

# Version control for reproducible science

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# What version control software does

- ▶ Software that records changes you make to files over time
  - ▶ Manage different *versions* of files
  - ▶ Recover old files, keep track of file changes
  - ▶ Collaborate with others on shared files

# What version control software does

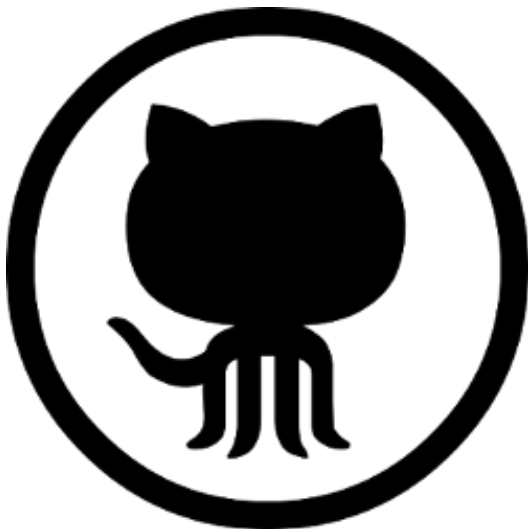
- ▶ Software that records changes you make to files over time
  - ▶ Manage different *versions* of files
  - ▶ Recover old files, keep track of file changes
  - ▶ Collaborate with others on shared files
- ▶ **Put more intuitively**, version control takes a snapshot in time (called a '*commit*') of all 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

# Version control makes science easier

- ▶ Organise files and avoid having to 'save as' multiple versions
  - ▶ *analysis\_1.R*
  - ▶ *analysis\_2.R*
  - ▶ *analysis\_FINAL.R*
  - ▶ *analysis\_FINAL\_no\_really\_this\_time.R*
- ▶ Have a clear history of what you have done, when, and why (through commit comments)
- ▶ Never worry about losing your data, analysis, or writing when integrating with GitHub

## Version control can help open science

- ▶ Transparent record of data collection, analysis, and writing
- ▶ Record publicly available on GitHub, Bitbucket, or GitLab



## Most researchers use git (and GitHub)

- ▶ Free and open-source
- ▶ Separate from GitHub
- ▶ Works across platforms
  - ▶ Windows
  - ▶ Linux
  - ▶ Mac
- ▶ Invented by Linus Torvalds



## Objectives: using version control

**By the end of today you will be able to use git with GitHub and GitKraken to manage your projects with version control**

- ▶ Understand key concepts of version control
- ▶ Perform basic tasks in GitHub and GitKraken
  - ▶ Staging and committing files
  - ▶ Pushing to and pulling from GitHub
  - ▶ Branching, merging, & resolving merge conflicts

**Discuss, share, and get additional help by raising an issue in the `version_control` repository on the Stirling Coding Club GitHub organisation.**



Why focus on using GitKraken?



Figure 4: