

## An introduction version control

[https://stirlingcodingclub.github.io/version\\_control.pdf](https://stirlingcodingclub.github.io/version_control.pdf)

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  - ▶ Focus on [GitHub](#) and [GitHub Desktop](#) software

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  - ▶ Learn and reinforce knowledge on how to use **key skills** effectively
  - ▶ Focus on [GitHub](#) and [GitHub Desktop](#) software
- ▶ Hands-on practice setting up and using version control in your own work with [accompanying notes for guidance](#)

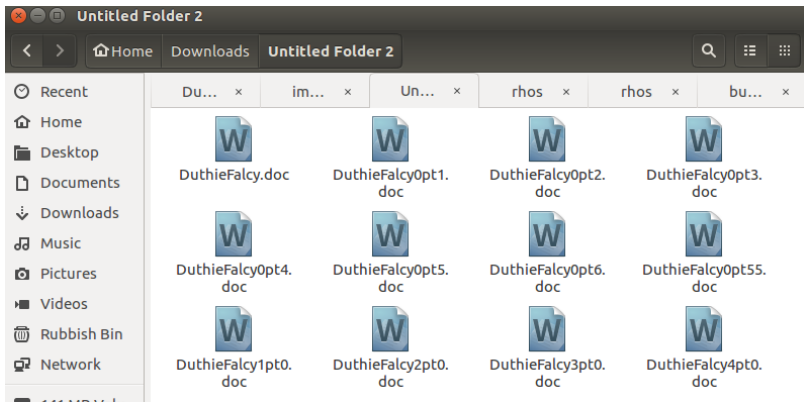
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[https://bradduthie.github.io/notes/vc\\_notes.html](https://bradduthie.github.io/notes/vc_notes.html)

## Rough outline of version control

1. What is version control, and why use it?
2. Getting set up – good file management
3. Setting up [GitHub](#)
4. The [GitHub Desktop](#) tutorial
5. Independent work using version control

# What is version control, and why use it?



# What version control software does

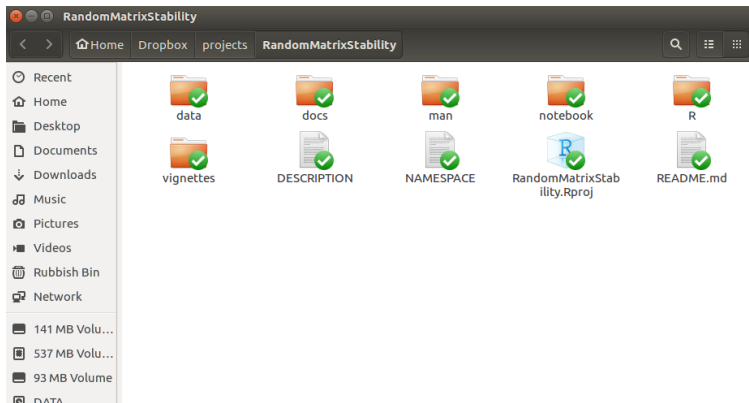
- ▶ Software that records changes you make to files over time
  - ▶ Manage different *versions* of files (no need to 'Save As...')
  - ▶ Recover old files, keep track of file changes
  - ▶ Collaborate with others on shared files

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- ▶ **Put more intuitively**, version control takes a snapshot in time (called a '**commit**') of all the files in one of your folders (called '**repositories**')
    - ▶ Visualise changes to your files over time
    - ▶ Look at the differences between file versions
    - ▶ Record who changed files, and what they changed



# Inside of a project on version control





Folders (a.k.a, 'repositories') include all data files, R code, notes, manuscript drafts, etc.

# Full annotated timeline of folder changes (GitHub)


Commits on Mar 1, 2019

**Some work on the SI**


 bradduthle committed on 1 Mar 2019 ✓

 **5d29331** <>

**Major restructure and revision of the Discussion to compare to Gibbs ...** ...


 bradduthle committed on 1 Mar 2019 ✓

...et al.


