






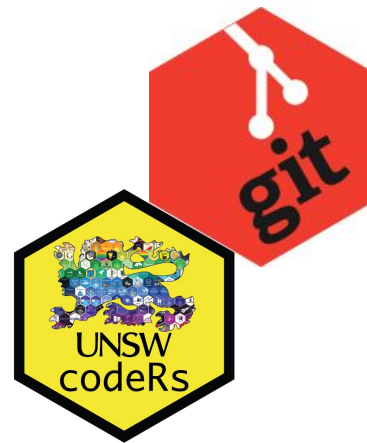


intro_version_control (tool = “git”, origin = “github”, language = “R”)

Name	Date modified	Type
 analysis_script.R	17/01/2020 16:21	R File
 analysis_script_v2.R	17/01/2020 16:21	R File
 analysis_script_v3.R	17/01/2020 16:21	R File
 analysis_script_final.R	17/01/2020 16:21	R File
 analysis_script_final_v2.R	17/01/2020 16:22	R File
 analysis_script_definitely_final.R	17/01/2020 16:22	R File
 analysis_script_final_for_real.R	17/01/2020 16:22	R File



Assoc. Prof. Daniel Falster
Fiona Robinson
Dr. Fonti Kar



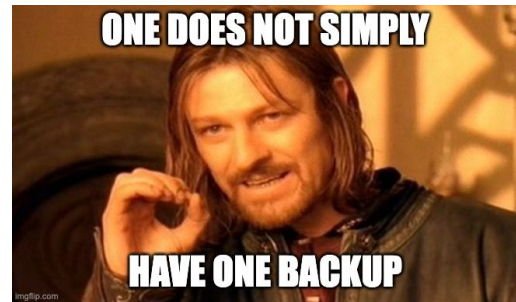
Workshop overview

1. What's awesome about git and github (10mins)
2. Key concepts (10 mins)
3. Have a go (20mins)
4. Where next



Why use version control with git?

An extra backup



Dropbox / Egernia striolata soci



Name ↑	Modified
.git	--
data	--
doc	--
Frontiers	--
Old stuff	--
output	--
pdf	--
R	--
.gitignore	28/7/2016 2:42 pm
.RData	3/1/2017 12:28 pm
.Rhistory	3/1/2017 12:28 pm

fontikar / egerniasl Public

<> Code Issues Pull requests Actions Projects Wiki Security

master 1 branch 0 tags

Go to file

Add file

Code

fontikar	Increased nitt for t2_correctonly model	367ee5e on 9 Dec 2016 44 commits
R	Increased nitt for t2_correctonly model	5 years ago
data	Removed unnecessary files and removed row number column from ra...	6 years ago
doc	Some comments	5 years ago
output	Rm row numbers	5 years ago
.gitignore	Adding an ignore file for yougit add .gitignore	5 years ago
README.md	first commit	6 years ago



A better backup - Changes are meaningful

Time stamped with notes for **future self**/collaborators

Commits on Dec 9, 2016

- Increased nitt for t2_correctonly model
fontikar committed on 9 Dec 2016 [367ee5e](#) <>
- Increased nit and thin for coronly task 2 model
fontikar committed on 9 Dec 2016 [22763d0](#) <>
- Includes batch*treatment interaction
fontikar committed on 9 Dec 2016 [9417f53](#) <>
- Reduced down some ugly code to calculate significant tally and learni...
fontikar committed on 9 Dec 2016 [c220e1b](#) <>

Commits on Aug 1, 2016

- Forgot to index model for function MCMC.chains
fontikar committed on 1 Aug 2016 [f062f57](#) <>



Changes are super **easy to spot!**

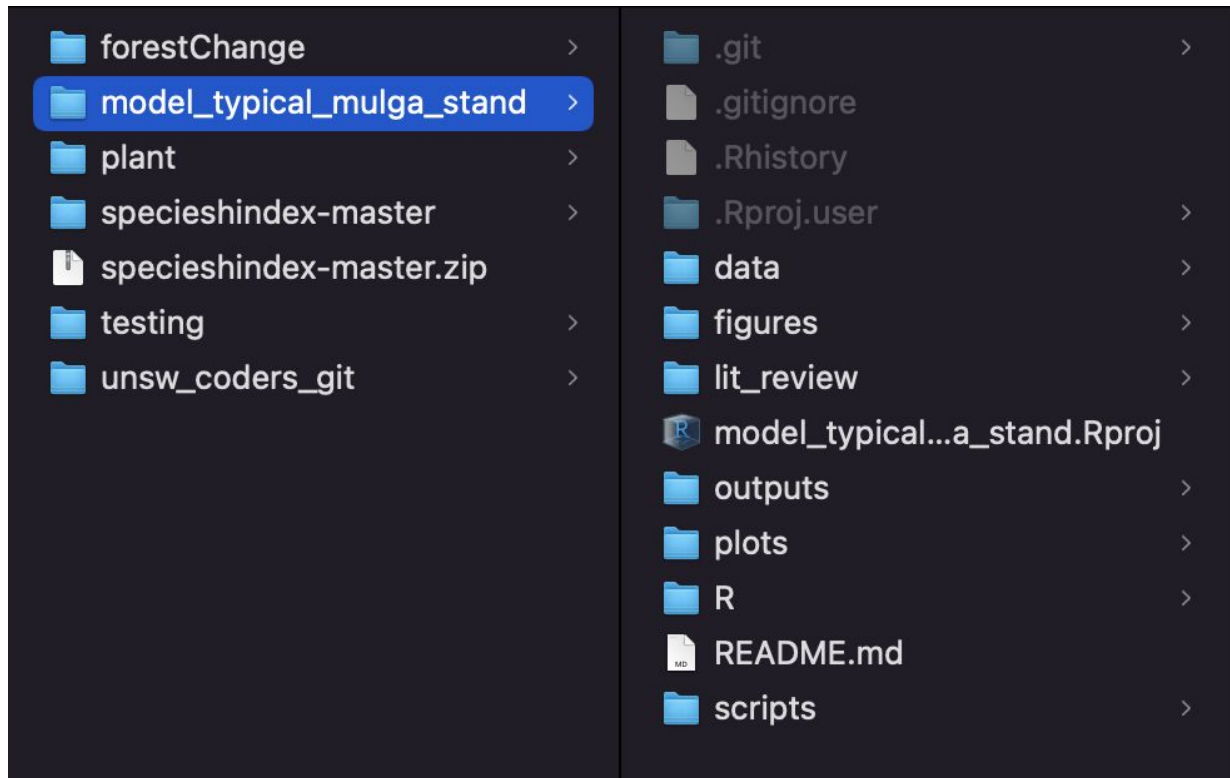
Showing 1 changed file with 3 additions and 13 deletions.

Split Unified

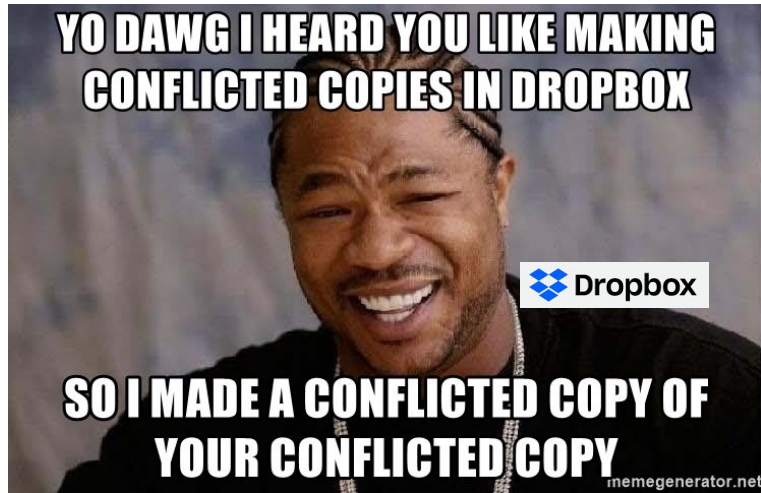
```
16 R/t2_mcmc.R
@@ -32,29 +32,19 @@ saveRDS(probcor.1, file="output/t2_probcor.1")
32 32  correctly.1 <- list()
33 33  for(i in 1:3){
34 34    set.seed(chains[i])
35 35  correctly.1[[i]] <- MCMCglmm(Choose.only.correct.dish ~ Treatment*Trial+Batch, random = ~us(1+Trial):LizardID, family = "categorical", nitt = 11000
36 36  }
37 37
```

A better backup - keep current workspace tidy

Code hoarding is allowed, in a very controlled way



Collaboration -- makes working together easier



Collaboration -- easily combine files

Can see **WHAT** is changed by **WHO** and **WHEN**

Edits to vignette
fontikar committed 2 days ago

Commits on Oct 22, 2021

Solve poor fit of model 3 ...
dfalster committed 6 days ago

Don't track compiled objects
dfalster committed 6 days ago

Potential fix to count data problem ...
dfalster committed 6 days ago

Commits on Oct 19, 2021

Diagnostic plots added to vignette
charliehinchliffe committed 9 days ago



Collaboration -- easily reconcile differences

Files have a **conflict**? Git says **fix it now, not later**

```
$ git status
> # On branch main
> # Your branch and 'origin/main' have diverged,
> # and have 1 and 2 different commits each, respectively.
> # (use "git pull" to merge the remote branch into yours)
> # You have unmerged paths.
> # (fix conflicts and run "git commit")
> #
```

git will tell you **where** the conflict is

```
If you have questions, please
<<<<<<< HEAD          ←
open an issue
=====
ask your question in IRC.
>>>>>>> branch-a      ←
```

Make your work reproducible

- Hub to openly store + share your code
- Full trail from start to finish
- Instills confidence in readers/reviewers
- Enforces good habits


noise-phenomena compendium

launch binder build passing DOI 10.5281/zenodo.1219780

A compendium of code, data, and author's manuscript accompanying the publication:

Carl Boettiger . *From noise to knowledge: how randomness generates novel phenomena and reveals information*. Published in *Ecology Letters*, 22 May 2018 <https://doi.org/10.1111/ele.13085>

Overview

This repository is organized as a reproducible research compendium. Click the  button above to explore in an interactive RStudio session. Binder uses rocker-project.org Docker images to ensure a consistent and reproducible computational environment. These Docker images can also be used locally.

An Rmd notebook and associated pdf for Appendix A can be found in [appendixA](#). This notebook includes explanations and code necessary for all of the numerical examples discussed in the paper. It should also provide a useful starting point for extending and exploring these models with other parameters.

Or to explore the code locally, clone or download this repository into RStudio or your preferred environment and install the compendium by running `devtools::install()`. To install additional dependencies used only in formatting the figures, use `devtools::install(dep=TRUE)`.

This compendium is checked by Travis-CI continuous integration. Click the  button for details.

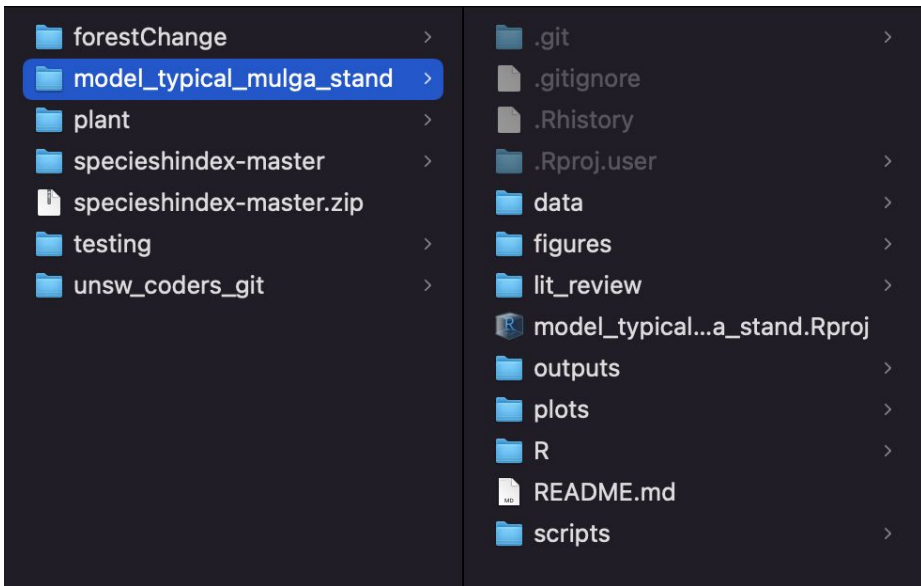
<https://github.com/cboettig/noise-phenomena>



