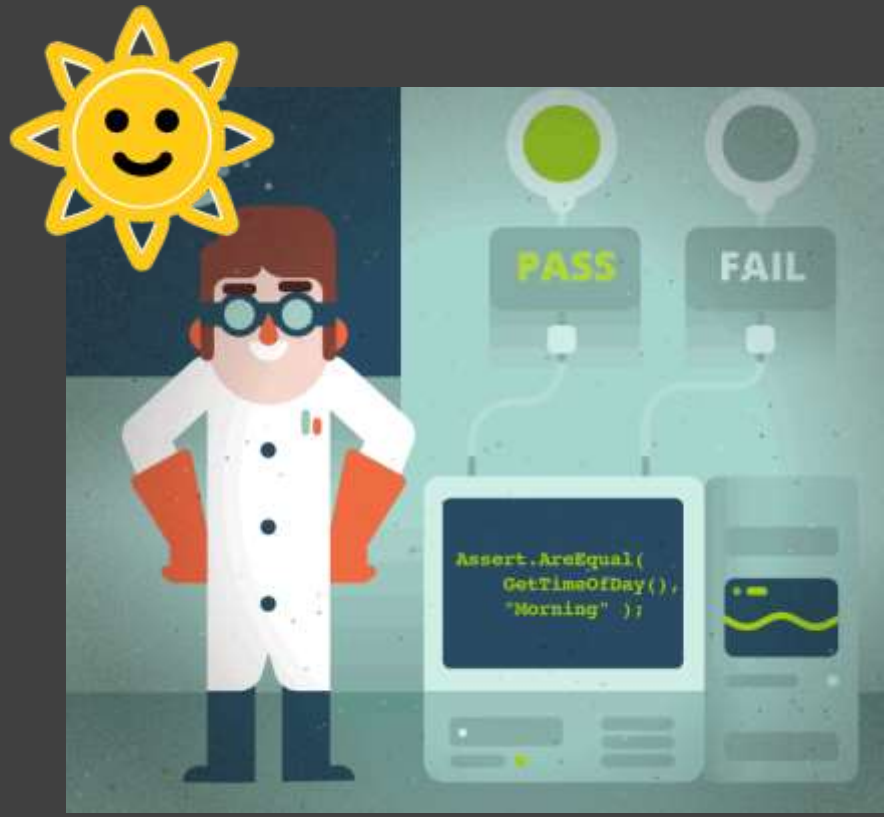

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Is your code doing what you think its doing?

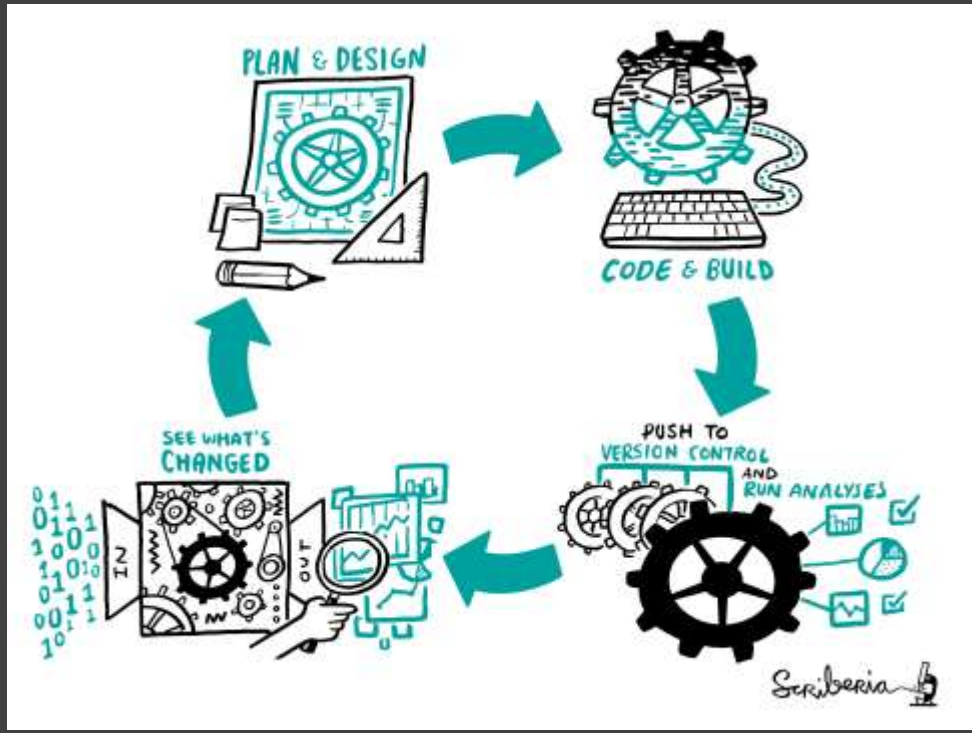
Testing sub-chapters on:

- Smoke
- Unit
- Integration
- System
- Acceptance and regression
- Runtime

And continuous integration…

https://doi.org/10.5281/zenodo.10215177

- Plan and design your experiment
- Write down those steps in code
- Push to version control and run the analyses
  - Traditionally done on the cloud, but the important part is that **all steps** are run **every time**
- Test to see what's changed



https://the-turing-way.netlify.com/reproducible-research/ci.html

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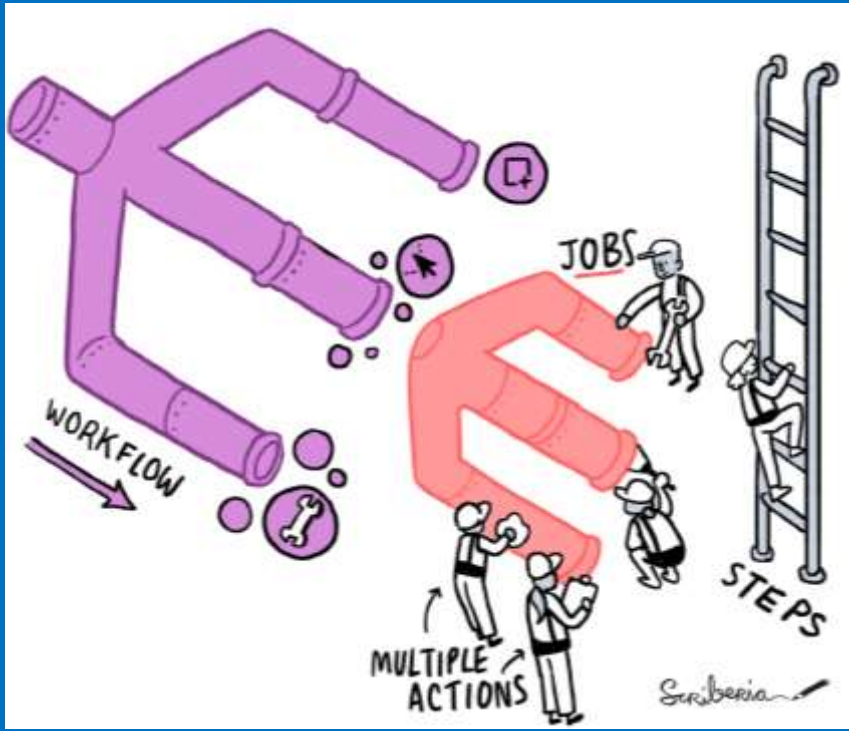
How to deliver explainable results?

- Code your data processing, analysis & visualisations. Share protocols for manual steps.
- Test to catch changes (planned and unplanned).
- Interrogate the analysis / model to understand how it behaves under difference circumstances.



https://the-turing-way.netlify.app/reproducible-research
https://the-turing-way.netlify.app/reproducible-research/testing
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https://www.turing.ac.uk/research/research-projects/ai-ethics-and-governance-practice

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Eric Steven Raymond, The Cathedral and the Bazaar

Linus’ Law: https://en.wikipedia.org/wiki/Linus%27s_law

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Our human needs are one of the major reasons that coding in the open is so challenging

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THERE'S MORE TO
COLLABORATION
THAN YOU MIGHT THINK!
DIFFERENT TEAMS
COMMON GOAL
EXCHANGE OF KNOWLEDGE
PRODUCTION
TREAT EACH OTHER KINDLY
BUILD DIVERSE TEAMS
CODE OF CONDUCT
INCLUSIVE WORKSPACE
EXPLICITELY OPEN FOR CONTRIBUTION
Scribbria

How to get better at (code) review?

