A quick tour of Git and Github
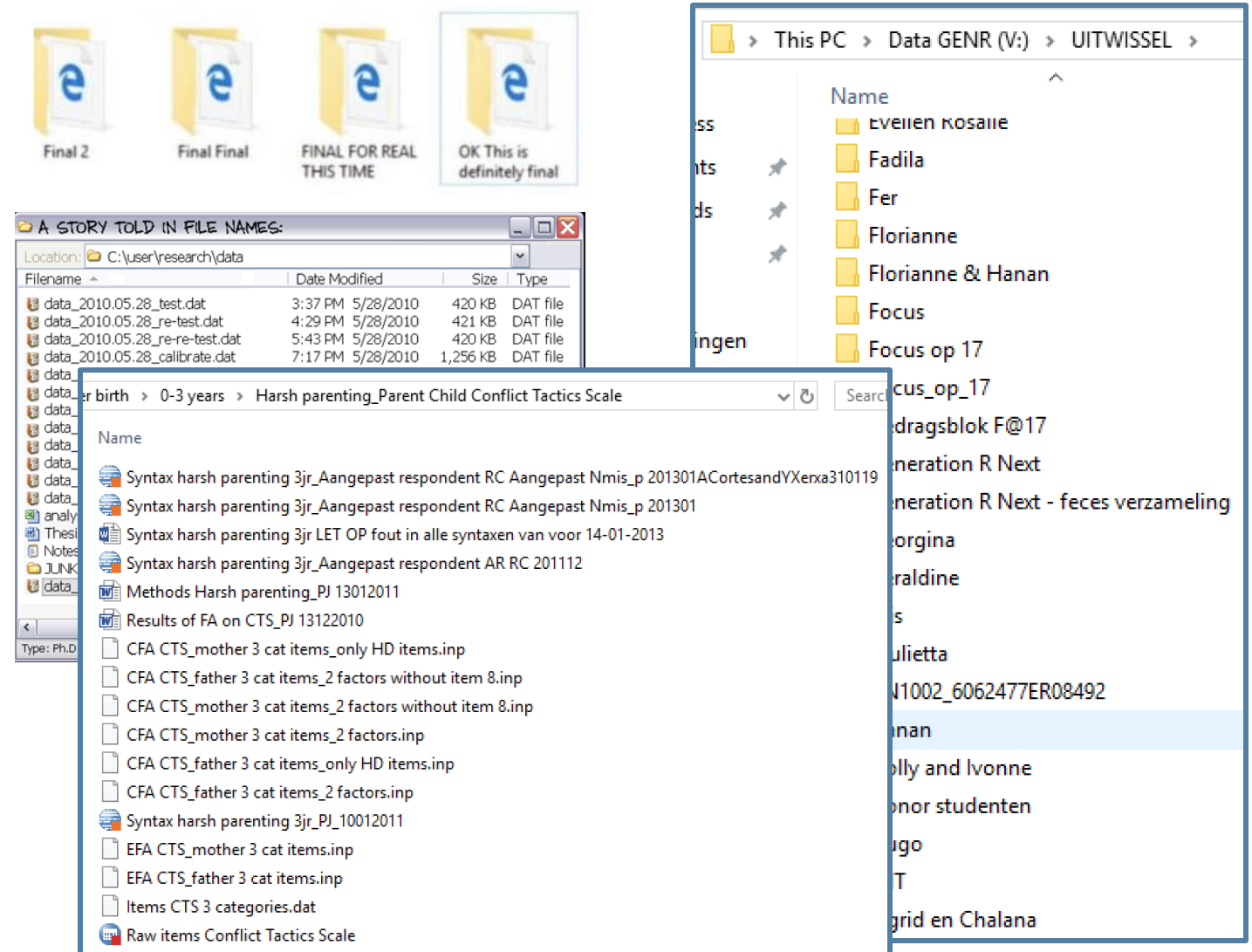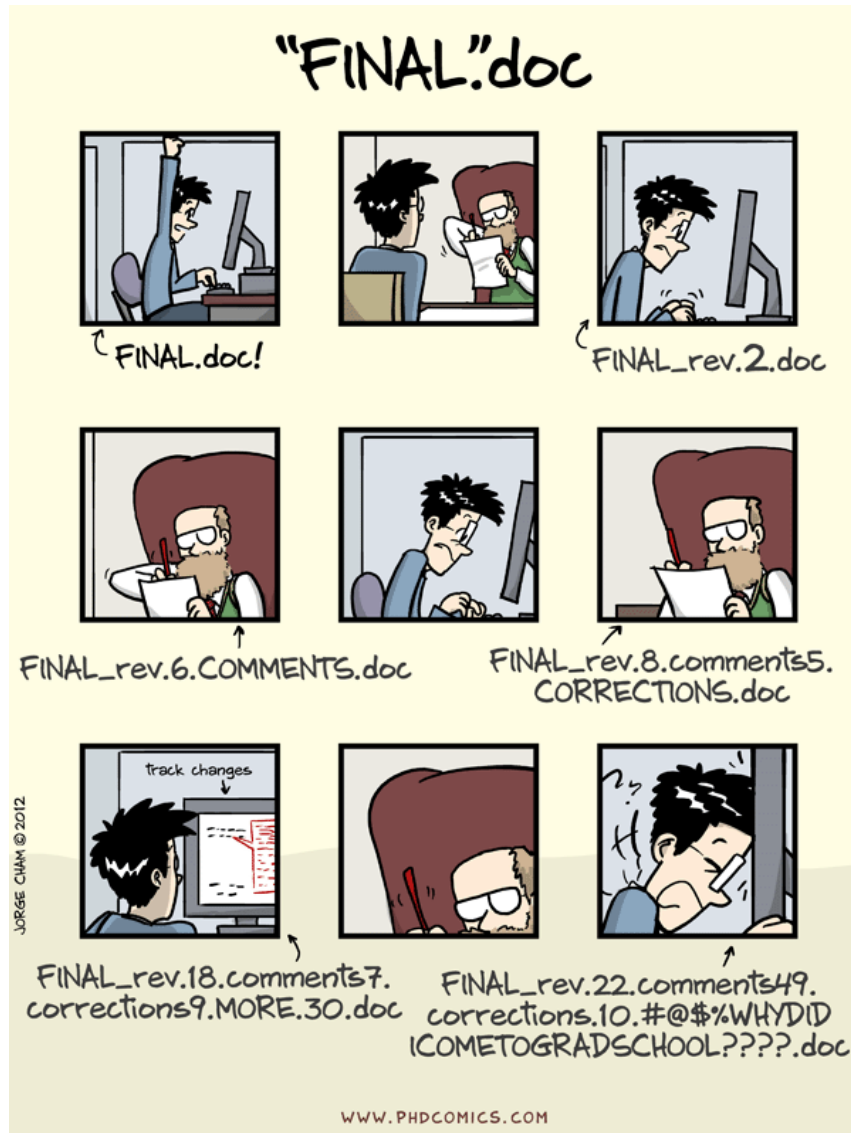
(for researchers)

