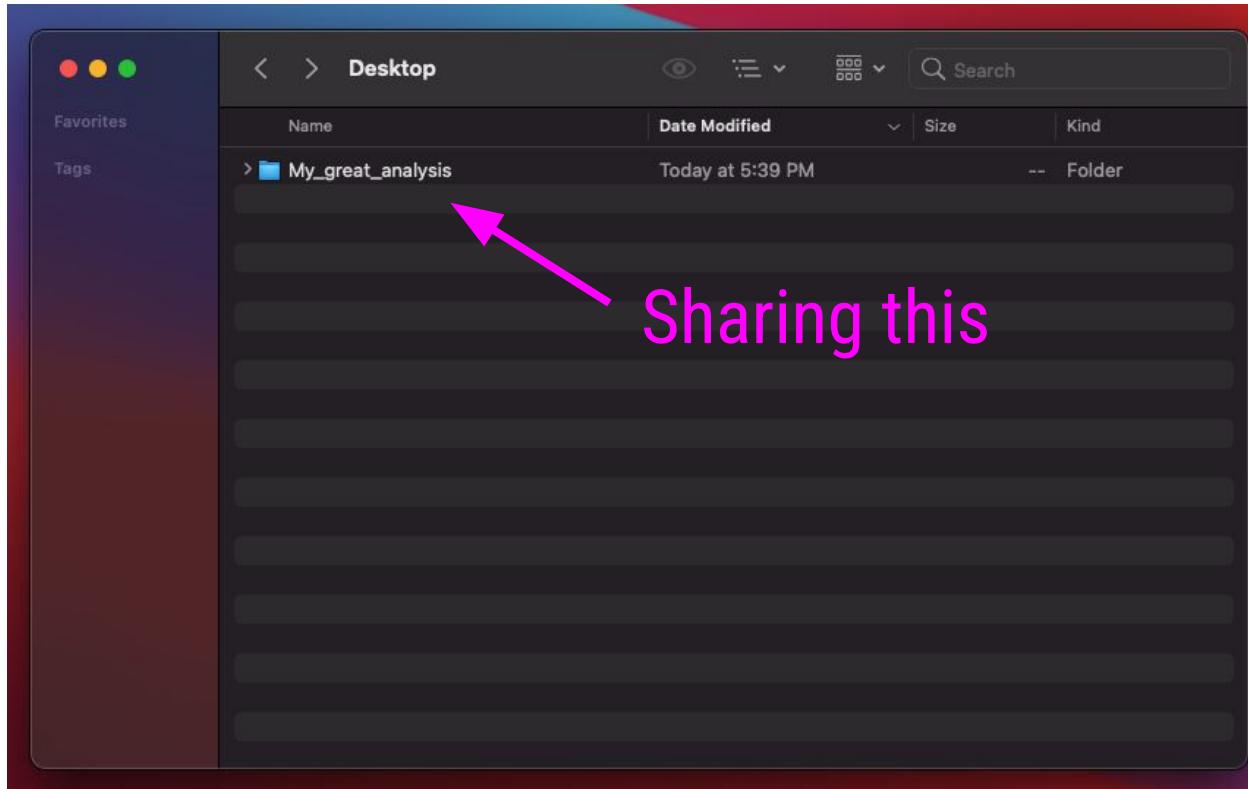
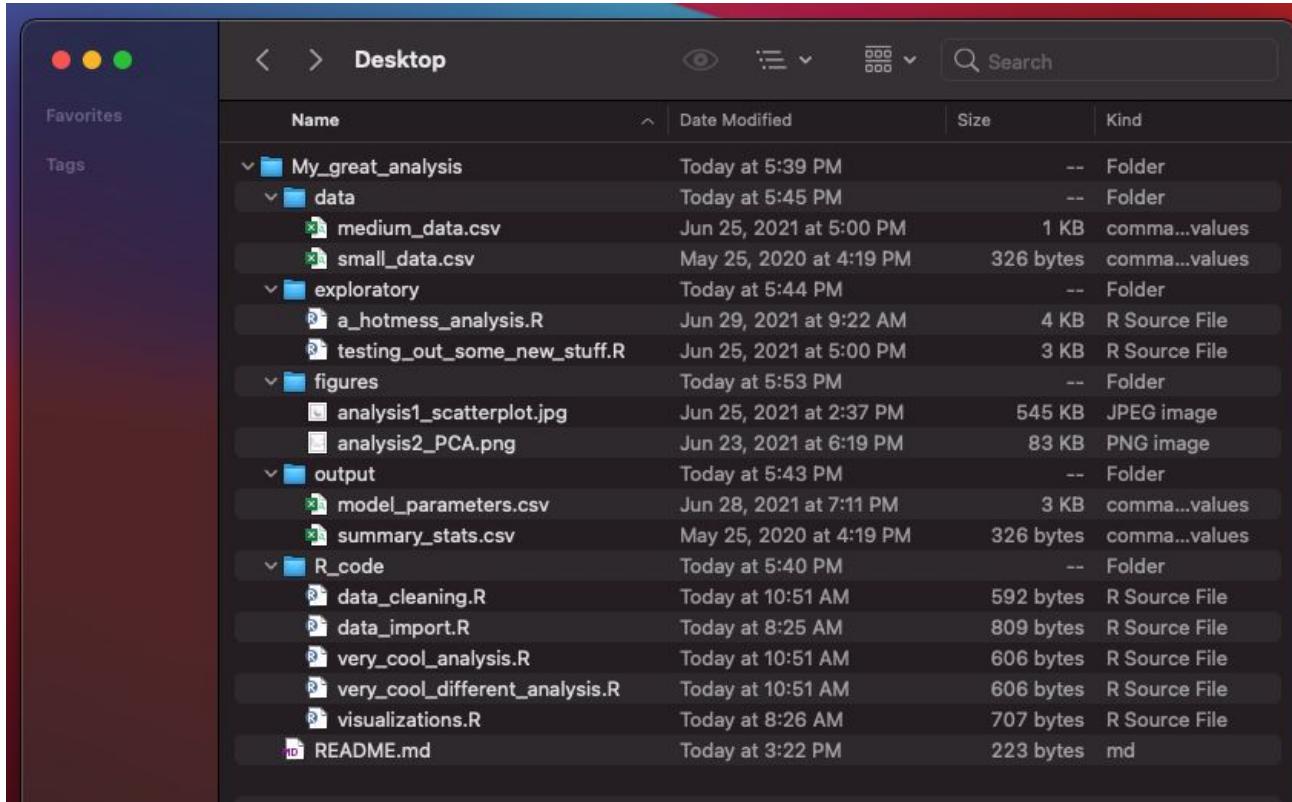


