VISION رؤية 2030
المملكة العربية السعودية
KINGDOM OF SAUDI ARABIA

Danish Diabetes Academy

The Turing Way : Four Selfish reasons to work openly

By Batool Almarzouq (She/her)
Computational Biologist @batool664

King Abdullah International Medical Research Center

OSCSA
Open Science Community Saudi Arabia

The title is inspired from Markowetz, F. Five selfish reasons to work reproducibly. Genome Biol 16, 274 (2015). https://doi.org/10.1186/s13059-015-0850-7

Batool Almarzouq

Post-doc in KAIMRC

Community Lead

Committee member + Organisers

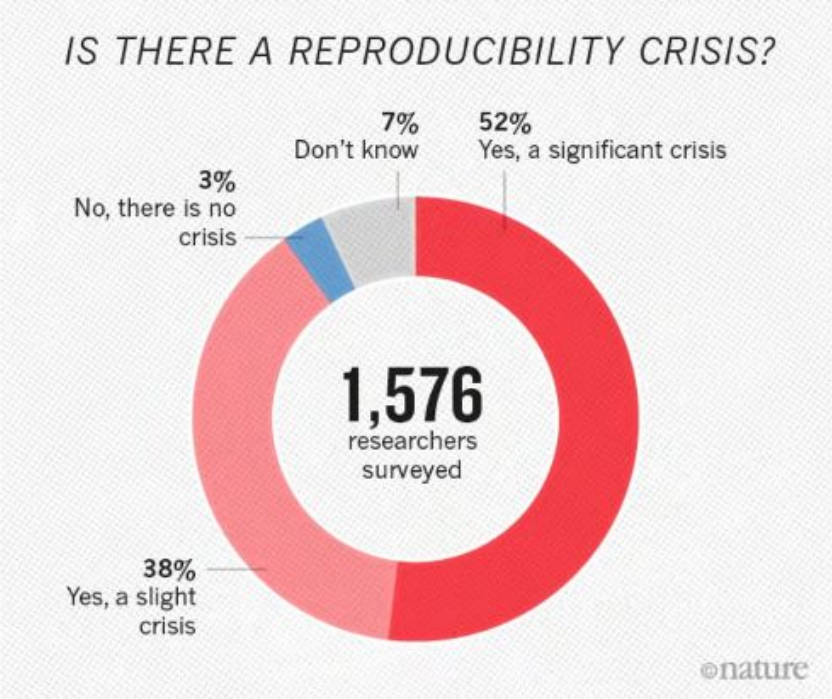
Honorary research Fellow

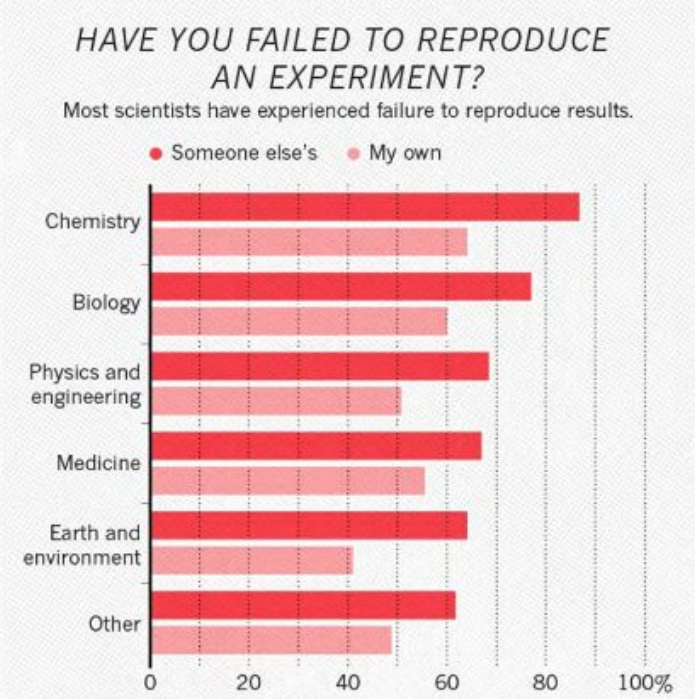
Core contributor

I will talk about ..

- Why should we care about **Open Science**?
- What is *The Turing Way Community*?
- **Four reasons** why you might want to adopt open Science practices in your research !
- **Tips** to get started now?

Why Open Science?





Baker, M. 1,500 scientists lift the lid on reproducibility. Nature 533, 452–454 (2016). https://doi.org/10.1038/533452a

Why Open Science?


Popular Latest

The Atlantic

Only through November 30: Try subscriber newsletters for free

SCIENCE

Psychology's Replication Crisis Is Running Out of Excuses

Another big project has found that only half of studies can be repeated. And this time, the usual explanations fall flat.