 **a40ede5** <>

Commits on Feb 27, 2019

**Edit the manuscript up to Reviewer 2 specific comment 3 -- these are ...** ...


 bradduthle committed on 27 Feb 2019 ✓


...next on the list, specifically the new Discussion paragraph

 **d411fd5** <>


Commits on Feb 22, 2019


**First pass, fix some notation**

 bradduthle committed on 22 Feb 2019 ✓

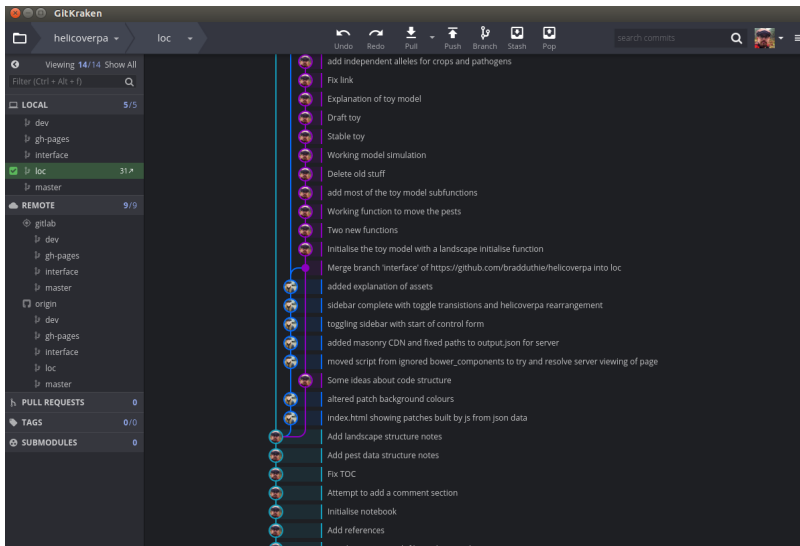
 **39f854b** <>

**Add some to the abstract to emphasise finite systems**

 bradduthle committed on 22 Feb 2019 ✓

 **612aa4b** <>

# Parallel versions ('branches') of a folder



# Clear breakdown of what has changed



The screenshot shows a GitHub commit diff interface. At the top, it indicates "1 commit", "1 file changed", and "1 contributor". Below this, it shows the commit message "New line" by user "bradduthie" committed 4 minutes ago. The diff view shows a single file, "README.md", with 2 additions and 0 deletions. The changes are highlighted in green, showing lines 6 and 7 being added to the file. The content of the README.md file is displayed below the diff, showing instructions for users to communicate project details and how to use it.

1 commit   1 file changed   1 contributor

Commits on Nov 15, 2022

New line [\[see\]](#)  
bradduthie committed 4 minutes ago

Showing 1 changed file with 2 additions and 0 deletions.   Split   Unified

2 README.md

@@ -3,3 +3,5 @@

3   3   This is your README. READMEs are where you can communicate what your project is and how to use it.

4   4

5   5   Write your name on line 6, save it, and then head back to GitHub Desktop.

6   +

7   + Adding a new line!

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# Version control makes science easier

- ▶ **Organises files** by avoiding 'save as' multiple versions
  - ▶ analysis\_1.R
  - ▶ analysis\_2.R
  - ▶ analysis\_FINAL.R
  - ▶ analysis\_FINAL\_no\_really\_this\_time.R

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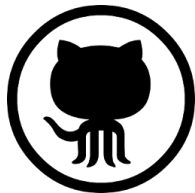
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- ▶ **Gives peace of mind** to experiment by removing any fear of breaking something that you know works



# Version control can help open science



- ▶ Transparent record of data collection, analysis, and writing
- ▶ Record publicly available on [GitHub](#), [Bitbucket](#), or [GitLab](#)
- ▶ GitHub repository can be copied, reproduced, and discussed
- ▶ [git](#) and GitHub can track individual contributions to a project

# Most researchers use git (and GitHub)



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- ▶ Works across platforms
  - ▶ Windows
  - ▶ Linux
  - ▶ Mac
- ▶ Invented by [Linus Torvalds](#)