# Version control with GitHub

# What is the goal of making code?



# What is the goal of making code?



# But first.. Where are we?

/Users/avahoffman/Desktop/My\_great\_analysis

A screenshot of a Mac OS X Finder window. The path is highlighted in pink: /Users/avahoffman/Desktop/My\_great\_analysis. The window shows a list of files and folders:

Name	Date Modified	Size	Kind
My_great_analysis	Today at 5:39 PM	--	Folder
data	Today at 5:45 PM	--	Folder
medium_data.csv	Jun 25, 2021 at 5:00 PM	1 KB	comma...values
small_data.csv	May 25, 2020 at 4:19 PM	326 bytes	comma...values
exploratory	Today at 5:44 PM	--	Folder
a_holmess_analysis.R	Jun 29, 2021 at 9:22 AM	4 KB	R Source File
testing_out_some_new_stuff.R	Jun 25, 2021 at 5:00 PM	3 KB	R Source File
figures	Today at 5:53 PM	--	Folder
analysis1_scatterplot.jpg	Jun 25, 2021 at 2:37 PM	545 KB	JPEG image
analysis2_PCA.png	Jun 23, 2021 at 6:19 PM	83 KB	PNG image
output	Today at 5:43 PM	--	Folder
model_parameters.csv	Jun 28, 2021 at 7:11 PM	3 KB	comma...values
summary_stats.csv	May 25, 2020 at 4:19 PM	326 bytes	comma...values
R_code	Today at 5:40 PM	--	Folder
data_cleaning.R	Today at 10:51 AM	592 bytes	R Source File
data_import.R	Today at 8:25 AM	809 bytes	R Source File
very_cool_analysis.R	Today at 10:51 AM	606 bytes	R Source File
very_cool_different_analysis.R	Today at 10:51 AM	606 bytes	R Source File
visualizations.R	Today at 8:26 AM	707 bytes	R Source File
README.md	Today at 3:22 PM	223 bytes	md