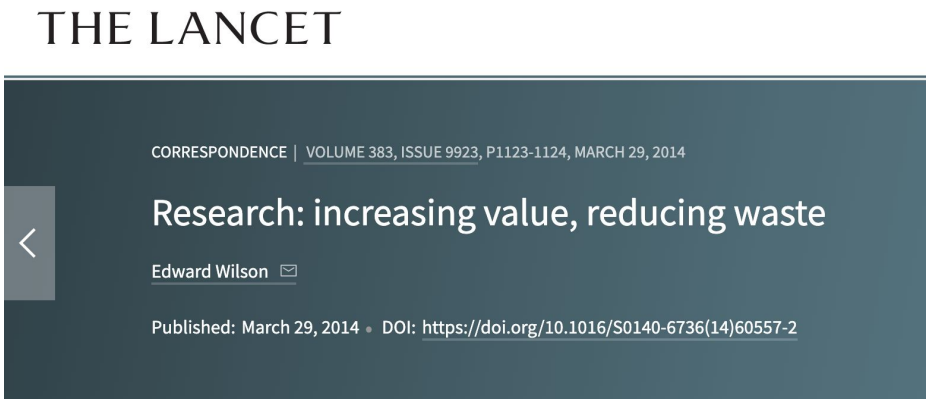
By Ed Yong


nature human behaviour

LETTERS

https://doi.org/10.1038/s41562-018-0399-z

Evaluating the replicability of social science experiments in *Nature* and *Science* between 2010 and 2015


THE LANCET

CORRESPONDENCE | VOLUME 383, ISSUE 9923, P1123-1124, MARCH 29, 2014

Research: increasing value, reducing waste

Edward Wilson

Published: March 29, 2014 • DOI: https://doi.org/10.1016/S0140-6736(14)60557-2

The $28 Billion a Year Research Reproducibility Crisis

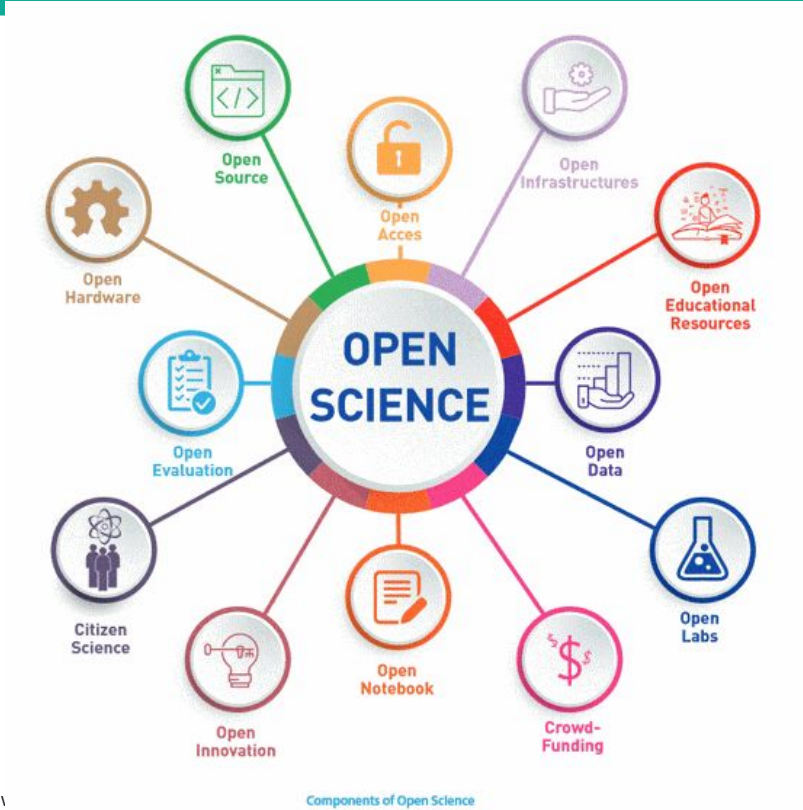
October 19, 2015

The biggest crisis in the future of healthcare has nothing to do with the kind of issues that politicians talk about, such as payment systems and accessibility. Since cost-effective solutions to tragic and costly conditions like heart disease, dementia, diabetes, and cancer depend on bringing to market new treatments that rely upon genomics, nanotechnology, and molecular biology, the *biggest* problem is that at least half of the research money we invest in them is wasted. How can this be? What are the implications? What are the solutions? We'll show you.

What is Open Science?

The picture was taken from the UNESCO Open Science brochure[lence]

What is Open Science?



Components of Open Science

The picture \

The Turing Way

An Open Source project, handbook, community & lots of collaboration!

It supports a **diverse community** to make **data science reproducible**, ethical, collaborative and **inclusive for everyone**.

The Turing Way

Search this book...

Welcome

Guide for Reproducible Research

Guide for Project Design

Guide for Communication

Guide for Collaboration

Guide for Ethical Research

Community Handbook

Afterword

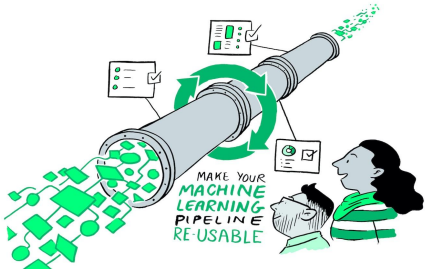
The Turing Way is an open source community-driven guide to reproducible, ethical, inclusive and collaborative data science.

Our goal is to provide all the information that data scientists in academia, industry, government and the third sector need at the start of their projects to ensure that they are easy to reproduce and reuse at the end.