- Accept that someone else finding the bug is a success!
- Use a style guide so code is easy to review and understand.
- Build community, explain why code runs the way it does.
- Stay collaborative, work to a shared goal.
- Be kind.

https://the-turing-way.netlify.app/reproducible-research/reviewing
https://the-turing-way.netlify.app/project-design/code-styling.html

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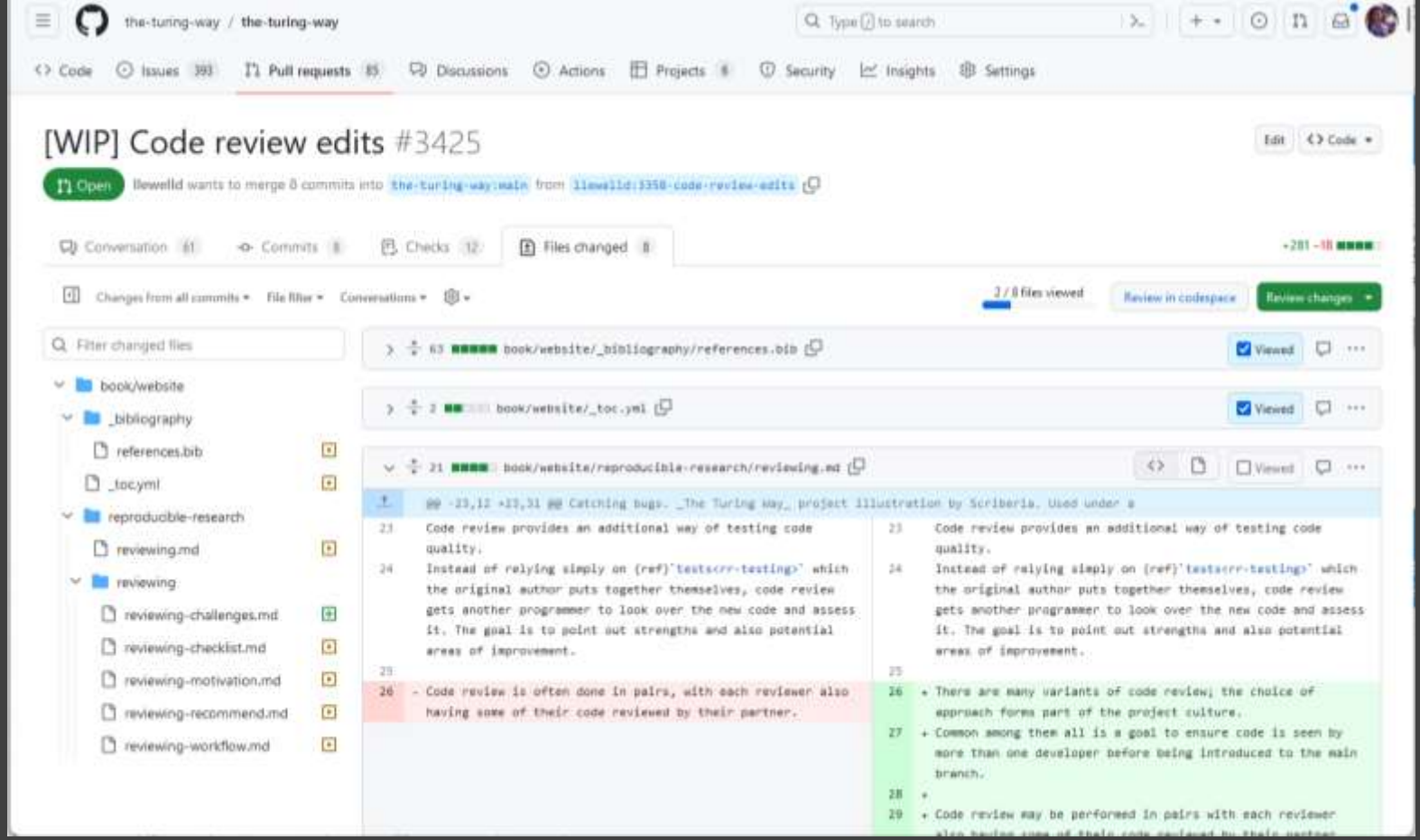

https://the-turing-way.netlify.app/reproducible-research/reviewing
https://github.com/the-turing-way/the-turing-way/pull/3425