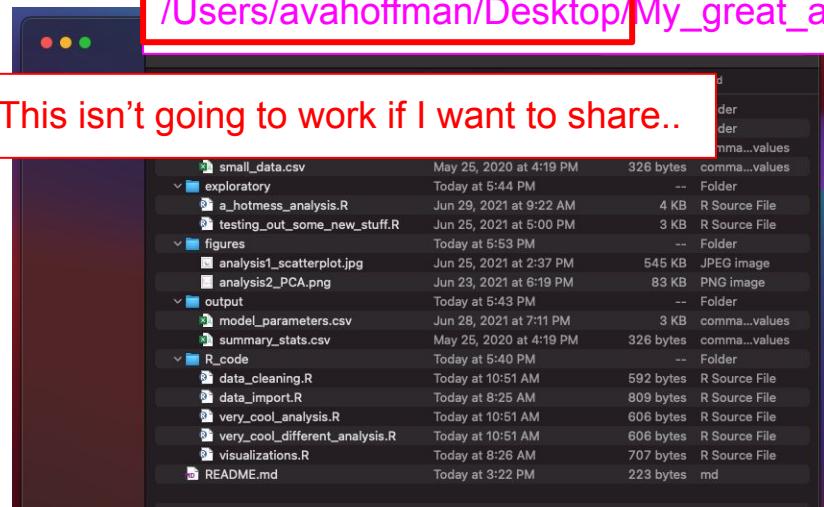
A screenshot of a cloud storage interface. The path is highlighted in pink: /Cloud/project. The interface has tabs for Files, Plots, Packages, Help, and Viewer. The Files tab is selected. The contents are:

Name	Size	Modified
project.Rproj	205 B	Jul 2, 2021, 6:09 PM
.Rhistory	0 B	Jul 2, 2021, 6:09 PM
data		
exploratory		
figures		
output		
R_code		
README.md	223 B	Jul 2, 2021, 6:14 PM

**Absolute path Starts at the root directory: /**

/Cloud/project

# But first.. Where are we?



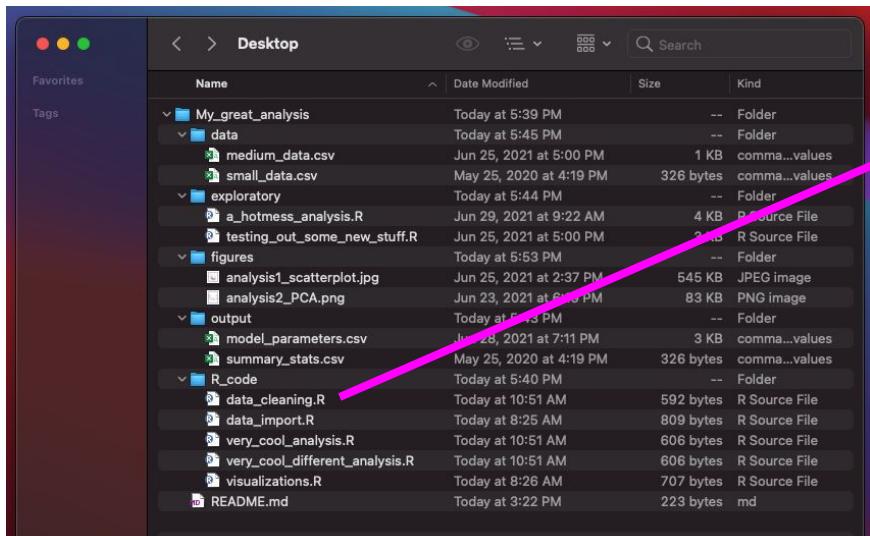
Name	Size	Modified
project.Rproj	205 B	Jul 2, 2021, 6:09 PM
.Rhistory	0 B	Jul 2, 2021, 6:09 PM
<b>data</b>		
exploratory		
figures		
output		
R_code		
README.md	223 B	Jul 2, 2021, 6:14 PM

**Absolute path Starts at the root directory:** /

/Cloud/project

# Enter the *relative* path!

Launch “`data_cleaning.R`”



```
library(tidyverse)
# Read in Data
dat = read_csv("small_data.csv")
```

R looks in `/Users/avahoffman/Desktop/My_great_analysis/R_code`

# Enter the *relative path*!

The screenshot shows the RStudio interface with a script editor containing the following code:

```
library(tidyverse)
# Read in Data
dat = read_csv("small_data.csv")
```

The console below shows the command being run and the resulting error:

```
R 4.1.0 - ~/Desktop/My_great_analysis/R_code/
> # Read in Data
> dat = read_csv("small_data.csv")
Error: 'small_data.csv' does not exist in current working directory
('/Users/avahoffman/Desktop/My_great_analysis/R_code').
```

A red box highlights the error message in the console.

The data isn't in  
/Users/avahoffman/Desktop/My\_great\_analysis/R\_code !

