

# The Alan Turing Institute

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## The Turing Way: *Changing research culture through open collaboration*

FOSDEM23 – 4 February 2023

Anne Lee Steele  
she/her



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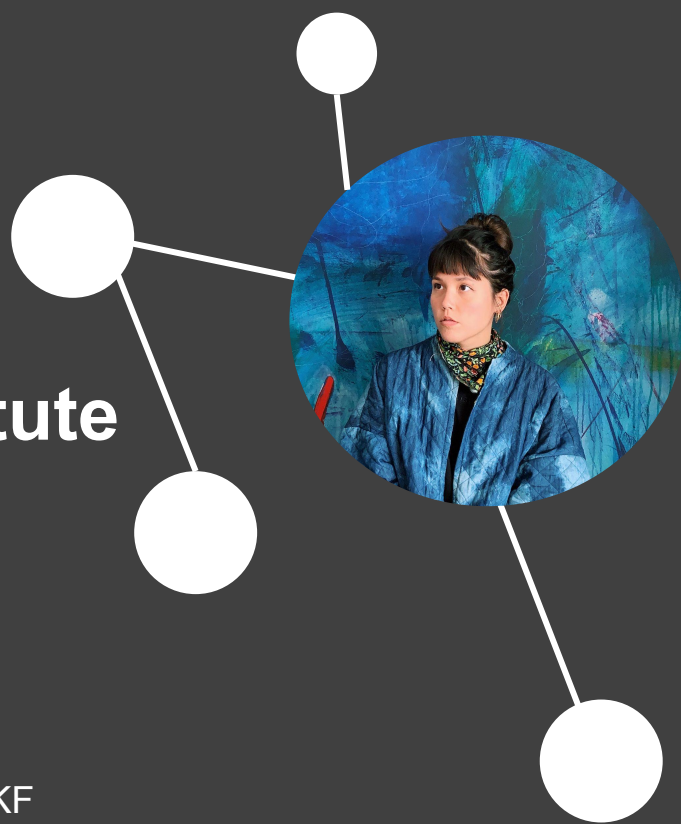
About me

# Community Manager of *The Turing Way*, Alan Turing Institute

Member of 28 Member Core Team

Other F/OSS-related things:

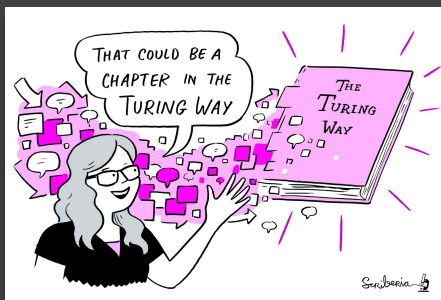
- (Digital) Anthropologist (BA, MA) by training
- Fellow at Internet Society
- Ethnographer of OpenStreetMap community (2+ years)
- Ex-Frictionless Data Reproducible Research Fellow at OKF



# The Turing Way

## An Open Source guide on Data Science & Open Research

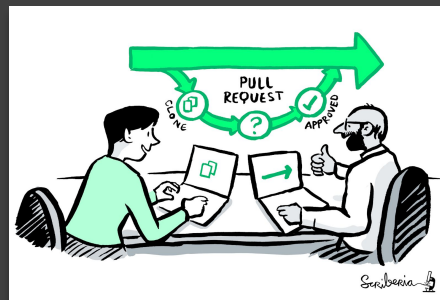
We involve and support a diverse community to make data science reproducible, ethical, collaborative and inclusive for everyone