Serena Defina

Overview of this talk
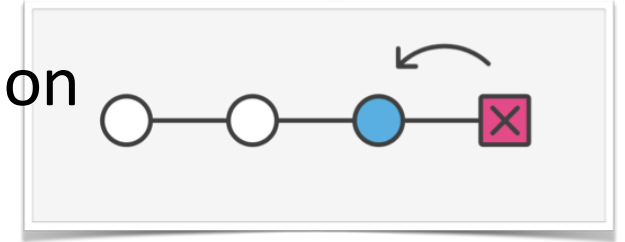
❑ What is Git and what is it for?

❑ What is GitHub and what is it for?

❑ The big 5 (basic commands you should know)

❑ Mini demo

A world without *version control*…

What is Git?

Git is a *version control* software: it *tracks* the evolution and *merges* changes in your *files.*
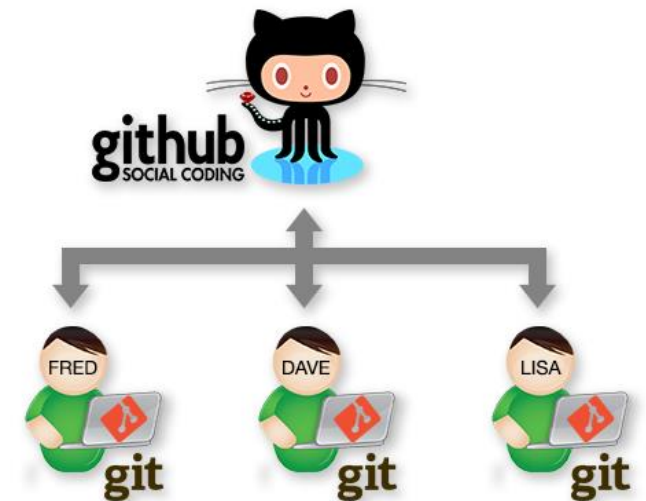
What is it for?

Primarily (?) software development (code), but... *not only*:
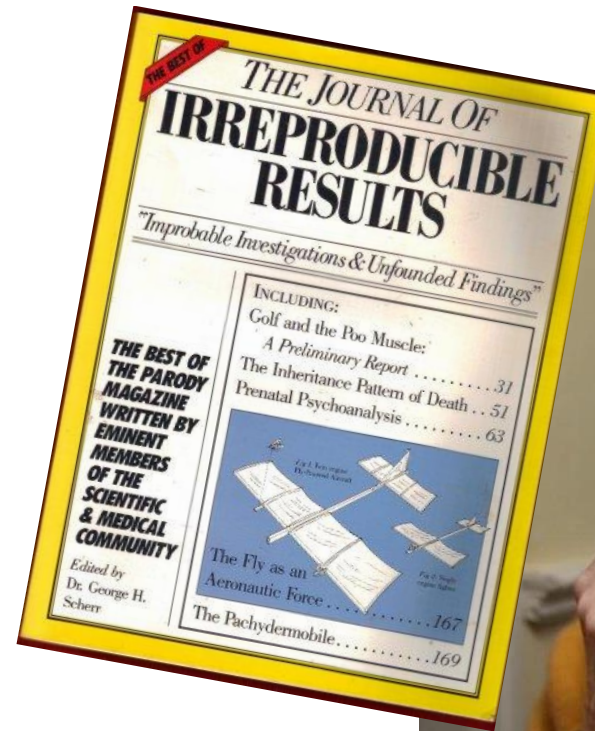- Dissertation: https://github.com/blahah/phd
- CV: https://github.com/smythp/cv

What is GitHub?