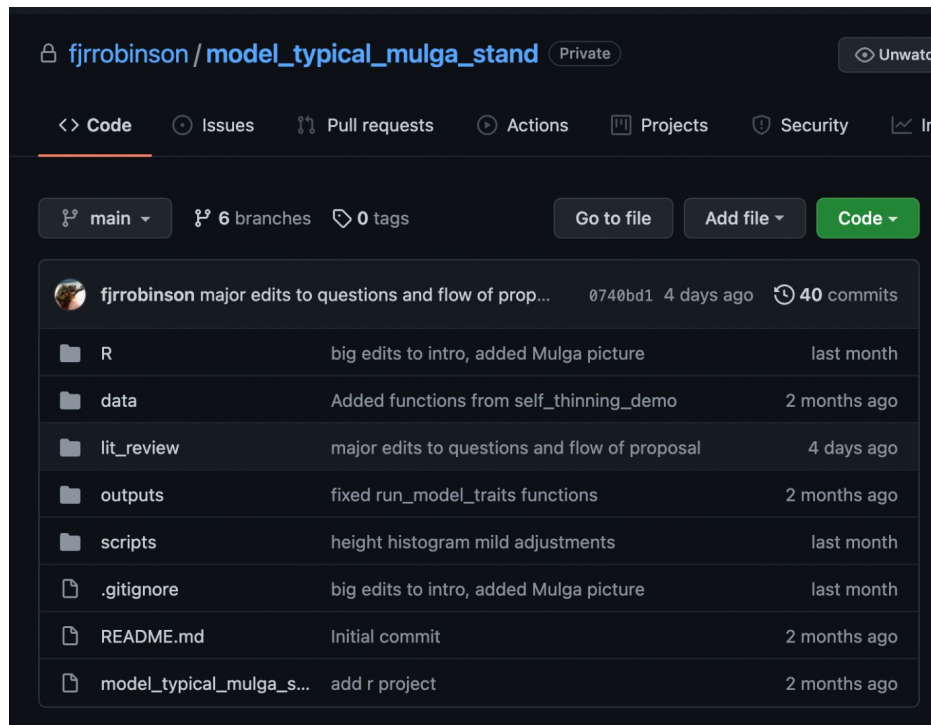
Key concepts in git

repository

Your project directory/filing system

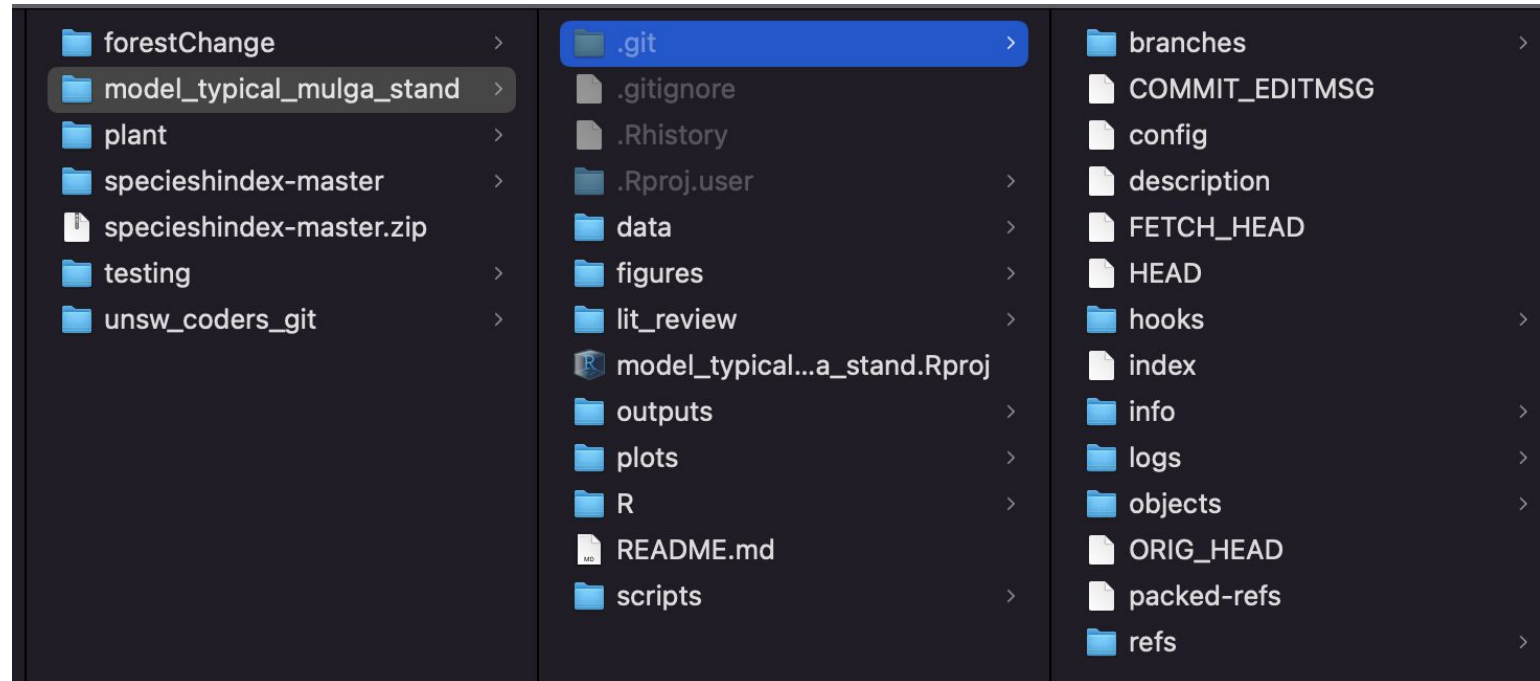


Local copy



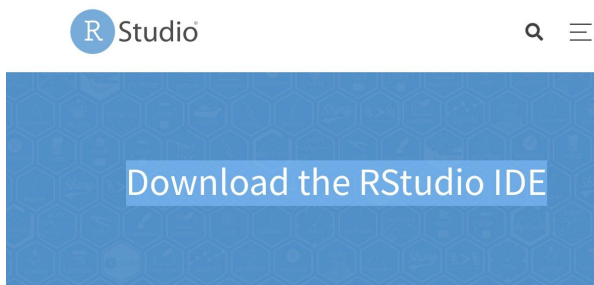
Github

git -> .git folder



Multiple interfaces to git

All looks different, but the concepts are the same!
Usability and number of functions available do vary



Choose Your Version

The image shows a terminal window with a black background and white text. The prompt is "dfalster@Daniel-imac-2014: ~/packages/austraits/austraits.build". The output shows the last login time, a confirmation message, and the execution of "git status" which reports the current branch and its upstream status. The prompt is followed by a cursor.

```
Last login: Sun Oct 31 08:02:46 on console
dfalster, you are happily delicate!
+ ~ cd packages/austraits/austraits.build
+ austraits.build git:(R-CMD-check) git status
On branch R-CMD-check
Your branch is based on 'origin/R-CMD-check', but the upstream is gone.
(use "git branch --unset-upstream" to fixup)

nothing to commit, working tree clean
+ austraits.build git:(R-CMD-check) |
```

We will use this one today!