The screenshot shows the RStudio interface with the same script editor and console. The difference is in the fourth line of the script:

```
library(tidyverse)
# Read in Data
dat = read_csv("../data/small_data.csv")
```

A pink arrow points from a callout box to the three dots in the path. The callout box contains the text:

Use `..` to tell R to look a level higher

**Relative path** Starts  
relative to another file

# Enter the *relative* path + .Rproj

The screenshot shows the RStudio interface. On the left, a code editor window titled "data\_cleaning.R" displays the following R code:

```
1 library(tidyverse)
2
3 # Read in Data
4 dat = read_csv("/data/small_data.csv")
5
6
```

Below the code editor is a "Console" tab showing the R session information: "R 4.0.3 · /cloud/project/". To the right of the code editor is the "Environment" tab of the global environment, which is currently empty.

On the far right, there is a file browser window titled "project.Rproj" showing the project structure:

Name	Size	Last Modified
..	0 B	Jul 2, 2021, 6:
.Rhistory	205 B	Jul 2, 2021, 6:
data		
exploratory		
figures		
output		
project.Rproj		
R_code		
README.md		

A pink arrow points from the text "Relative path Starts relative to another file" in the bottom right box to the folder icon next to "project.Rproj" in the file browser.

**When a project is open, R knows to look relative to the .Rproj file**

**Click File > New Project... on your local machine if you need one**

**Relative path Starts relative to another file**

# Enter the *relative* path + .Rproj

The screenshot shows the RStudio interface. On the left, the code editor displays a script named `data_cleaning.R` with the following content:

```
1 library(tidyverse)
2 library(here)
3
4 here()
5
6 # Read in Data
7 dat = read_csv("./data/small_data.csv")
8
```

The console below shows the command `here()` being run and returning the path `"/cloud/project"`.

The Global Environment pane shows the `Global Env` tab selected. A pink box highlights the `here()` function call in the code editor, and a pink arrow points from it to the `here()` entry in the Global Environment pane.

The Project browser pane on the right lists the contents of the project directory:

Name	Size	Modified
..	0 B	Jul 2, 2021, 6:
.Rhistory	0 B	Jul 2, 2021, 6:
data	205 B	Jul 2, 2021, 6:
exploratory		
figures		
output		
project.Rproj		
R_code		
README.md		

A pink box highlights the `here()` entry in the Global Environment pane, and another pink box highlights the `here()` entry in the Project browser pane. A pink arrow points from the `here()` entry in the Global Environment pane to the `here()` entry in the Project browser pane.

**here () defines your base directory to be the directory where you have a .Rproj file**

**Relative path Starts relative to another file**

# Enter the *relative* path + .Rproj

The screenshot shows the RStudio interface. On the left, the code editor displays:

```
1 library(tidyverse)
2 library(here)
3
4 small_dat_path = here("data", "small_data.csv")
5
6 # Read in Data
7 dat = read_csv(small_dat_path)
8
9
```

A pink arrow points from the line `small_dat_path = here("data", "small_data.csv")` to the file browser on the right. The file browser shows a project structure with a `data` folder containing `medium_data.csv` and `small_data.csv`. The `small_data.csv` file is selected.