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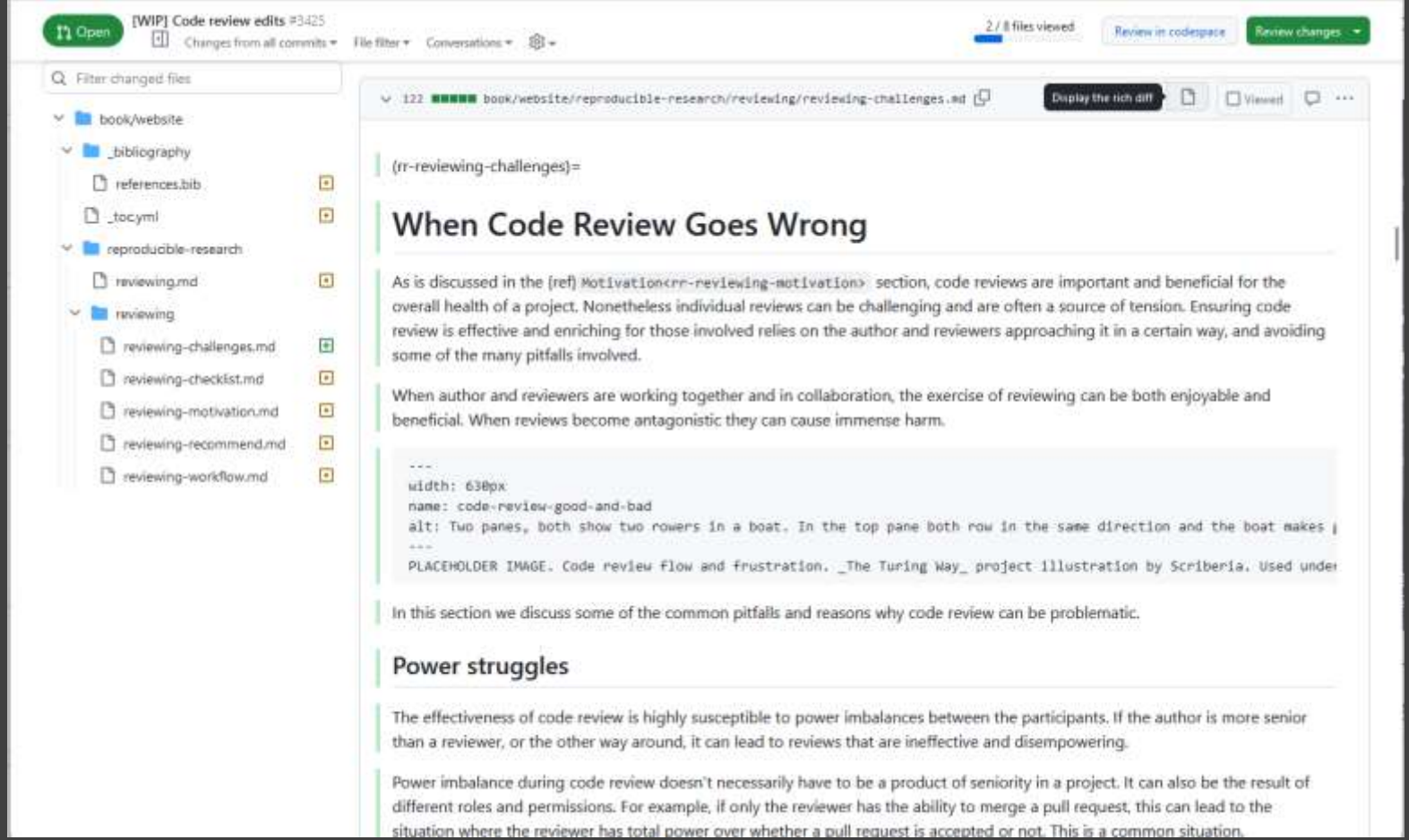