Commits → tree

Current Repository
self_thinning_demo

Current Branch
master

Pull origin
Last fetched 7 minutes a...
3 ↓

Changes 3

History

No Branches to Compare

fixed bug stopping seed_rain from k...

fjrrobinson • Aug 20, 2021

fix file name, updating mortality

fjrrobinson • Aug 20, 2021

cleaned up seed rain and added file ...

fjrrobinson • Aug 19, 2021

added b_lf1 as output variable but d...

fjrrobinson • Aug 19, 2021

updated patch species total functio...

fjrrobinson • Aug 19, 2021

fixed tidy patch bug where defaulte...

fjrrobinson • Aug 16, 2021

cleaned up seed rain and added file for changing traits

fjrrobinson 938c36d ± 3 changed files +307 -59

scripts/changing_traits.Rmd

scripts/height.Rmd

scripts/seed_rain_sensitivity.Rmd

96 48

97 49

@@ -103,22 +55,17 @@ plot_size_distribution_patch

103 55 ## total leaf area over time

104 56

105 57 ```{r}

106 -data_species_tot_low %>%

107 - ggplot(aes(time, area_leaf)) +

108 - geom_line()

109 58

110 -data_species_tot_high %>%

111 - ggplot(aes(time, area_leaf)) +

59 +purrr::map_df(

60 + my_result,

61 + x\$species %>% patch_species_total() %>%

hash

Current Repository
self_thinning_demo

Current Branch
master

Pull origin
Last fetched 7 minutes a...
3 ↓

Changes 3

History

No Branches to Compare

fixed bug stopping seed_rain from k...

fjrrobinson · Aug 20, 2021

fix file name, updating mortality

fjrrobinson · Aug 20, 2021

cleaned up seed rain and added file ...

fjrrobinson · Aug 19, 2021

added b_lf1 as output variable but d...

fjrrobinson · Aug 19, 2021

updated patch species total functio...

fjrrobinson · Aug 19, 2021

fixed tidy patch bug where defaulte...

fjrrobinson · Aug 16, 2021

plot individual growth to time functi...

Becca-90 · Aug 12, 2021

fixed arguments

Becca-90 · Aug 10, 2021

cleaned up seed rain and added file for changing traits

fjrrobinson · 938c36d · 3 changed files +307 -59

scripts/changing_traits.Rmd

scripts/height.Rmd

scripts/seed_rain_sensitivity.Rmd

96 48

97 49

103 55

104 56

105 57

106

107

108

109 58

110

111

59

60

61

62

63

64

112 65

Plot size distribution

```{r}

@@ -103,22 +55,17 @@ plot\_size\_distribution\_patch(resultshigh2\$species)

## total leaf area over time

```{r}

-data_species_tot_low %>%

- ggplot(aes(time, area_leaf)) +

- geom_line()

-data_species_tot_high %>%

- ggplot(aes(time, area_leaf)) +

+purrr::map_df(

+ my_result,

+ ~.x\$species %>% patch_species_total() %>%

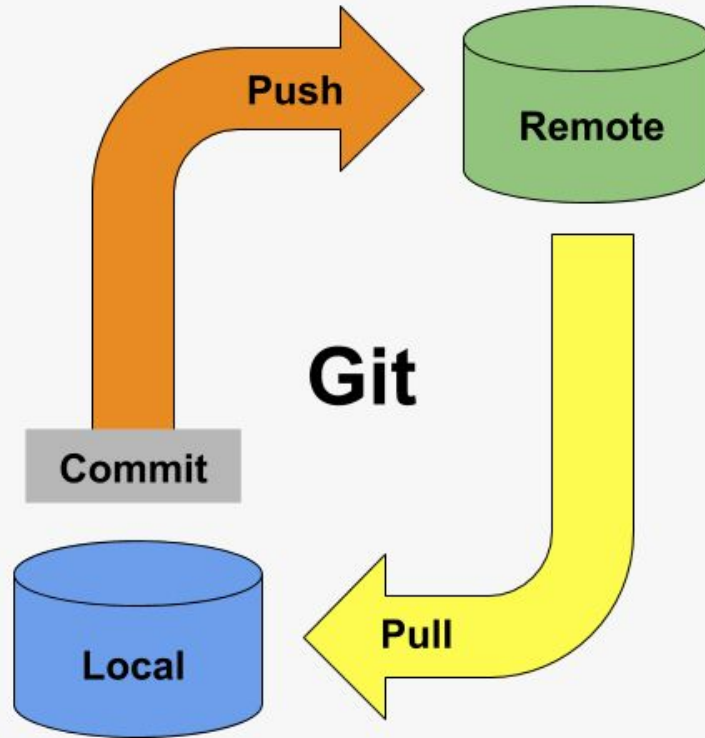
+ mutate(seed_rain = .x\$p\$seed_rain)) %>%

+ ggplot(aes(time, area_leaf,

+ colour = as.factor(seed_rain))) +

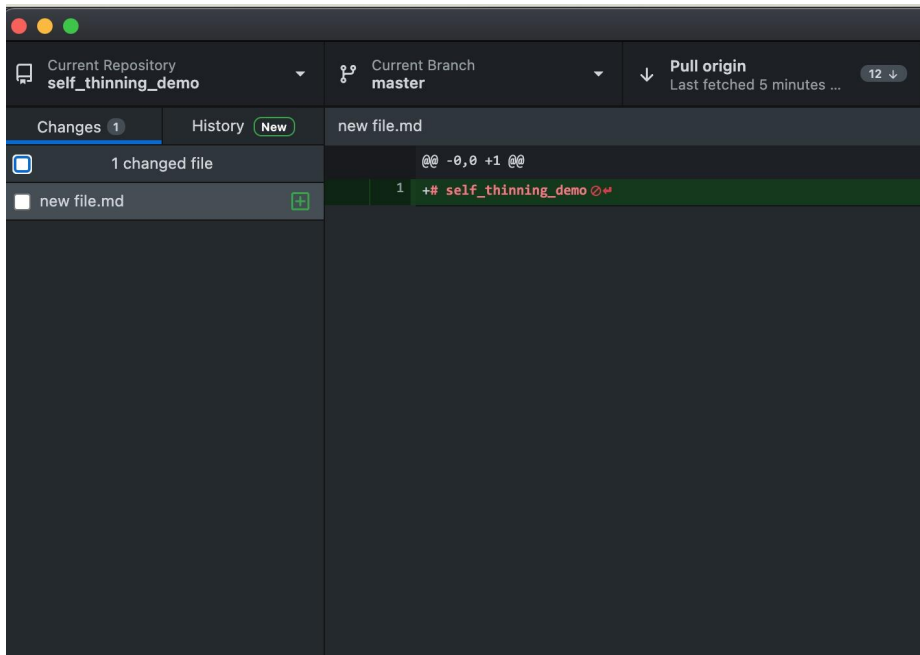
geom_line()

Push and Pull

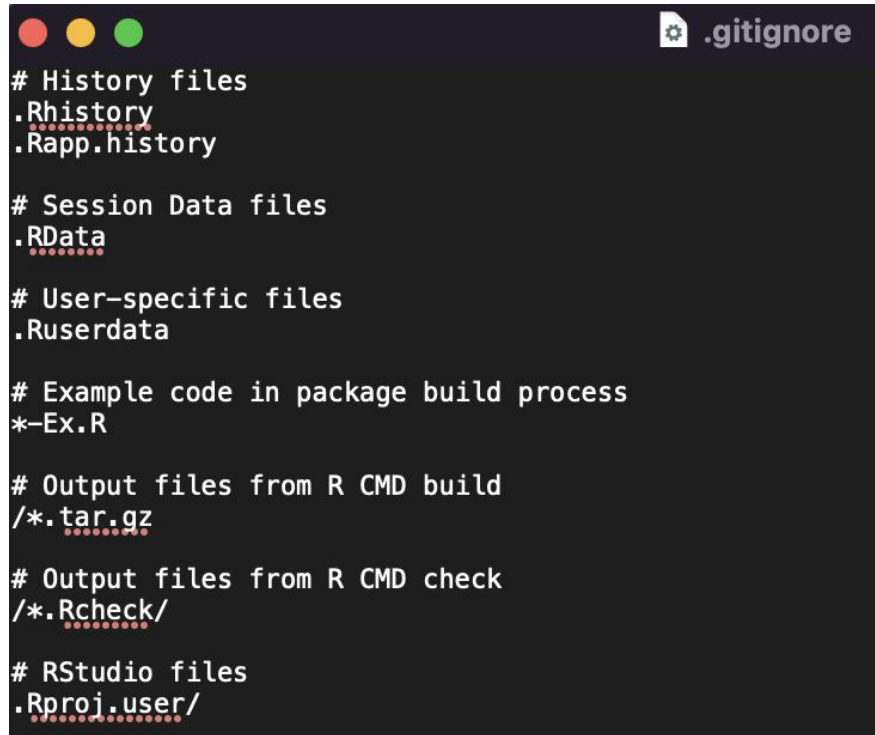


What to track and ignore?

You need to actively add files



You can ignore files with .gitignore



Ready to git with it?