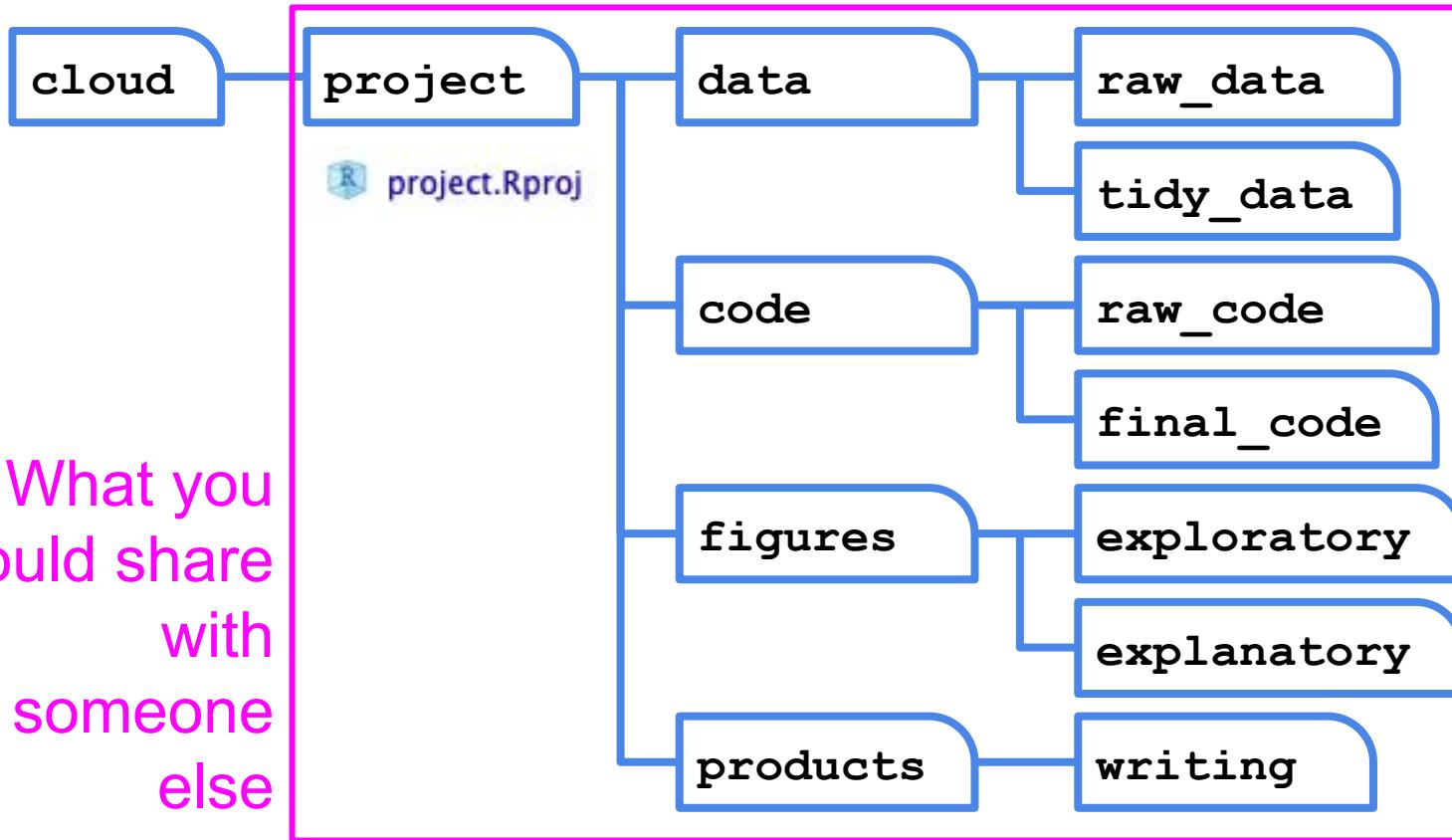
A pink box contains the text: `here()` can then be used to create absolute paths to files

In the bottom-left corner, the console shows:

```
R 4.0.3 · /cloud/project/
> small_dat_path = here("data", "small_data.csv")
> small_dat_path
[1] "/cloud/project/data/small_data.csv"
>
```

A pink arrow points from the output in the console to the file browser. A pink box at the bottom right contains the text: Relative path Starts relative to another file

What you  
would share  
with  
someone  
else



All paths in your code should be relative to /cloud/project

So how do you efficiently share projects or  
folders structured like this with other people?

GitHub!

# Unfortunate truth

<https://twitter.com/mtrc/status/617075570761965568>



**Michael Cook**  
@mtrc

Follow

"Version control is a truly vital concept that has  
unfortunately been implemented by madmen." Amen.  
[twitter.com/Pentadact/stat...](https://twitter.com/Pentadact/status/617075570761965568)

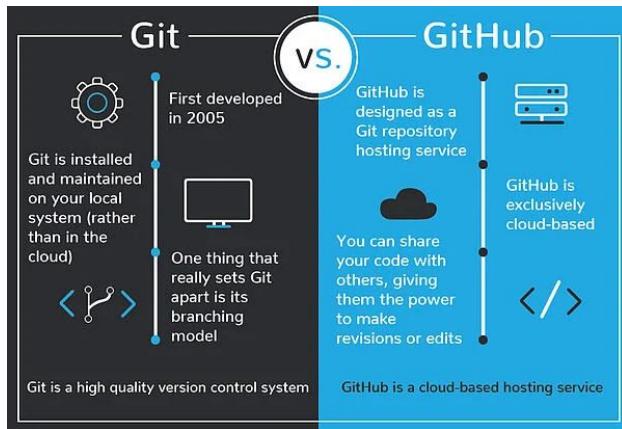
5:00 PM - 3 Jul 2015

↪ 9

★ 11

Git commands have convenience  
in mind, not intuition

# What's the difference between Git and GitHub?

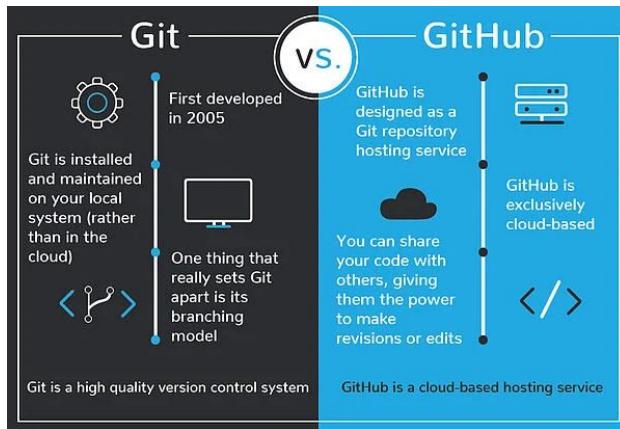


## In Simple Terms

Git is a version control system that lets you manage and keep track of your source code history