A book



A global community



An open-source project



A culture of collaboration

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# The Alan Turing Institute

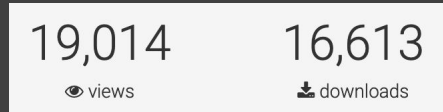
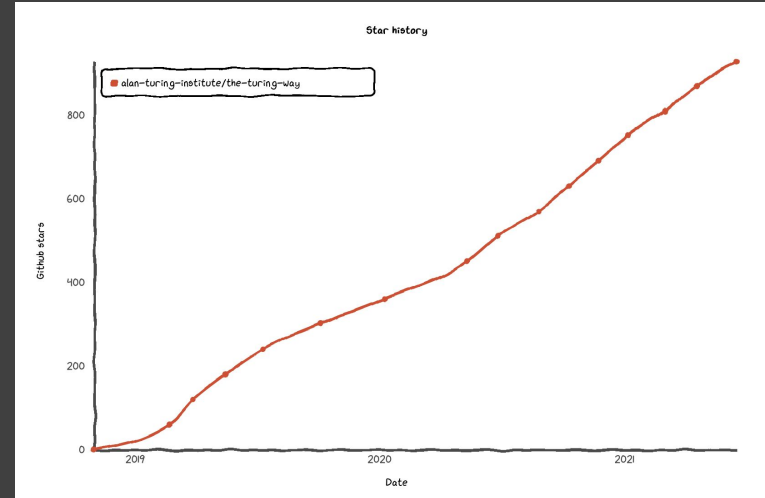
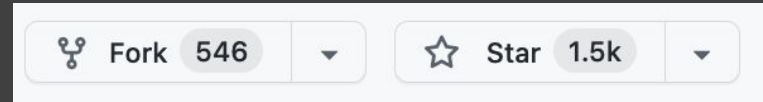
The UK's national  
institute for data science  
and artificial intelligence





# Project and Community Growth

- ~4 years, >250 pages
- Community resources, events, guidance, templates, training
- 420+ direct GitHub contributors and thousands of users



<https://zenodo.org/record/3332807>



the-turing-way.netlify.app/, @aleesteele, @turingway, CC-BY 4.0, DOI: 10.5281/zenodo.7604080

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## Notable impacts beyond the project

Resources are being used by learners, educators, community builders, policy makers and researchers globally

- Awarded Open UK award in category of “Belonging” (2022)
- Featured in Goldacre Review (2022)
- Highly commended project in The Hidden REF Competition (2022)
- Emerging Technology Charter by Mayor of London (policy) & EU 2020 (report)
- CodeRefinery and Library Carpentries (training materials)
- Cited by 50+ peer-reviewed articles & 10+ open source projects

# Reproducibility Crisis

- Many scientific studies are difficult or impossible to reproduce
- Often mentioned in regards to psychology and medicine but is pervasive across many scientific fields
- Range of causes: questionable research practices, 'publish or perish' culture, statistical issues
- Link with open science movement- push for openness and transparency

## Artificial Intelligence Confronts a 'Reproducibility' Crisis

Machine-learning systems are black boxes even to the researchers that build them. That makes it hard for others to assess the results.



Photo credit: Serg from the [Swarmrobot.org](#) project via [Wikipedia](#)

## Data Science's Reproducibility Crisis

What is Reproducibility in Data Science and Why Should We Care?

Hot off the heels of Joelle Pineau's brilliant talk on [Reproducibility, Reusability, and Robustness in Deep Reinforcement Learning](#) at this year's [International Conference on Learning Representations \(ICLR\)](#), it seems like everyone in the data science world (or at least in the data science research world) is talking about replicability and reproducibility.

This problem isn't unique to data science. In fact, according to 2016 survey by *Nature* magazine, [most scientific fields are facing a reproducibility crisis](#).