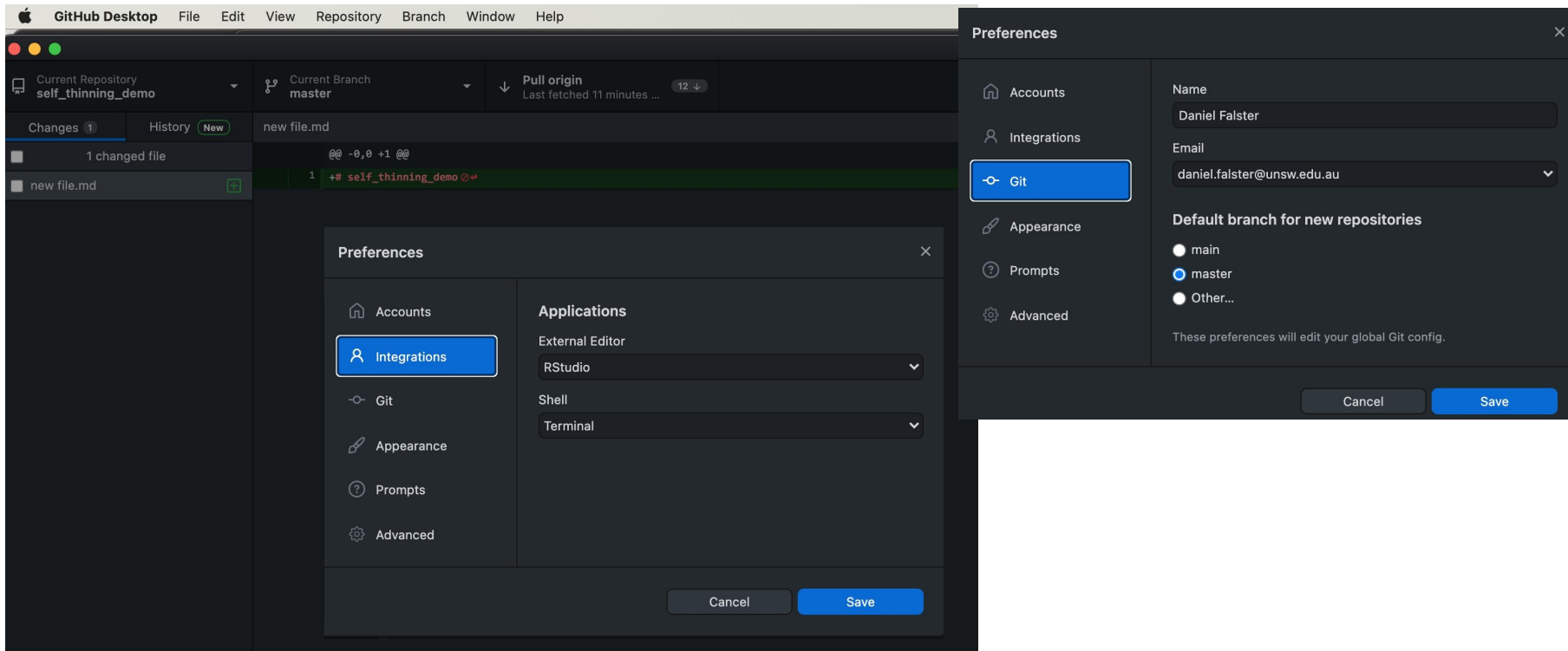
Our slightly ambitious plan

1. Sign into github & github desktop
2. Create a new local repo
3. Push to github
4. Collaborate
5. Where to from here?

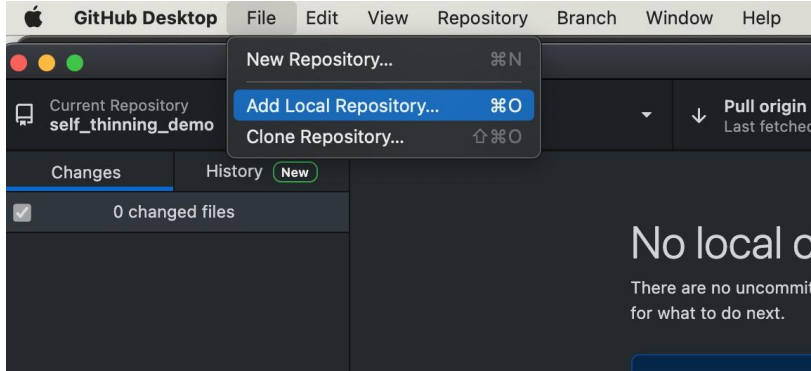


Sign into Github Desktop

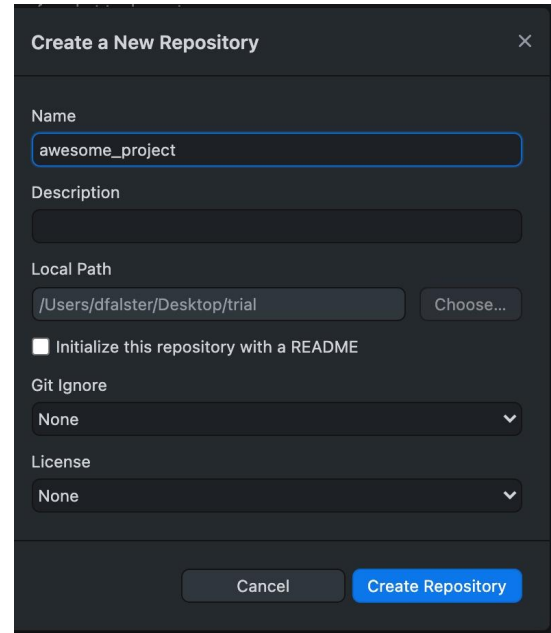
Check preferences



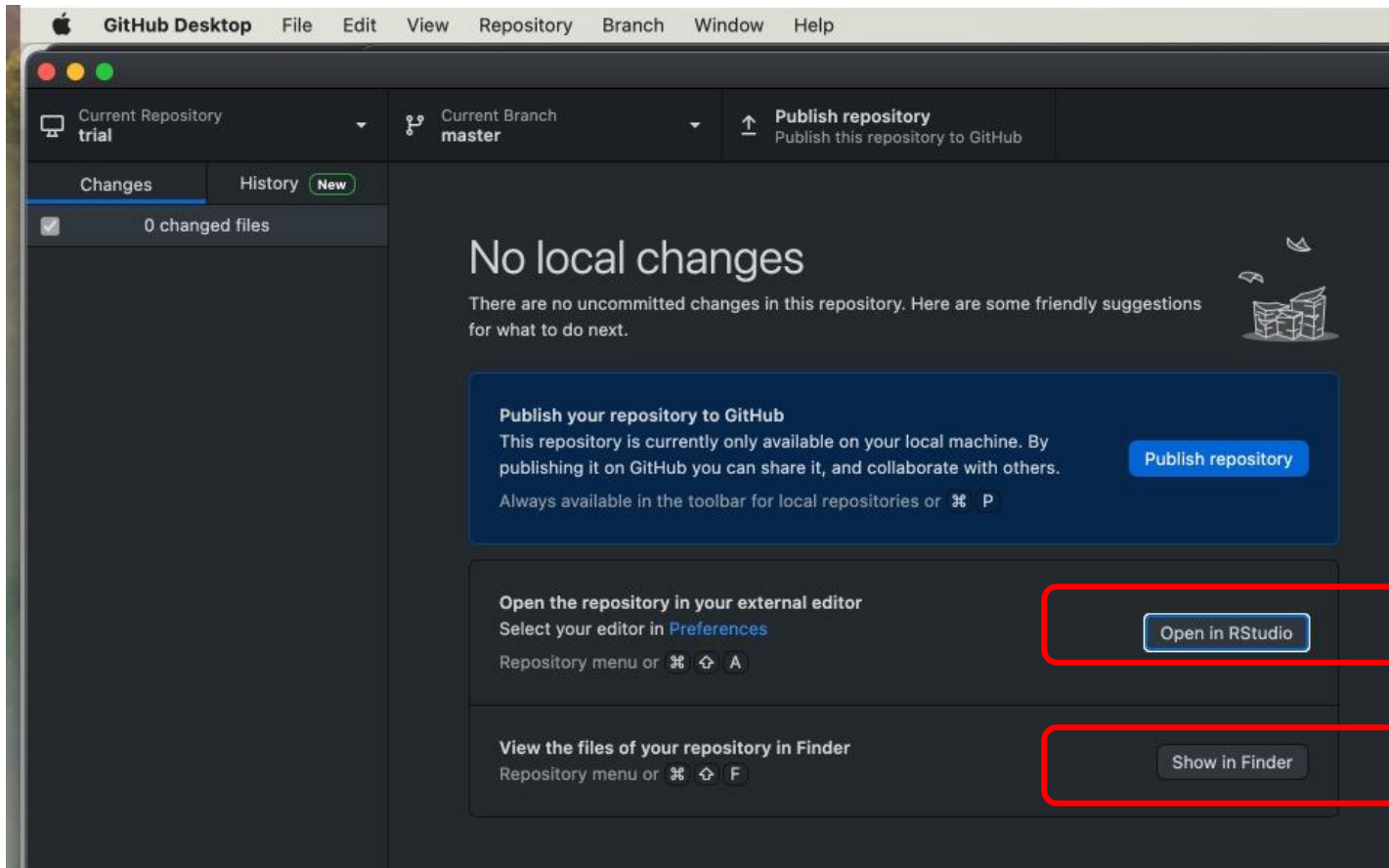
Create a new local repo



Creates repo on your machine



Open in Rstudio



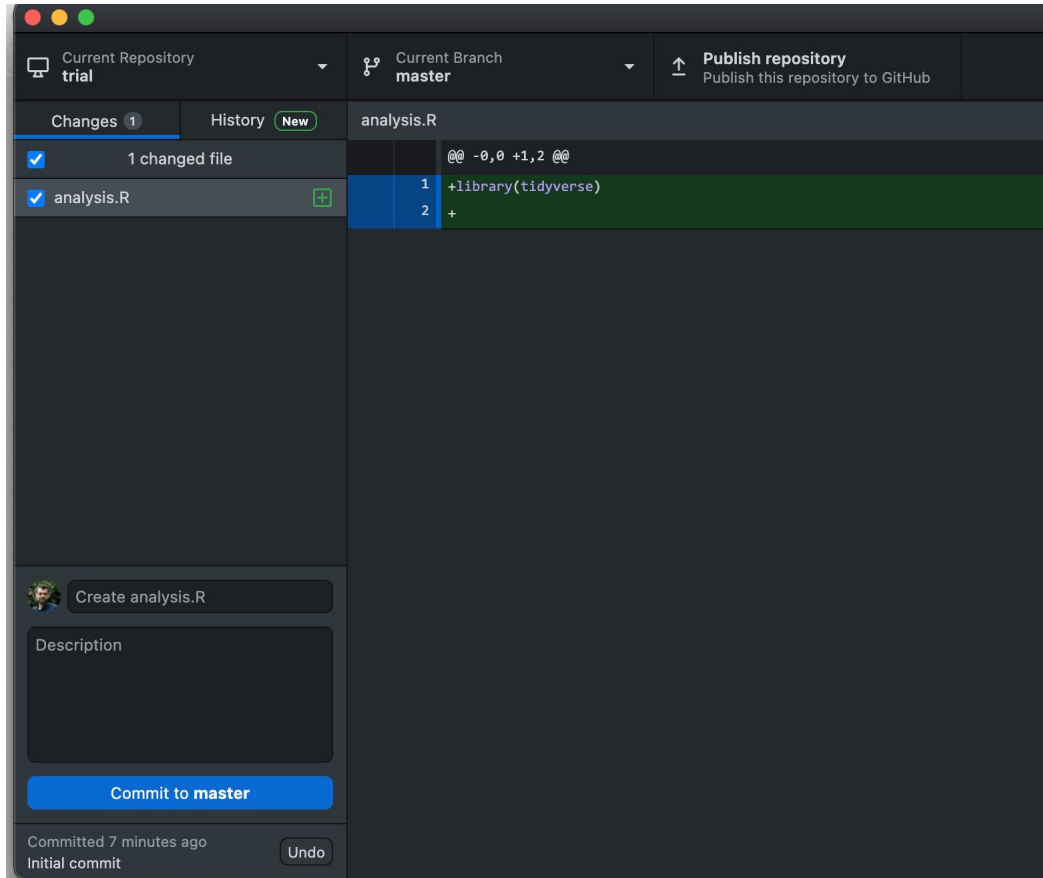
Add (edit) file, commit, repeat



files are “staged”