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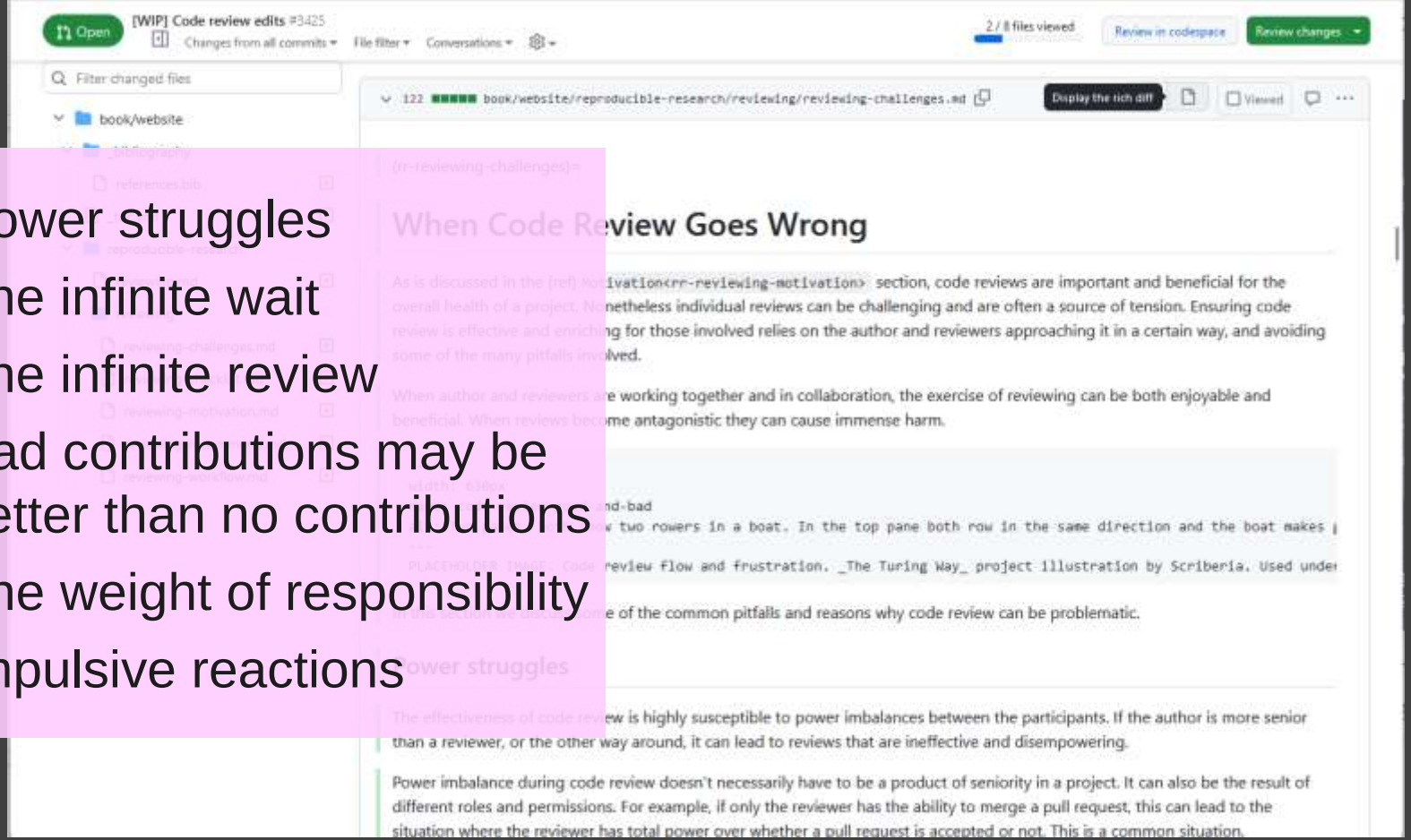

- Power struggles
- The infinite wait
- The infinite review
- Bad contributions may be better than no contributions
- The weight of responsibility
- Impulsive reactions

https://the-turing-way.netlify.app/reproducible-research/reviewing
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Stephen Crocker, Request For Comments (RFC's) History
https://www.livinginternet.com/i/ia_rfc_invent.htm

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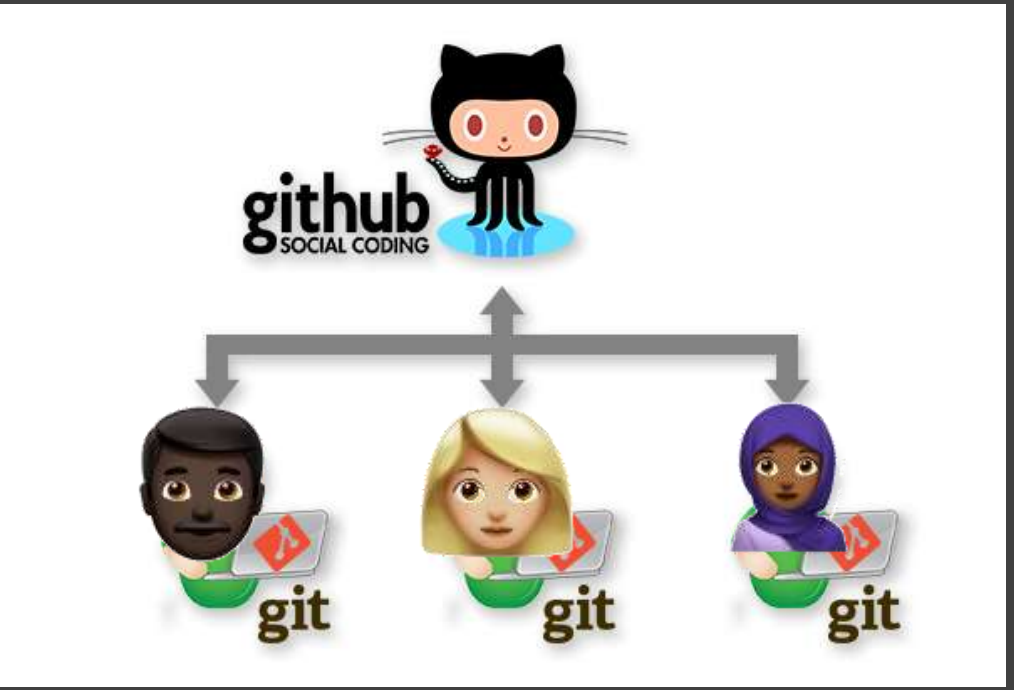

https://the-turing-way.netlify.app/collaboration/github-novice.html
https://the-turing-way.netlify.com/reproducible-research/vcs.html