The book started as a guide for reproducibility, covering version control, testing, and continuous integration. However, technical skills are just one aspect of making data science research "open for all".

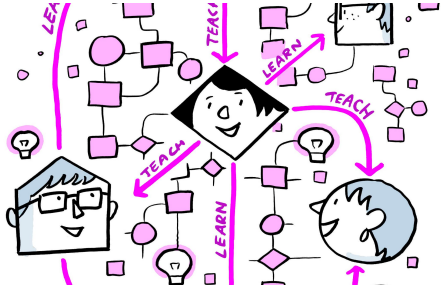
In February 2020, *The Turing Way* expanded to a series of books covering reproducible research, project design, communication, collaboration, and ethical research.

The Turing Way Guides

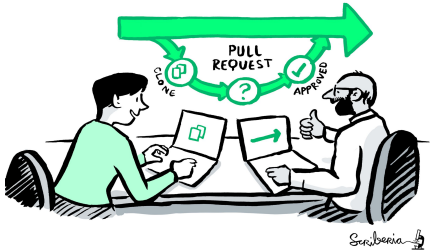


Reproducibility

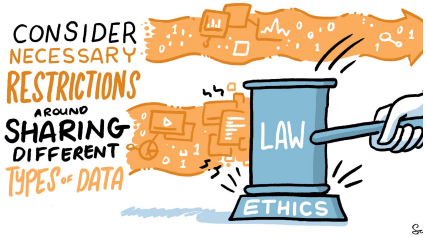
Project Design



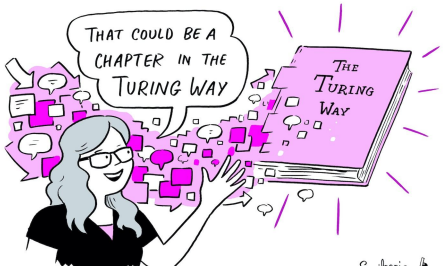
Communication



Collaboration

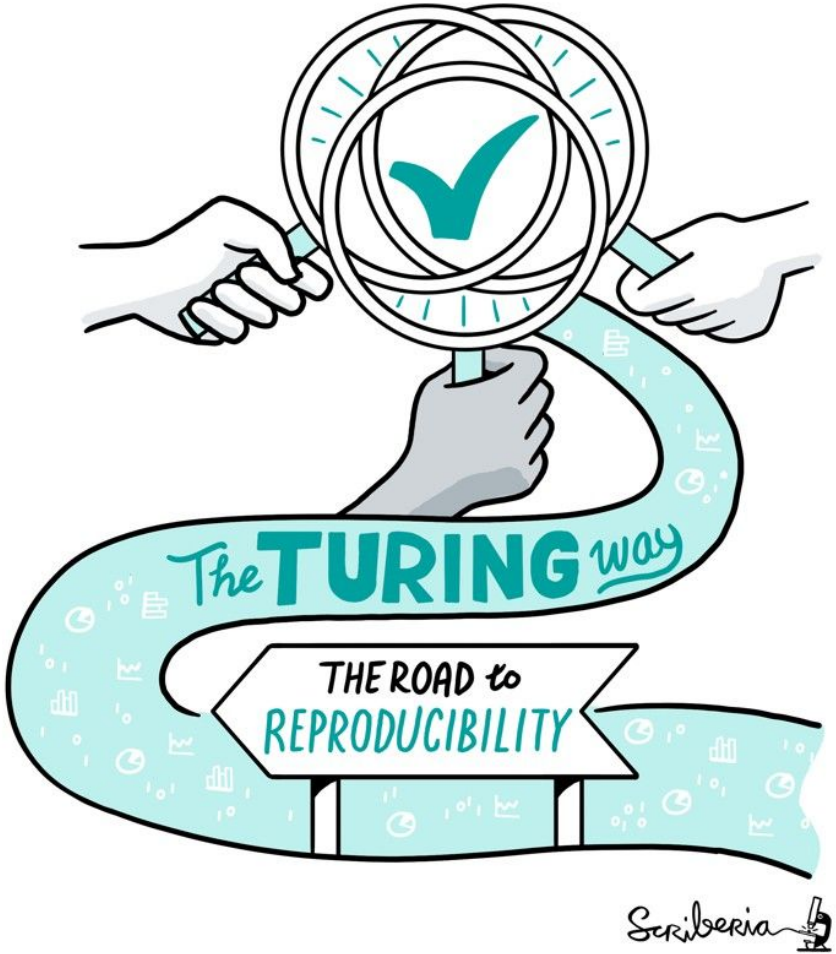


Ethical Research

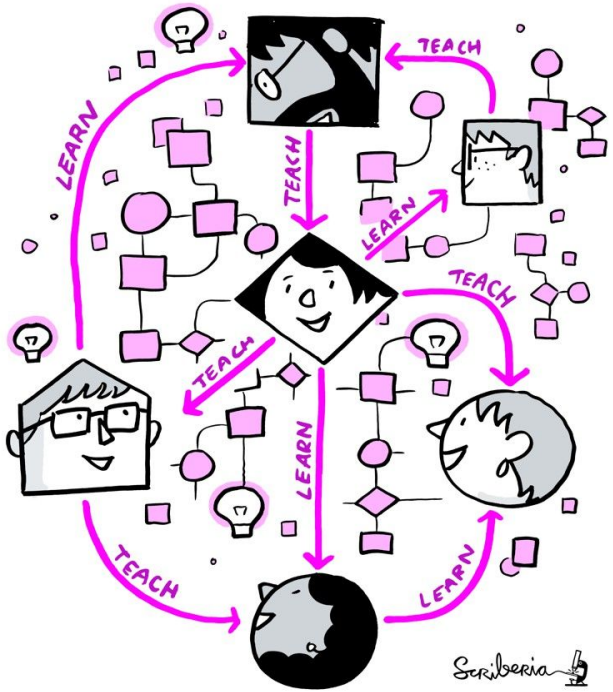


Community Handbook

What is it for me?



1st Reason

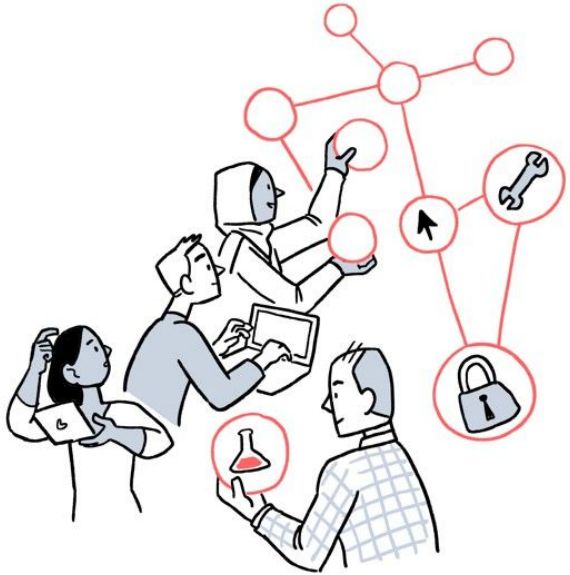


Working openly **increase** your **visibility & opportunities** for acknowledgment, collaboration, and advancement

More in "Open Research" Sub-chapter in the TW

2nd Reason

Open science **grants you access** to new data and applications



More in "Added Advantages" Sub-chapter in the TW

Scriberia

3rd Reason

Working Openly make **reviewing your work easier**

More in "Sharing Your Research Work" Sub-chapter in the TW

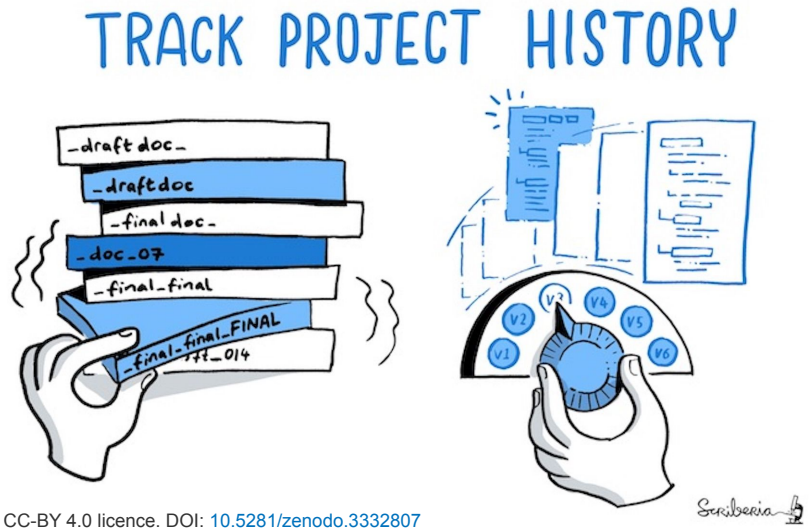
4th Reason

Working Openly **save you time**!

More in "Added Advantages" Sub-chapter in the TW