describe what you did here

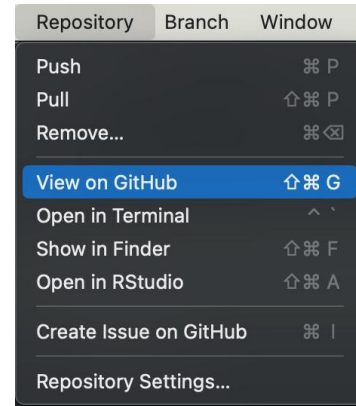
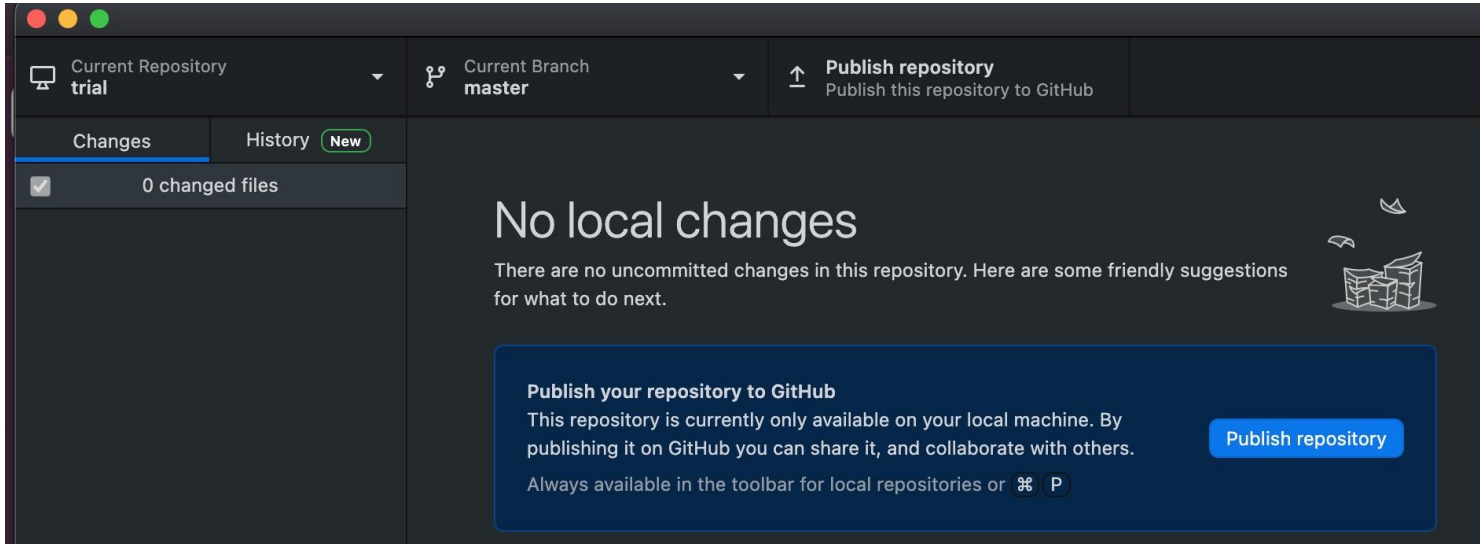


See what part of your file is changed*

*only works for plain text files. (.txt, .R, .RMD) - not .docx

Ready to collaborate?

Push to github



Invite someone to edit your repo

The screenshot shows the GitHub interface for the repository 'dfalster / trial2'. The browser address bar shows 'github.com/dfalster/trial2/settings/access'. The repository is marked as 'Private'. The top navigation bar includes links for 'Code', 'Issues', 'Pull requests', 'Actions', 'Projects', 'Wiki', 'Security', 'Insights', and 'Settings' (which is highlighted with a red box). On the left sidebar, the 'Options' menu is open, and 'Manage access' is highlighted with a red box. The main content area is titled 'Who has access' and shows two sections: 'PRIVATE REPOSITORY' and 'DIRECT ACCESS'. The 'PRIVATE REPOSITORY' section states 'Only those with access to this repository can view it.' and has a 'Manage' link. The 'DIRECT ACCESS' section states '0 collaborators have access to this repository. Only you can contribute to this repository.' Below this, the 'Manage access' section shows a message 'You haven't invited any collaborators yet' with an 'Add people' button highlighted by a red box.

github.com/dfalster/trial2/settings/access

dfalster / trial2 Private

Unwatch 1 Star 0 Fork 0

Code Issues Pull requests Actions Projects Wiki Security Insights **Settings**

Options

Manage access

Security & analysis

Branches

Webhooks

Notifications

Integrations

Deploy keys

Autolink references

Actions

Secrets

Who has access

PRIVATE REPOSITORY

Only those with access to this repository can view it.

[Manage](#)

DIRECT ACCESS

0 collaborators have access to this repository. Only you can contribute to this repository.

Manage access

You haven't invited any collaborators yet

[Add people](#)

Accept invite

fontikar invited you to UNSW-codeRs/git-with-it Inbox x



Fonti Kar <noreply@github.com>
to me ▾

13:02 (42 minutes ago)



GitHub



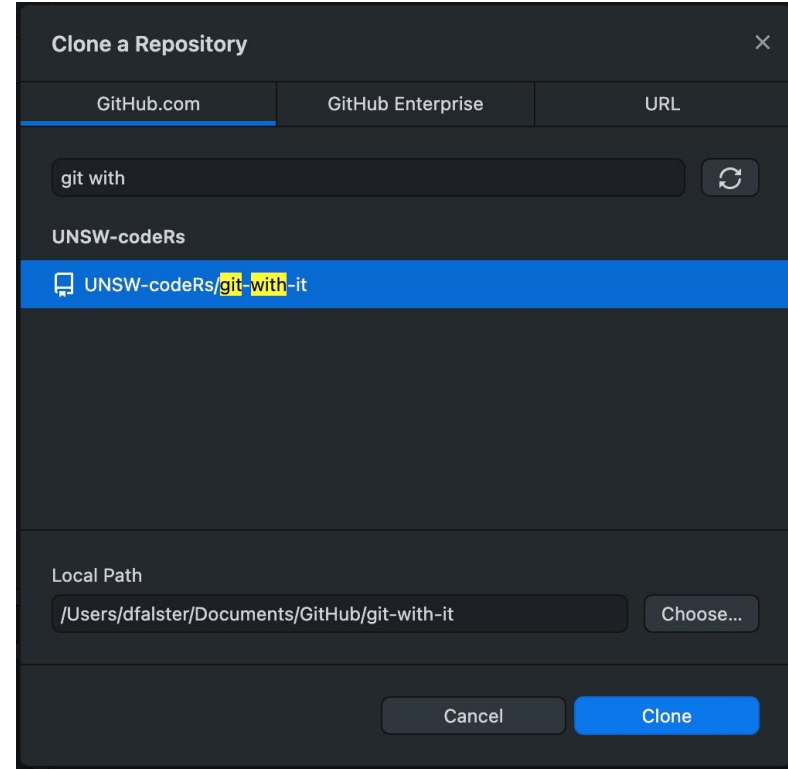
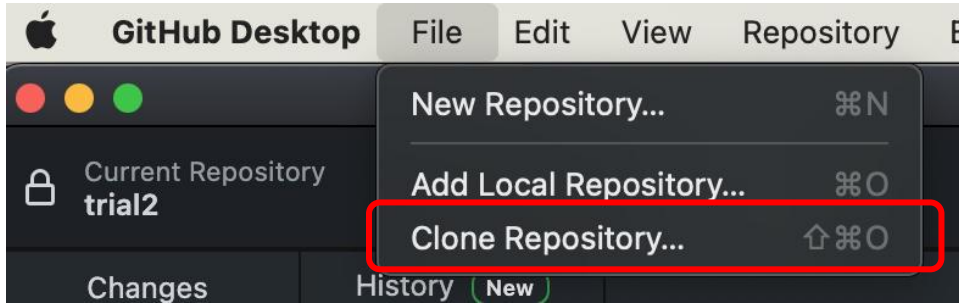
@fontikar has invited you to collaborate on the
UNSW-codeRs/git-with-it repository