Ironically, according to survey respondents, one of the most important factors



Molecular Brain

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[Editorial](#) | [Open Access](#) | [Published: 21 February 20](#)

## No raw data, no science: another possible source of the reproducibility crisis

[Tsuyoshi Miyakawa](#) 

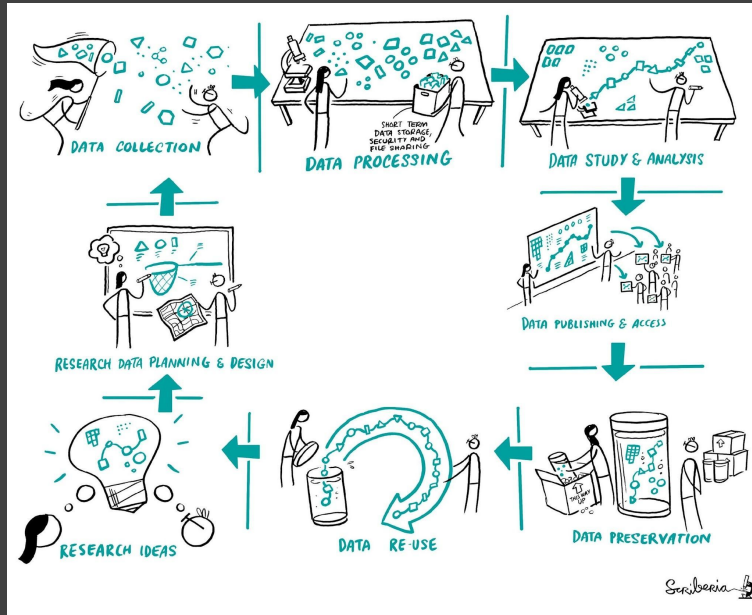
[Molecular Brain](#) **13**, Article number: 24 (2020) | [Cite this article](#)

**50k** Accesses | **63** Citations | **2240** Altmetric | [Metrics](#)

### Abstract

A reproducibility crisis is a situation where many scientific studies cannot be reproduced.

# Reproducibility



		Data	
		Same	Different
Analysis	Same	Reproducible	Replicable
	Different	Robust	Generalisable

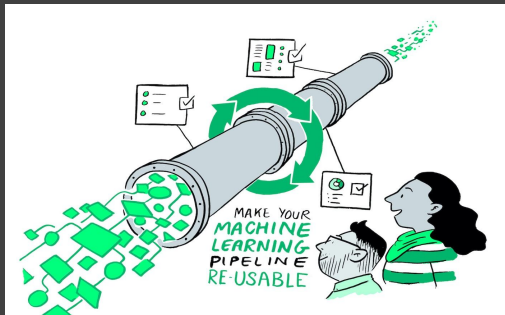
# Guide for Reproducible Research

## Guide for Reproducible Research

- Overview
- Open Research
- Version Control
- Licensing
- Research Data Management
- Reproducible Environments
- BinderHub
- Code quality
- Code Testing
- Code Reviewing Process
- Continuous Integration
- Reproducible Research with Make
- Research Compendia
- Credit for Reproducible Research
- Risk Assessment
- Case Studies