Where to start?

Tip 1: Use any type of **version control**!



Where to start?

Tip 1: Use any type of **version control**!

Reference: [Library Carpentry: Introduction to Git]

- Version control allows us to **define formalized ways** we can work together
- It allow us to have a **robust and rigorous log** of changes to a file, without renaming files (v1, v2, *final_copy*)
- Allow us to quickly **undo a set of changes**
- Help you **understand the code** and debug
- Backup

Where to start?

Git is one of the most widely used version control systems in the world. It is a free, open source tool

GitHub on the other hand is a **popular website for hosting** and sharing Git repositories remotely. It offers a web interface!

Reference: Library Carpentry: Introduction to Git

Batool Almarzouq

BatoolMM

Ph.D. in Biochemistry. Experience in cancer bioinformatics, RNA-Seq, network biology, pathway enrichment, and integrated –omics analyses, Docker, HPC (She/her).

Edit profile

45 followers · **89** following · ☆ **371**

University of Liverpool

https://batool-almarzouq.netlify.app/

@batool664

Highlights

☆ PRO

Overview | Repositories 66 | Projects | Packages

R ☆ 8 Jupyter Notebook ☆ 4

PlantAI Public

This is a simple application which use a convolutional neural network (CNN) to characterise the plants in my home and help in taking care of them.