GitHub is a cloud-based hosting service that lets you manage Git repositories

# What's the difference between Git and GitHub?



## In Simple Terms

Git is a version control system that lets you manage and keep track of your source code history

GitHub is a cloud-based hosting service that lets you manage Git repositories

Git

Your entire work history

GitHub

LinkedIn®

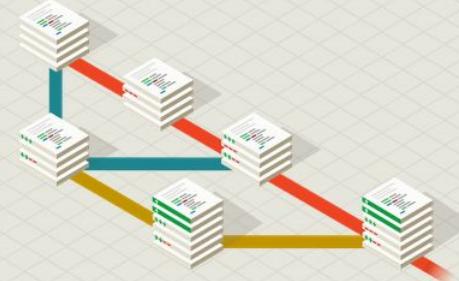


# git --fast-version-control

Search entire site...

Git is a **free and open source** distributed version control system designed to handle everything from small to very large projects with speed and efficiency.

Git is **easy to learn** and has a **tiny footprint with lightning fast performance**. It outclasses SCM tools like Subversion, CVS, Perforce, and ClearCase with features like **cheap local branching**, convenient **staging areas**, and **multiple workflows**.



## About

The advantages of Git compared to other source control systems.



## Documentation

Command reference pages, Pro Git book content, videos and other material.



## Downloads

GUI clients and binary releases for all major platforms.



## Community

Get involved! Bug reporting, mailing list, chat, development and more.



**Pro Git** by Scott Chacon and Ben Straub is available to [read online for free](#). Dead tree versions are available on [Amazon.com](#).



[Mac GUIs](#)



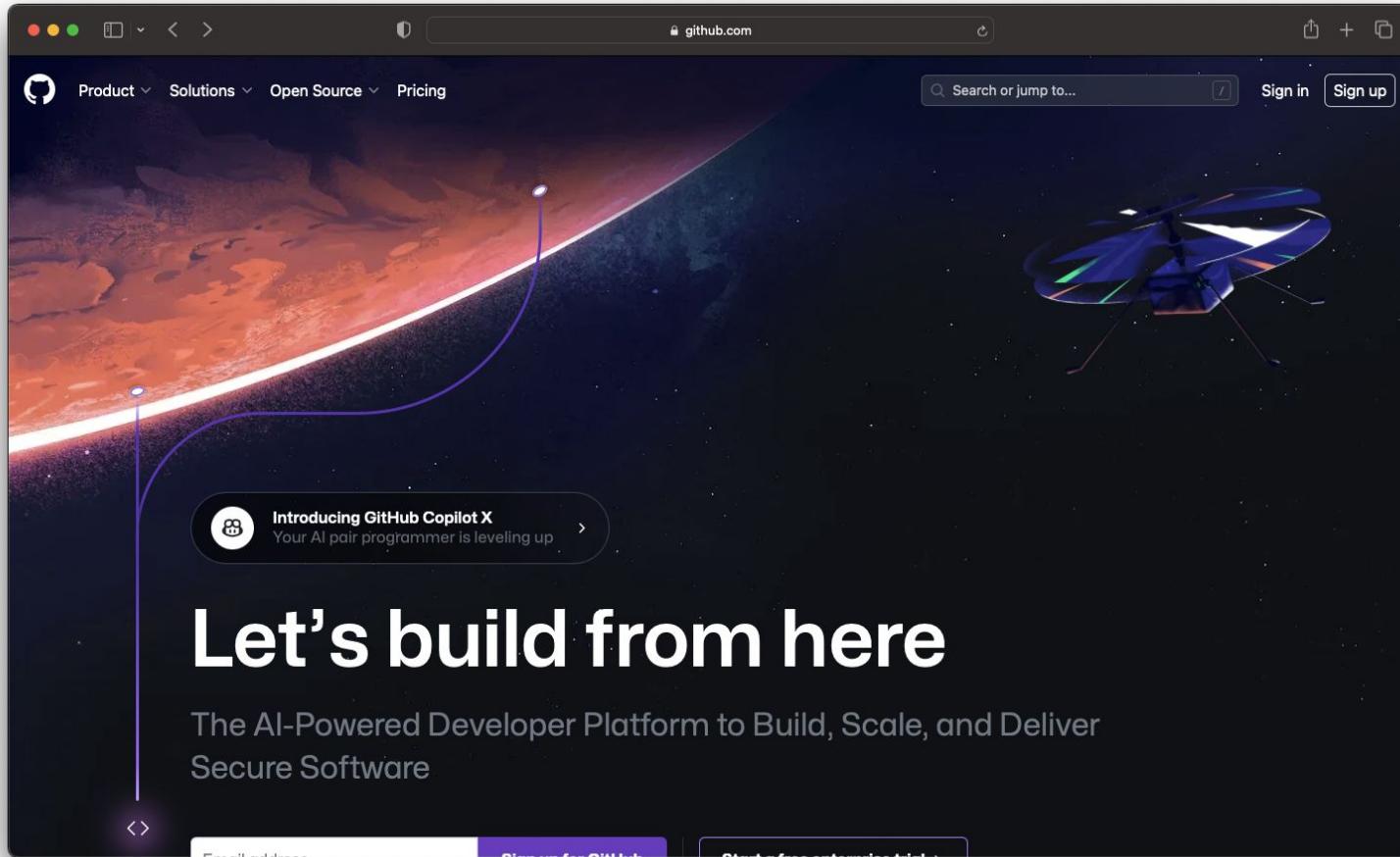
[Tarballs](#)