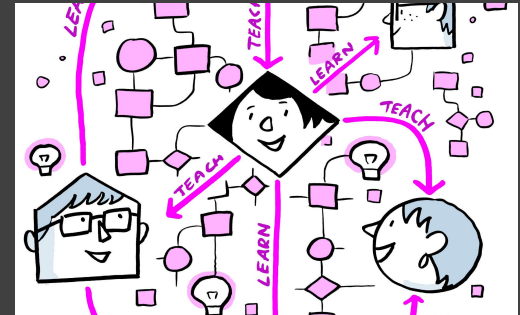
# The Turing Way Guides



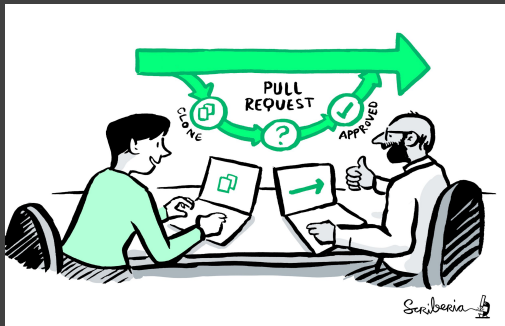
Reproducibility



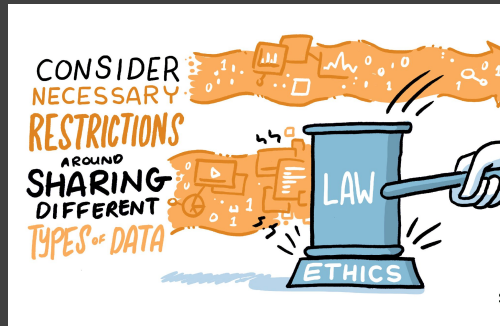
Project design



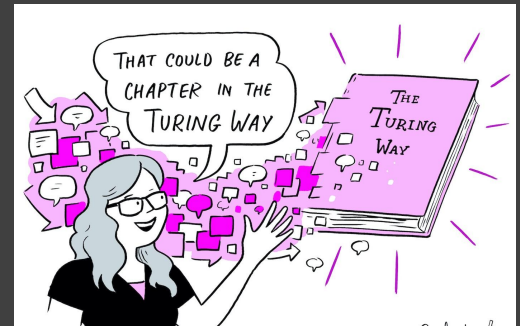
Communication



Collaboration



Ethical research



Community handbook



# From Reproducibility to Open Research





# From Open Research to Changing Culture



Translation, localisation  
& internationalisation



Maintenance &  
community care



Supporting research  
infrastructure & open source



Mentoring researchers at  
every stage



Enabling accessible  
practices



Advocating for  
culture change

# Acknowledging all contributions



## All Contributors

### Recognize All Contributors

Including those that don't push code

to recognise everyone who contributes



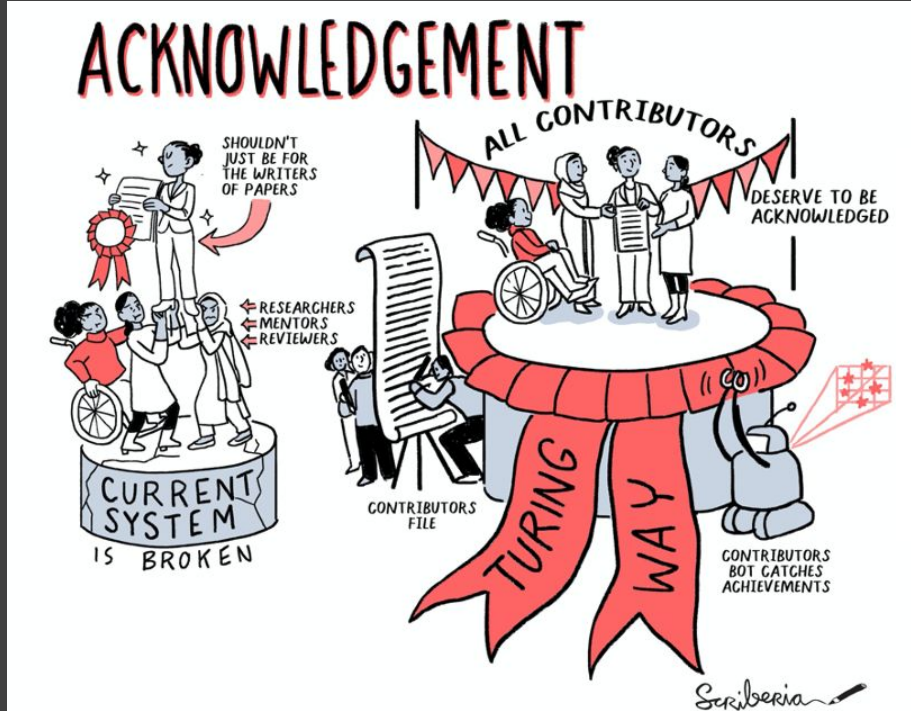
Kirstie Whitak



Malvika Sharan



💬	Answering questions (on glitter, GitHub, or in person)
🐛	Bug reports
📝	Blogposts
💻	Code
📖	Documentation and specification
🎨	Design
💡	Examples
📅	Event Organizers
💰	Financial Support
🔍	Funding/Grant Finders
💡	Ideas & Planning
🏠	Infrastructure (Hosting, Build-Tools, etc)
🔧	Plugin/utility libraries
🔄	Reviewed Pull Requests
🔧	Tools
🌐	Translation
⚠️	Tests
✅	Tutorials
🗣️	Talks
📺	Videos