Jupyter Notebook ☆ 4

Collaborating-on-Open-Data-Science-Projects

This is the materials for a workshop titled "Coll… Open Data Science Projects", part of WiDS202…

HTML

An-Open-Science-Approach-to-Machine-Learning Public

"An Open Science Approach to Machine Learning in Medical and Biological Research talk" in Saudi Data community

JavaScript

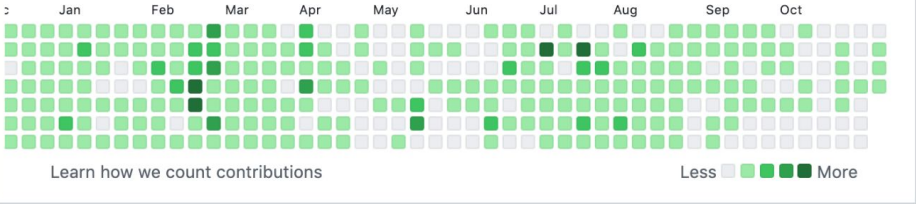
EVI1

Study the phosphorylation of EVI1 through MD

Python ☆ 2

2,790 contributions in the last year

Contribution settings



Where to start?

Tip 2: Join a **community of practice**!

R Ladies

THE CARPENTRIES

And many more!!!

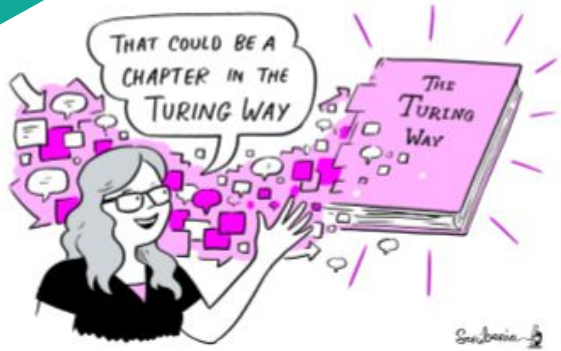
The Turing Way project illustration by Scriberia. Used under a CC-BY 4.0 licence. DOI: 10.5281/zenodo.3332807

Where to start?