[Windows Build](#)



[Source Code](#)



<https://github.com/>

It's like a shared Dropbox folder that you have to sync yourself, on each of your computers, in specific orders

# Why not just use Dropbox?

The screenshot shows a GitHub commit history for the repository `jtleek/jtleek.github.io`. The commits are listed by date:

- Commits on May 8, 2015:**
  - Merge pull request #14 from hammer/patch-1** (by jtleek, May 8, 2015)
  - updated papers with rail** (by jtleek, May 8, 2015)
- Commits on May 4, 2015:**
  - Merge pull request #14 from hammer/patch-1** (by jtleek, May 4, 2015)
  - Fix typo on papers.md** (by hammer, May 4, 2015)
  - regionr eport paper** (by jtleek, May 4, 2015)
- Commits on Apr 30, 2015:**
  - added boosting lecture** (by jtleek, Apr 30, 2015)
  - polyester paper** (by jtleek, Apr 30, 2015)

SISBID / Data-Wrangling

Unwatch 13 Star 51 Fork 76

Code Issues Pull requests Actions Projects Wiki Security Insights ...

gh-pages 11 branches 1 tag Go to file Add file Code

carriewright11 Merge pull request #35 from SISBID... faef211 5 hours ago 338 commits

data	all pdfs may be created	12 months ago
labs	Merge pull request #36 from SISBID/data_cleaning	5 hours ago
lecture_notes	Merge pull request #36 from SISBID/data_cleaning	5 hours ago
.gitignore	addeed token	12 months ago
.nojekyll	updated license, added webpage	6 years ago
Google_Doc_Syll.url	updating data io lab	12 months ago
LICENSE	updated license, added webpage	6 years ago
Module1.Rproj	smaller repo	12 months ago
README.md	Update README.md	9 days ago
all_the_packages.txt	all the packages added	12 months ago
download_pdfs.R	updated index and the pdfs	12 months ago
index.Rmd	fixing links for subsetting lab from 2 to 1	2 days ago
index.html	fixing links for subsetting lab from 2 to 1	2 days ago
list_all_packages.R	all the packages added	12 months ago

About

Teaching material for Summer Institute in Statistics for Big Data Module 1.

Readme View license

Releases 1

2019 Final SISBID ... Latest on Jun 30, 2020

Packages

No packages published Publish your first package

Contributors 8



<https://github.com/SISBID/Data-Wrangling>

SISBID / Data-Wrangling

Unwatch 13 Star 51 Fork 76

Code Issues Pull requests Actions Projects Wiki Security Insights ...

gh-pages 11 branches 1 tag Go to file Add file Code

carriwright11 Merge pull request #35 from SISBID... faef211 5 hours ago 338 commits

data	all pdfs may be created	12 months ago
labs	Merge pull request #36 from SISBID/data_cleaning	5 hours ago
lecture_notes	Merge pull request #36 from SISBID/data_cleaning	5 hours ago
.gitignore	addeed token	12 months ago
.nojekyll	updated license, added webpage	6 years ago
Google_Doc_Syll.url	updating data io lab	12 months ago
LICENSE	updated license, added webpage	6 years ago
Module1.Rproj	smaller repo	12 months ago
README.md	Update README.md	9 days ago
all_the_packages.txt	all the packages added	12 months ago
download_pdfs.R	updated index and the pdfs	12 months ago
index.Rmd	fixing links for subsetting lab from 2 to 1	2 days ago
index.html	fixing links for subsetting lab from 2 to 1	2 days ago
list_all_packages.R	all the packages added	12 months ago