# Mentored Contribution



Collaboration Cafes and  
weekly coworking

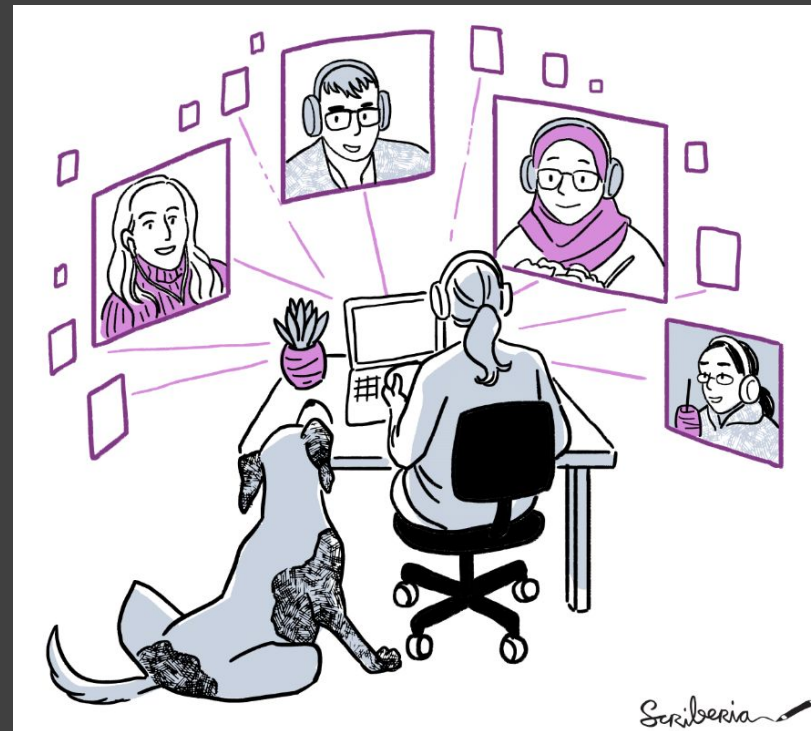


Book Dash Events  
(in-person & virtual)

# Connect with us online

- Twitter: [twitter.com/turingway](https://twitter.com/turingway)
- Fosstodon: <https://fosstodon.org/@turingway>
- Newsletter: [tinyletter.com/TuringWay](https://tinyletter.com/TuringWay)
- Slack: [tinyurl.com/jointuringwayslack](https://tinyurl.com/jointuringwayslack)
- Contribute to :  
[github.com/alan-turing-institute/the-turing-way](https://github.com/alan-turing-institute/the-turing-way)

[bit.ly/turingway](https://bit.ly/turingway)