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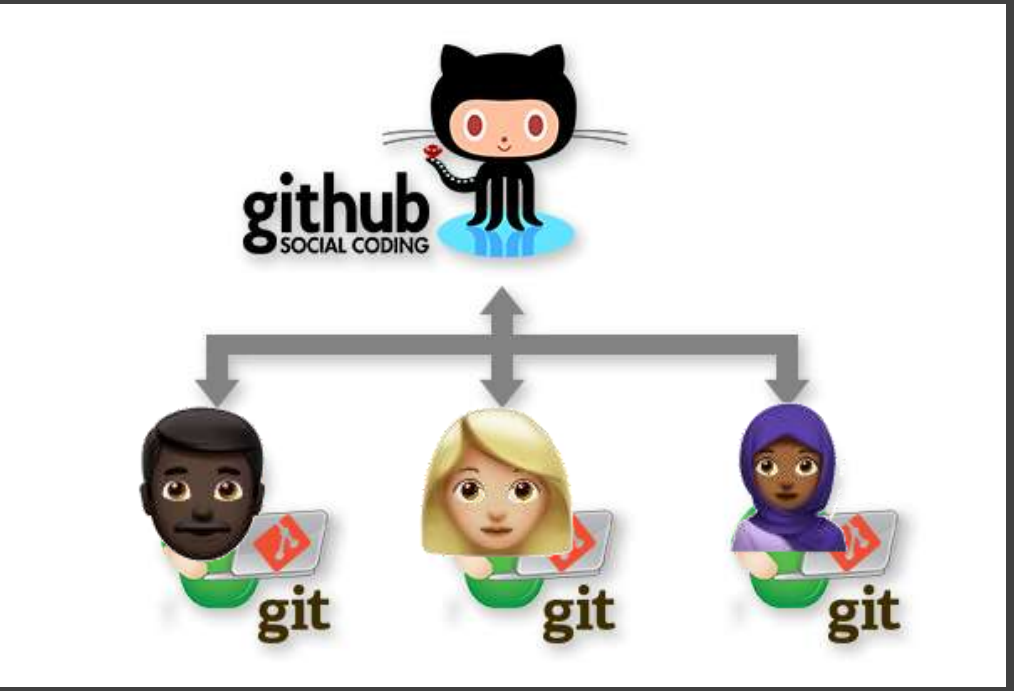

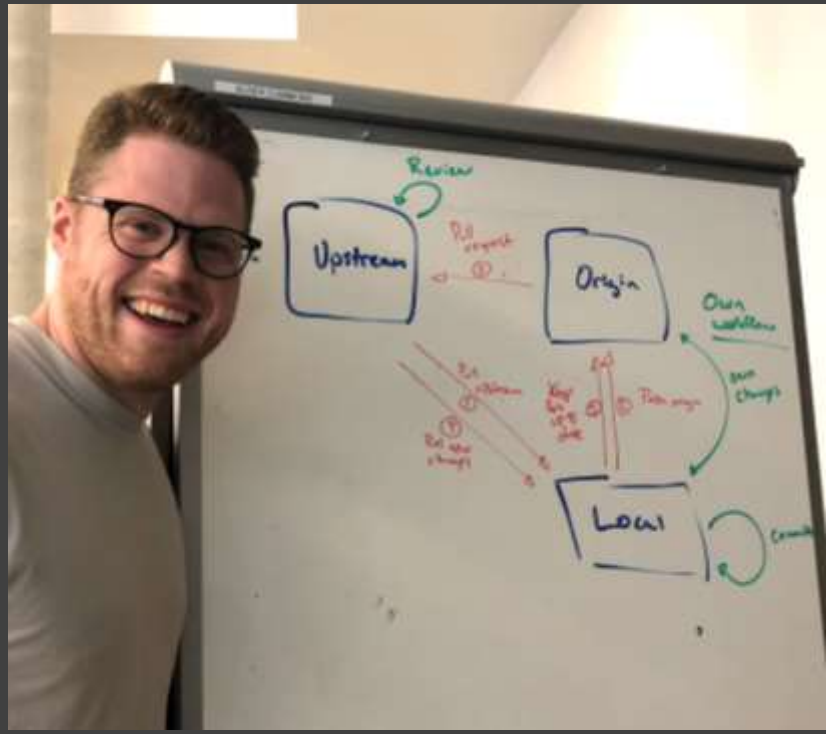

https://the-turing-way.netlify.app/collaboration/github-novice.html
https://the-turing-way.netlify.com/reproducible-research/vcs.html
https://neurohackademy.org

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How to get better at co-creation?