GitHub is a web-based collaboration tool.

- Tutorials: https://github.com/SereDef/GenR-run-GWAS
- Websites: https://seredef.github.io/

Why bother with all of this?

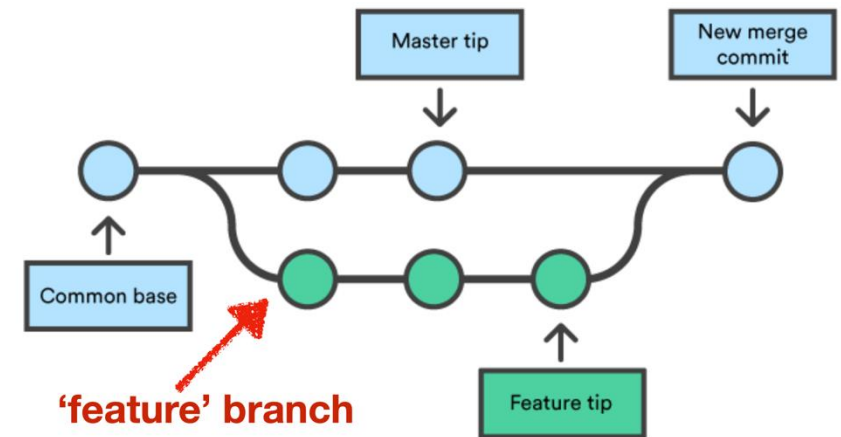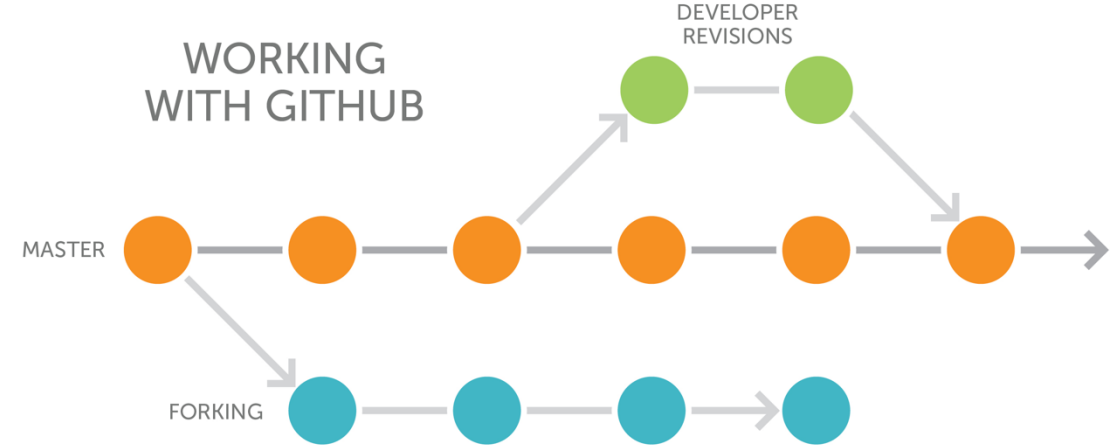✓ **Open and reproducible science (!)**

✓ Easy collaborations

✓ Sanity

Interacting with git and Github

- The `command line` (the "classic" way)

- The "clicky-clacky" way, e.g:
  - Github web or Desktop
  - Rstudio / Vscode / Pycharm

Git(hub) basic lingo

▶ **commit**

▶ **repository**

▶ README & .gitignore

▶ Fork & clone

▶ Branch

▶ Collaborator / Contributor

▶ Issues

WORKING WITH GITHUB

DEVELOPER REVISIONS

MASTER

FORKING

Master tip

New merge commit

Common base

'feature' branch

Feature tip

The big five

1. `git clone` (or `git init`)
2. `git status`
3. `git add`
4. `git commit -m "I changed something"`
5. `git push`

Or… clicky clacky …

Desktop

RStudio®

Summing up

How to use GitHub

Step 1 ▸ Sign up for GitHub
Step 2 ▸ Create repository
Step 3 ▸ Install and set up Git
Step 4 ▸ Clone the remote repository
Step 5 ▸ Make changes to files
Step 6 ▸ Add changes to the staging area
Step 7 ▸ Commit changes
Step 8 ▸ Push changes to the remote

Takes a bit of practice to learn Git's workflow …

… buuut you will get:

✓ Automated backups

✓ Easy sharing of code with collaborators

✓ An open science badge of honour

✓ You can roll back if you mess up
✓ Looks good on your resume
✓ Thank your past self in 4 years

*And you don't *have* to learn command line tools.