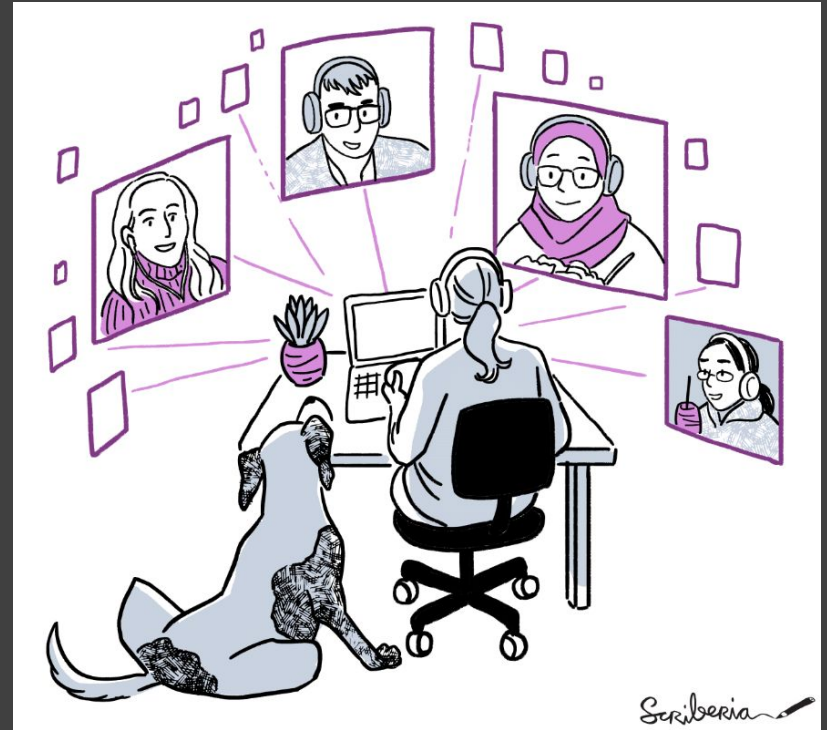




# Join a community event

- *Collaboration Cafes*
  - 1<sup>st</sup> & 3<sup>rd</sup> Wednesdays (14:00 UTC)
- *Coworking Calls*
  - Mondays (10:00 UTC)
- *Community Calls*
  - Fridays, monthly (17:00 UTC)
- *More ways to connect*

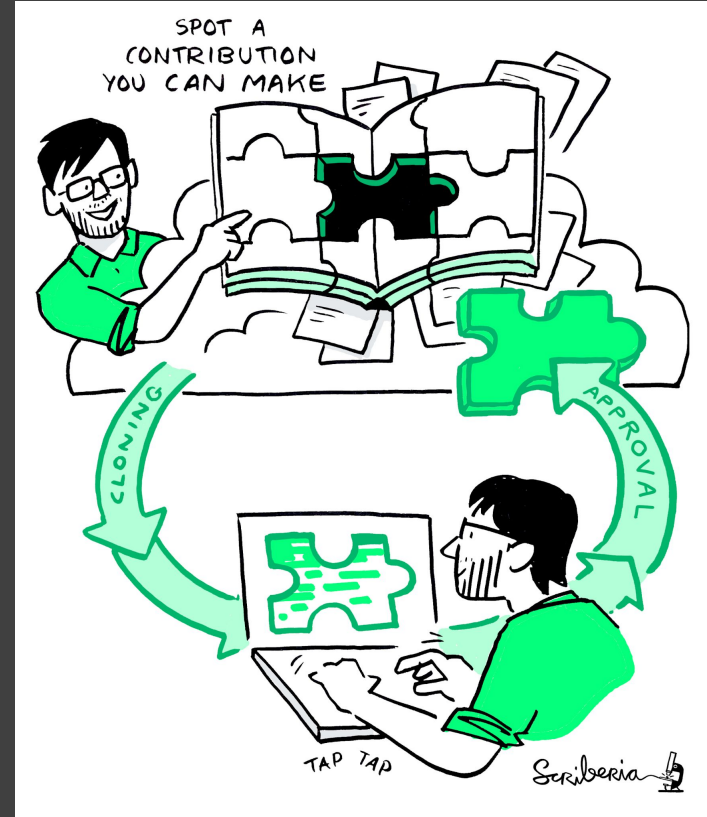
[bit.ly/turingway](https://bit.ly/turingway)