- Document requests for input in issues, and decisions somewhere easy to find.
- Be clear about communication channels, “don’t make decisions in the kitchen”.
- Plan for misunderstandings: have a code of conduct and an enforcement plan.

https://the-turing-way.netlify.app/collaboration/maintain-review
https://the-turing-way.netlify.app/collaboration/new-community

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Teon Brooks, https://teonbrooks.com

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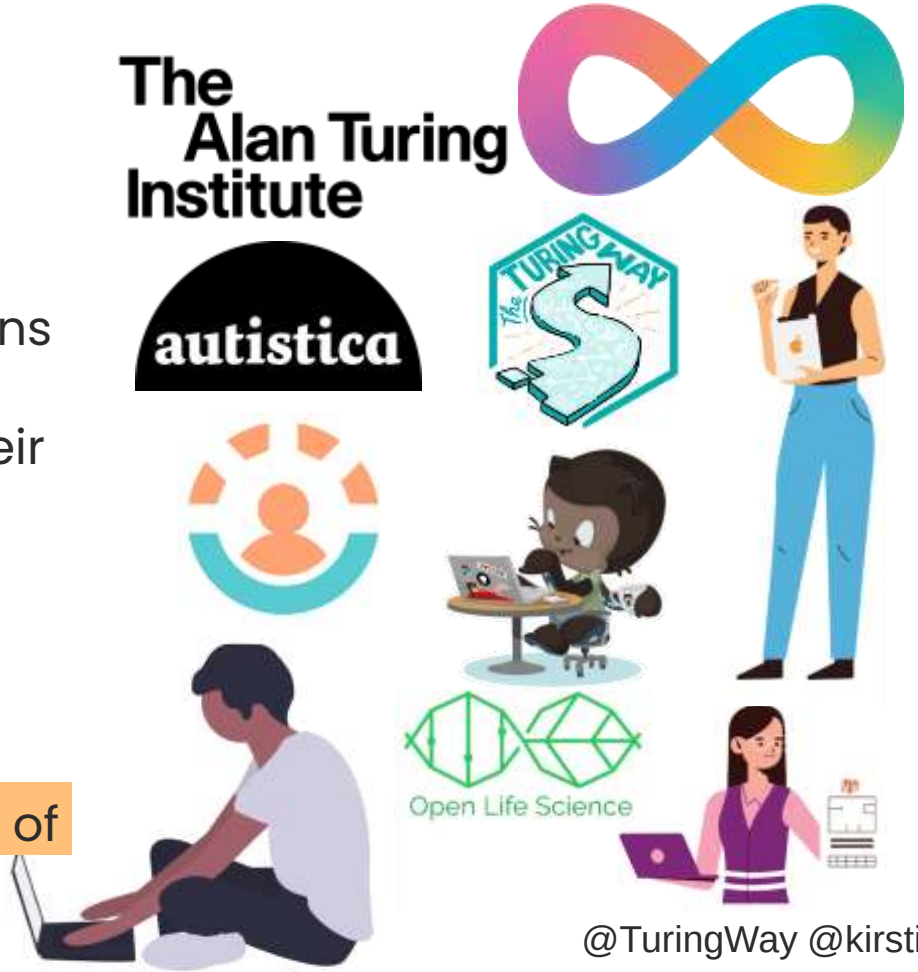
About AutSPACEs

A **research collaboration** between The Turing, Autistica, & Open Humans

A **community** of autistic people, their supporters, researchers and open source developers

A **citizen science** platform where people can share their experiences of sensory processing.



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https://doi.org/10.5281/zenodo.8164375
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AutSPACEs

Collect qualitative data to improve our understanding of sensory processing in people's daily lives

Share people's stories and adaptive techniques with others who have similar experiences

Educate neurotypical people to better support their friends, family and colleagues

Advise organisations on how they can design and adapt spaces to improve people's lives

https://doi.org/10.5281/zenodo.8164375

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Moderation Goals

James Scott

Susanna Fantoni

A welcoming, inclusive, and safe online space for autistic people

A space where autistic people can share challenging experiences

Decisions which balance the complex needs of the community

Aitkenhead et al, 2023, SocArXiv
https://doi.org/10.31235/osf.io/c2xe7

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How to build more useful outputs?

- Consider identity and positionality.
- Consider power and privilege.
- Consider intersectionality.
- Consider your incentives.

Fairness to all under capitalism may not be achievable. Make the compromise with open eyes.

https://the-turing-way.netlify.app/ethical-research/self-reflection

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Wilkinson, et al; The FAIR Guiding Principles for scientific data management and stewardship. https://doi.org/10.1038/sdata.2016.18

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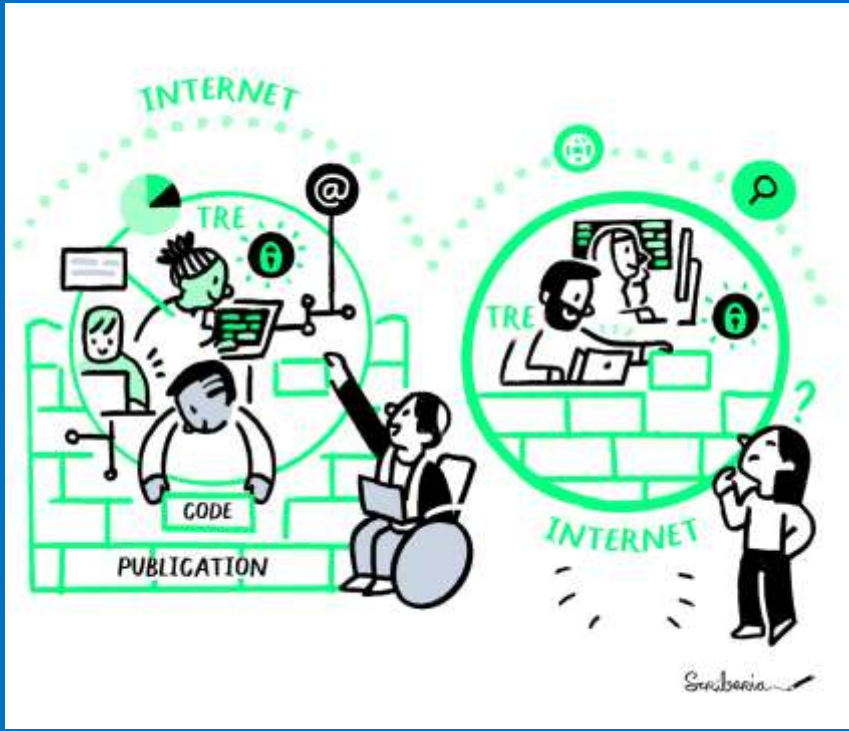
How to code in the open with sensitive data?

- Make the metadata open.
- Consider sharing “fake” data (simulated, synthetic or random).
- Share pathways to getting access to the data.
- Make the code easy to run on a local machine.



https://the-turing-way.netlify.app/reproducible-research/rdm

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Please join us in The Turing Way!

- Book: https://the-turing-way.netlify.com
- Newsletter: https://tinyletter.com/TuringWay
- GitHub: https://github.com/alan-turing-institute/the-turing-way
- Slack: https://tinyurl.com/jointuringwayslack
- Collaboration cafes on the 1st and 3rd Wednesday of each month. Next one on 6 December, 3pm – 5pm UTC.
- Original artwork by Scriberia: https://doi.org/10.5281/zenodo.3332807
- This work was supported by The UKRI Strategic Priorities Fund under the EPSRC Grant EP/T001569/1, particularly the "Tools, Practices and Systems" theme within that grant, and by The Alan Turing Institute under the EPSRC grant EP/N510129/1.

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- **GC Research Ethics Manager**: Victoria Kwan
- **Research Application Managers**: Hari Sood, Shakir Laher, Kalle Westerling, Sophie Arana & Francisco Gomez Medina
- **Programme management**: Arielle Bennett, Dave Chapman, Davide Sarmiento Perez, Batool Almarzouq, Alexandra Araujo Alvarez, Sydney Ambrose
- **Research associates and fellows**: Georgia Aitkenhead, Giulia Tomba, Priscilla Canizares

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WALKING PEOPLE THROUGH THE BASICS
TOOLS
NETWORKING
SHARING BEST PRACTICE
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FULL OF OPPORTUNITIES
HELPING PEOPLE GROW
OUR COMMUNITY
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