Book:
the-turing-way.netlify.app

GitHub:
github.com/alan-turing-institute/the-turing-way

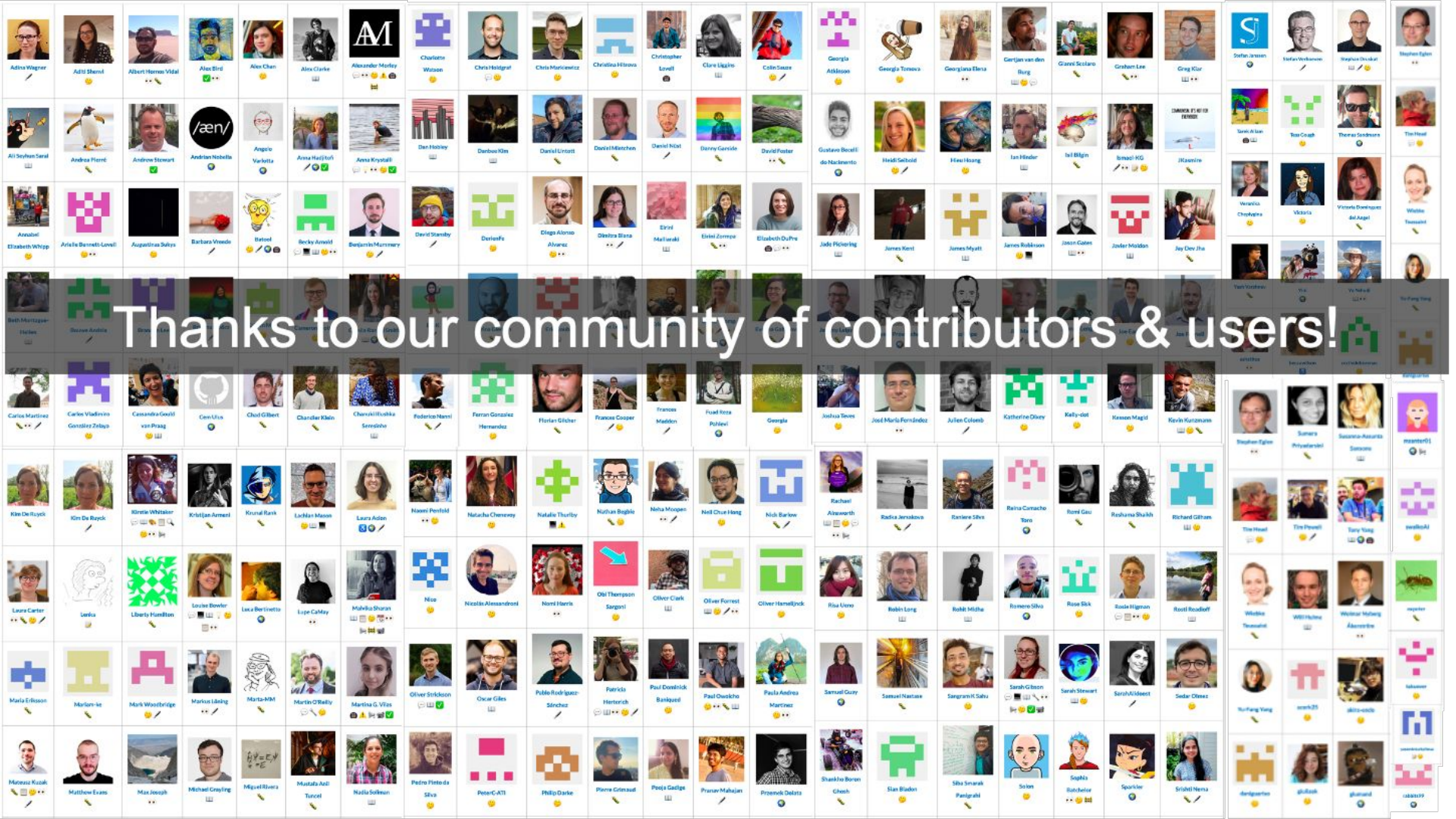
A Book

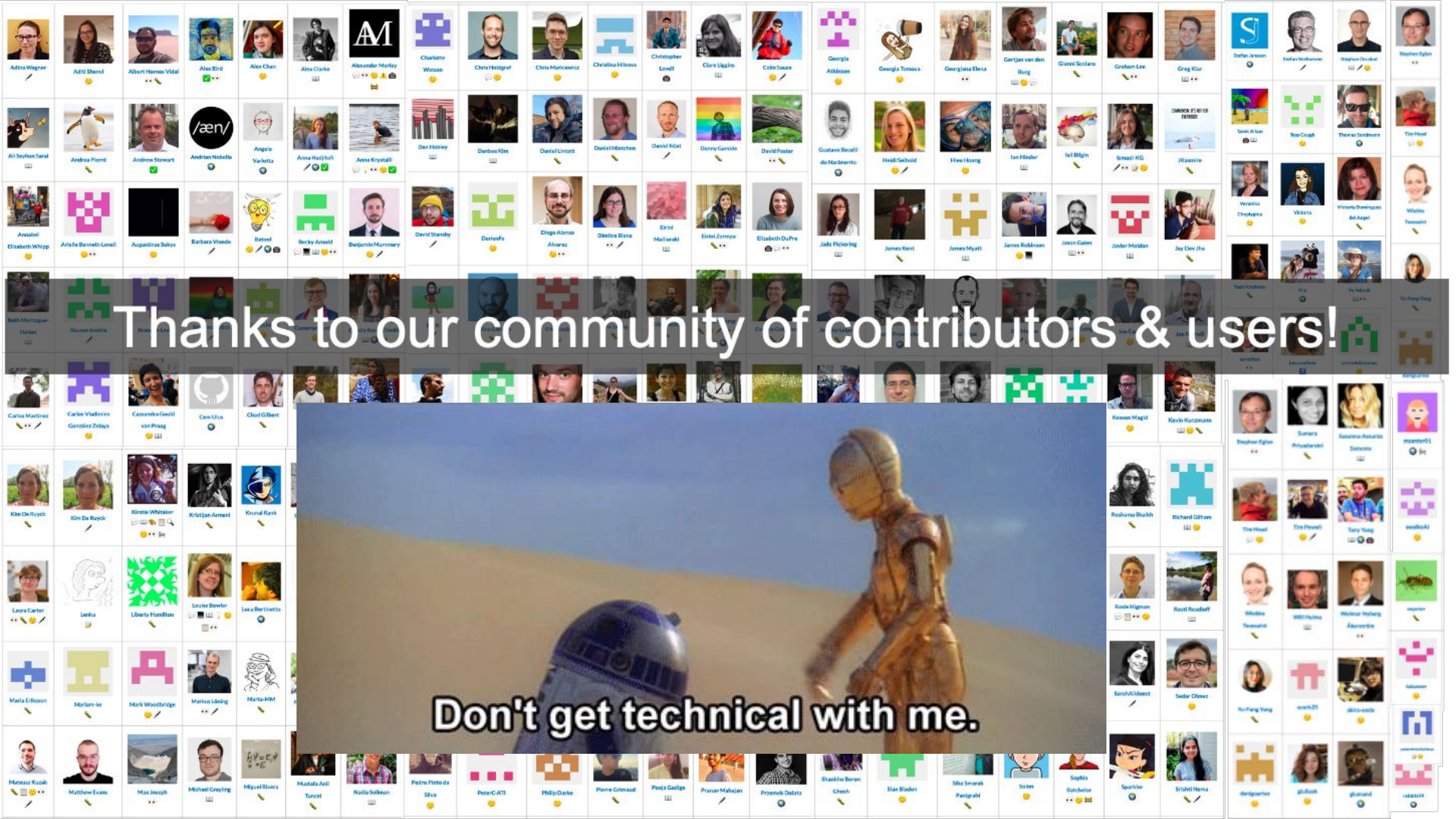


A Community

An Open Source Project

A Culture of Collaboration


Thanks to our community of contributors & users!