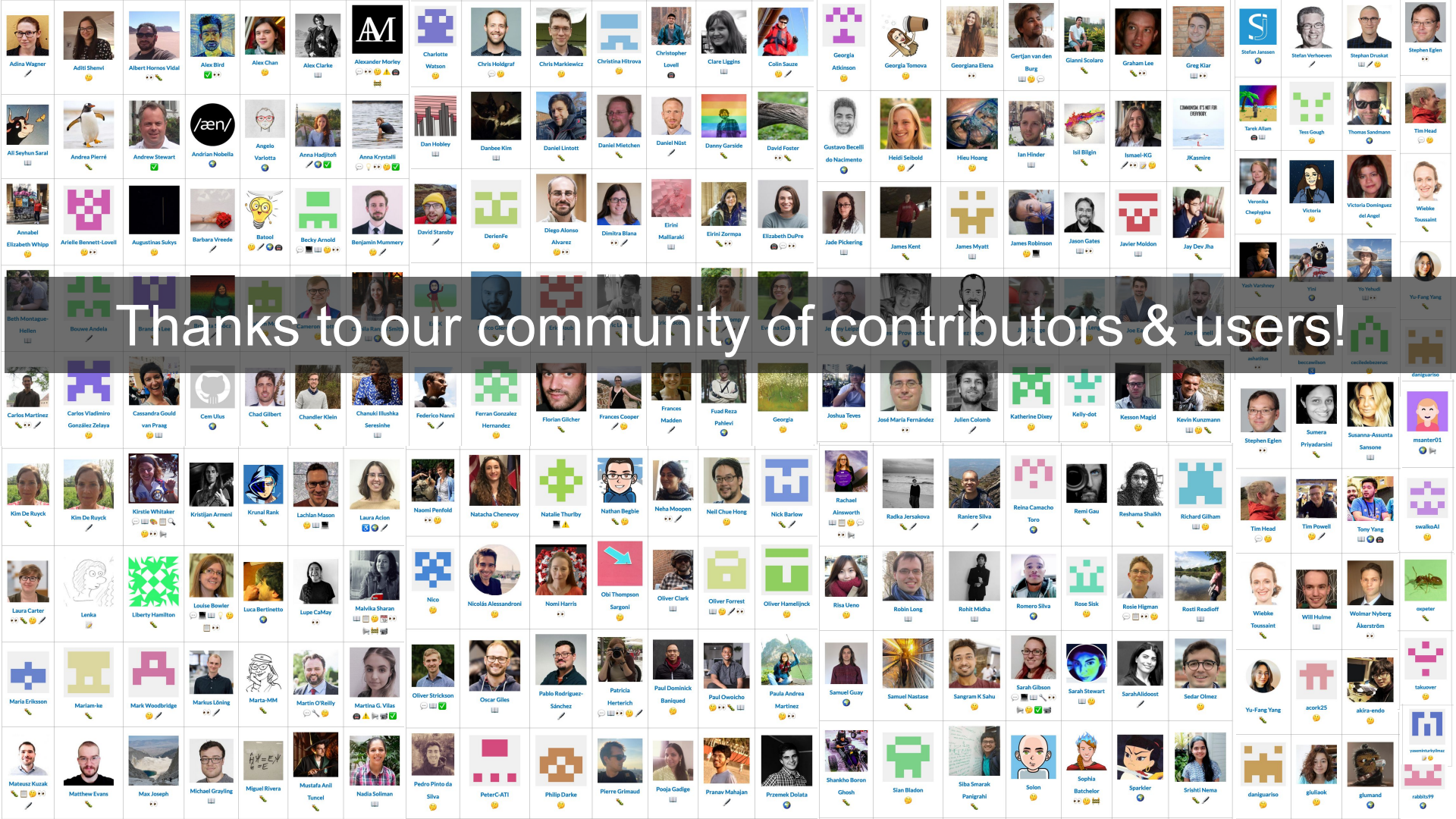


# Meeting you where you are!

- i. Join the community
- ii. Learn a new skill
- iii. Share your skills
- iv. Collaborate with others
- v. Mentor others' contributions
- vi. Represent this community

*We value your participation!*







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# The Alan Turing Institute

## Acknowledgements:

The Turing Way team, Kirstie Whitaker, Malvika Sharan & The Turing Way Core Team

*The Turing Way* community, contributors & collaborators

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