You can [accept](#) or [decline](#) this invitation. You can also head over to <https://github.com/UNSW-codeRs/git-with-it> to check out the repository or visit [@fontikar](#) to learn a bit more about them.

This invitation will expire in 7 days.

[View invitation](#)

Now clone



Where to next?

In case of fire



 **1. git commit**







2. git push



3. leave building

Issues



 **fjrrobinson / unsw_coders_git**

 Unwatch ▾ 2  Star 0  Fork 0

Private

[Code](#) [Issues 3](#) [Pull requests](#) [Actions](#) [Projects](#) [Security](#) [...](#)


Filters ▾


 Labels 9  Milestones 0


New issue

[3 Open](#) ✓ 0 Closed

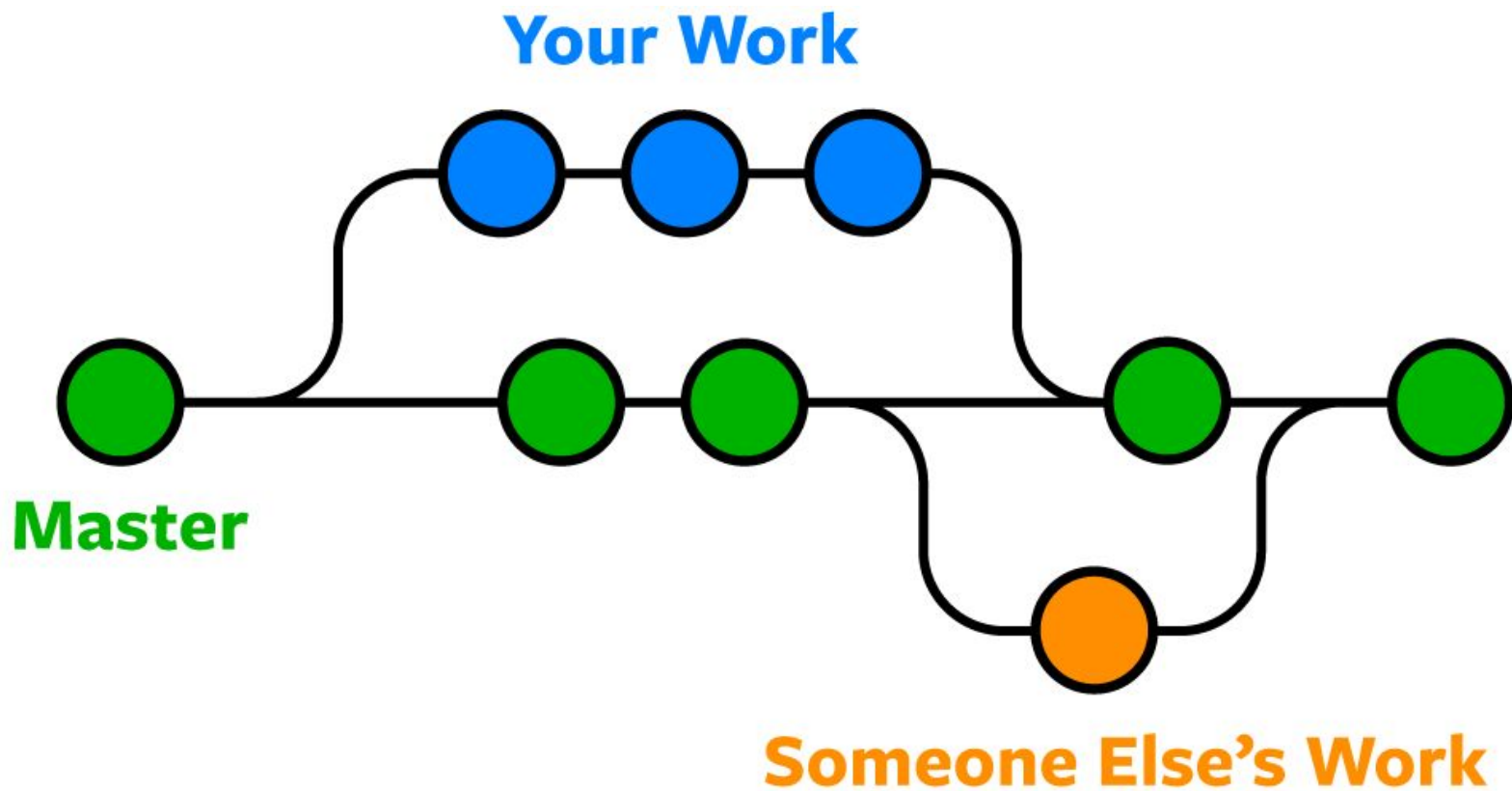
☐ Author ▾ Label ▾ Projects ▾ Milestones ▾ Assignee ▾ Sort ▾

☐  **function to join spatial data too inefficient - run out of memory**
#3 opened now by fjrrobinson

☐  **final plot needs outline of borneo to provide context**
#2 opened 11 minutes ago by fjrrobinson

☐  **Summarise dataset function only works for one species and not others**
#1 opened 11 minutes ago by fjrrobinson

Branches



Resources

- Official git documentation:: <https://git-scm.com>
- Github desktop: <https://docs.github.com/en/desktop>
- Git via Rstudio:
<https://support.rstudio.com/hc/en-us/articles/200532077-Version-Control-with-Git-and-SVN>
- https://jennybc.github.io/2014-05-12-ubc/ubc-r/session03_git.html

Using Git with RStudio

Git allows groups of people to work on the same documents (often code) at the same time, and without stepping on each other's toes.
It's a distributed version control system.

(cribbed from [tryGit!](#))

Intro to practical version control for scientists

These [slides](#) are courtesy of [Bernhard Konrad](#).

- <https://happygitwithr.com/install-intro.html#install-intro>