Thanks to our community of contributors & users!
Don't get technical with me.

Meeting where you are!

I. Connect with others

II. Learn a new skill

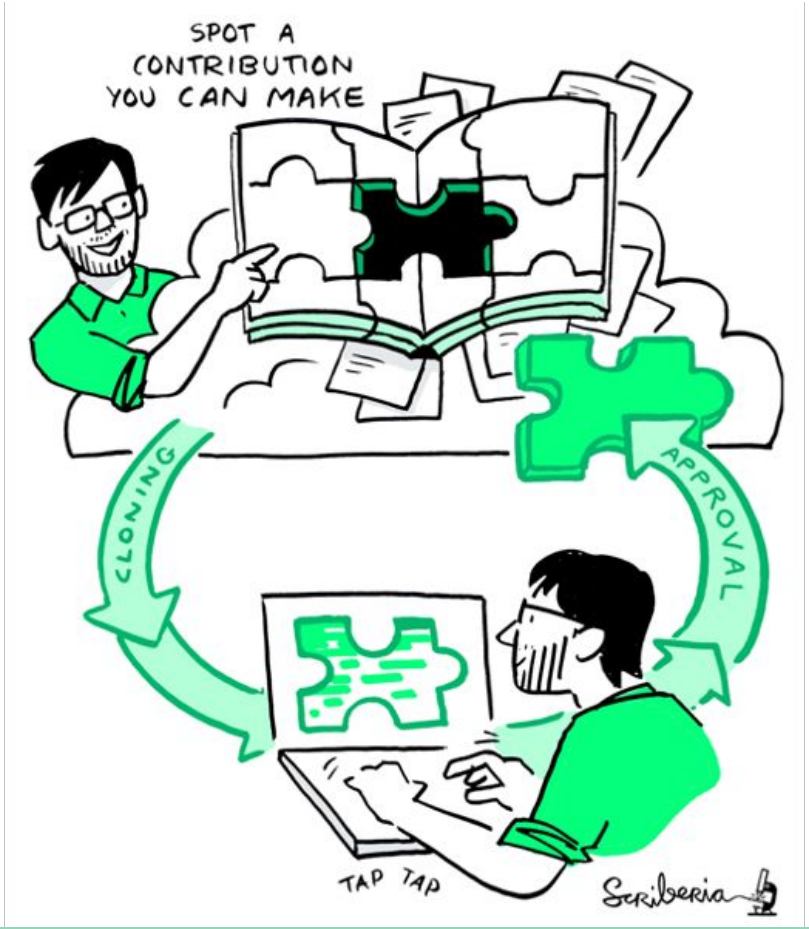
III. Share your skills

IV. Discuss ideas & collaborate

V. Mentor others' contributions

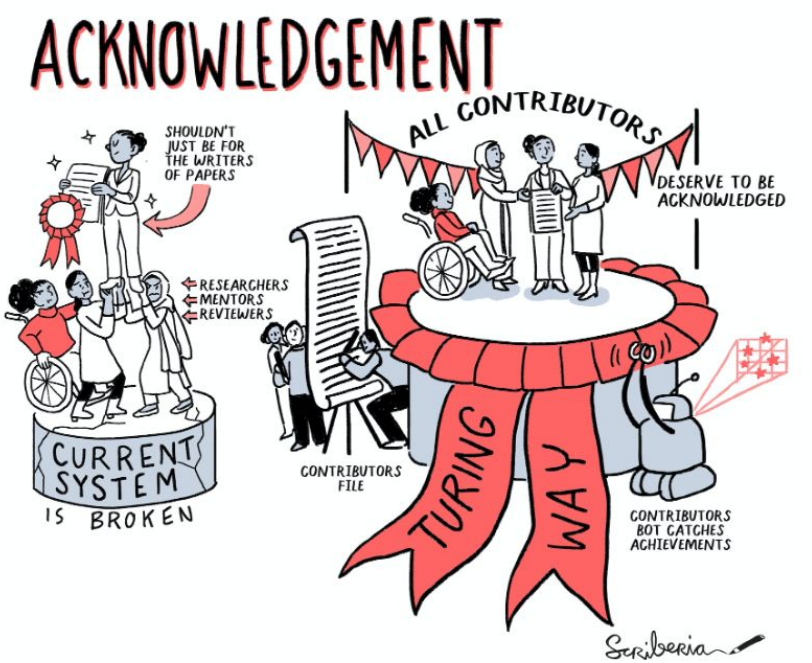
VI. Represent this community

We value your participation!



Acknowledging your work

- All-contributors bot to add your name to the README.md
- Adding your personal highlights and impact story in contributors.md
- Published on the afterword of online Contributors Record



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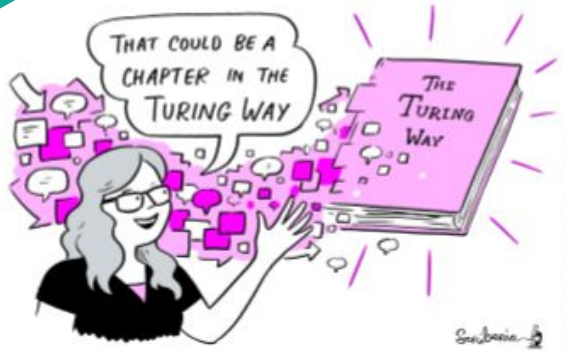


A Community

An Open Source Project

A Culture of Collaboration

Open Source Project

- Everyone can freely read, reuse, distribute, modify and develop.
- The project belongs to *The Turing Way* community.
- Built on open source infrastructure:

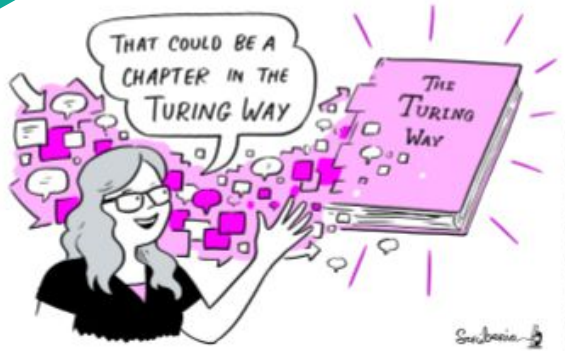
  Git, Jupyter Book, Binder, Nelify: the-turing-way.netlify.app/welcome

Where to start?

Book:
the-turing-way.netlify.app

GitHub:
github.com/alan-turing-institute/the-turing-way

A Book



A Community

An Open Source Project

A Culture of Collaboration

Every contribution counts

The Turing Way fosters a culture of collaboration

Open Leadership principles

Pathways for Collaboration

Develop & share

Maintain & improve

Share resources

Review and update

Make it global

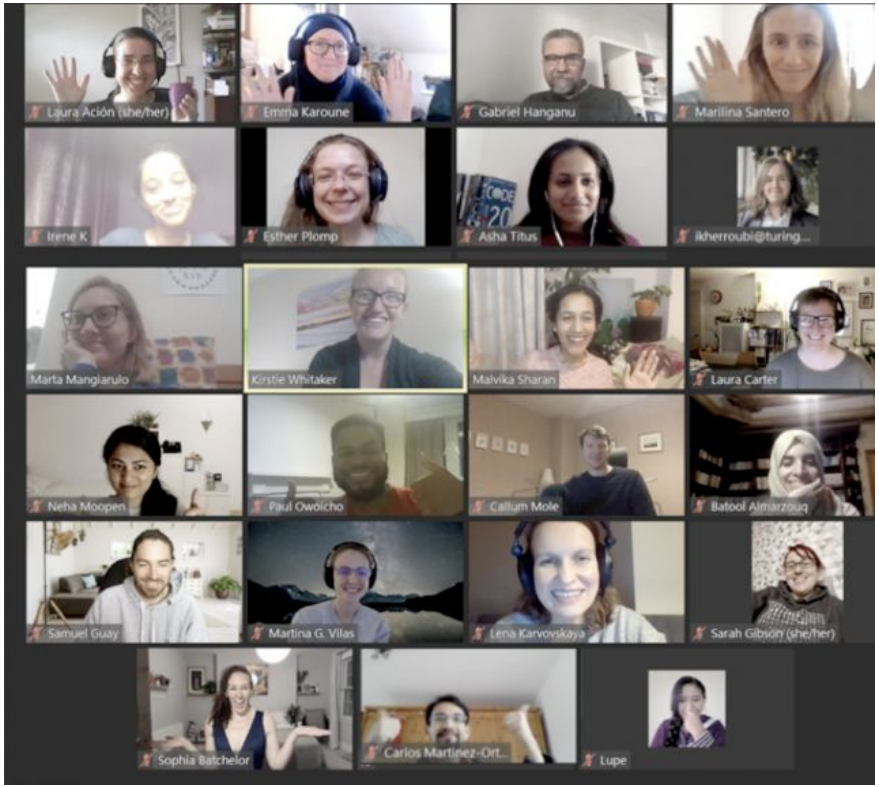
Share best practices

Bookdash Share-out

A book sprint is a method of creating a book collaboratively in an intense five days work

***Join us this <u>Friday</u> for** The Turing Way Community Share-out and Contributor Celebration*

- Open/Free to everyone
- *Two Sessions: 11:00 am - 17:00pm*



Conclusion

"Making research results openly available ***is not an afterthought*** *when the project is over, but, rather, it is an effective way of doing the research itself."*

Open Science by Design: Realizing a Vision for 21st Century Research. Washington, DC: The National Academies Press.https://doi.org/10.17226/25116.

Acknowledgment

Malvika Sharan, Co-lead, Senior Researcher

Kirstie Whitaker, Project Lead, Director

Mealle Salmon, R-Ladies Global Committee

Mai Alajaji, Associate Dean

All *The Turing Way* Community

Resources:

- How Open Science Helps Researchers Succeed

- Markowetz, F. Five selfish reasons to work reproducibly. Genome Biol 16, 274 (2015). https://doi.org/10.1186/s13059-015-0850-7

- Allen C, Mehler DMA (2019) Open science challenges, benefits and tips in early career and beyond. PLOS Biology 17(5): e3000246. https://doi.org/10.1371/journal.pbio.3000246