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Releases 1 2019 Final SISBID ... Latest on Jun 30, 2020

Packages No packages published Publish your first package

Contributors 8

<https://github.com/SISBID/Data-Wrangling>

# Install Git/Github Locally (for later)

<http://happygitwithr.com/install-git.html>

and

<https://try.github.io/levels/1/challenges/1>

Many cloud tools already have git installed!

# Step 1: New repo on GitHub

A screenshot of a GitHub user profile page for `avahoffman`. The top navigation bar includes links for `Pulls`, `Issues`, `Marketplace`, and `Explore`. A pink arrow points from the `New` button in the repository list to the `All activity` section.

**Repositories**

- [SISBID/Data-Wrangling](#)
- [jhudsl/AnVIL\\_Book\\_Getting\\_Started](#)
- [avahoffman/blue-gramma-gene-expression](#)
- [jhudsl/intro\\_to\\_r](#)
- [avahoffman/DESeq2-viz-demo](#)
- [jhudsl/jhudsl.github.io](#)
- [avahoffman/CV-and-resumes](#)

[Show more](#)

**Recent activity**

[Add Instructor checklist as...](#)

**All activity**

**carriewright11 pushed to SISBID/Data-Wrangling 5 hours ago**

- 6 commits to [gh-pages](#)
- [98387ee](#) fixing links for subsetting lab from 2 to 1
- [faef211](#) Merge pull request #35 from SISBID/subsetting\_part2
- [4 more commits »](#)

**carriewright11 pushed to SISBID/Data-Wrangling 2 days ago**

- 1 commit to [subsetting\\_part2](#)
- [98387ee](#) fixing links for subsetting lab from 2 to 1

**KatherineCox pushed to jhudsl/AnVIL\_Book\_Getting\_Started 2 days ago**

- 1 commit to [main](#)
- [00d7503](#) Render bookdown

<https://github.com/>

The screenshot shows the GitHub homepage interface. At the top, there is a navigation bar with the GitHub logo, a search bar containing "Search or jump to...", and links for "Pulls", "Issues", "Marketplace", and "Explore". To the right of the search bar is a user profile icon and a dropdown menu. A pink box highlights the "New repository" option in this dropdown menu. Below the navigation bar, the user's profile "avahoffman" is shown, along with a list of repositories. A green "New" button is visible next to the repository list. The main content area displays "All activity" with several recent pushes from different users to various repositories. One push from "carriewright11" to "SISBID/Data-Wrangling" is detailed, showing 6 commits to "gh-pages" and two specific commits. Another push from "carriewright11" to the same repository is also listed. A third push from "KatherineCox" to "jhudsl/AnVIL\_Book\_Getting\_Started" is shown at the bottom.

Search or jump to... /

Pulls Issues Marketplace Explore

avahoffman

Repositories

New

Find a repository...

SISBID/Data-Wrangling

jhudsl/AnVIL\_Book\_Getting\_Started

avahoffman/blue-grama-gene-expression

jhudsl/intro\_to\_r

avahoffman/DESeq2-viz-demo

jhudsl/jhudsl.github.io

avahoffman/CV-and-resumes

Show more

Recent activity

Add Instructor checklist as...

All activity

carriewright11 pushed to SISBID/Data-Wrangling 5 hours ago

6 commits to [gh-pages](#)

98387ee fixing links for subsetting lab from 2 to 1

faef211 Merge pull request #35 from SISBID/subsetting\_part2

4 more commits »

carriewright11 pushed to SISBID/Data-Wrangling 2 days ago

1 commit to [subsetting\\_part2](#)

98387ee fixing links for subsetting lab from 2 to 1

KatherineCox pushed to jhudsl/AnVIL\_Book\_Getting\_Started 2 days ago

1 commit to [main](#)

00d7503 Render bookdown

New repository

Import repository

New gist

New organization

New project

<https://github.com/>

## Create a new repository

A repository contains all project files, including the revision history. Already have a project repository elsewhere? [Import a repository](#).

### Repository template

Start your repository with a template repository's contents.

No template ▾

Owner \*



avahoffman

Repository name \*

my\_first\_project



Great repository names are short and memorable. Need inspiration? How about [fuzzy-pancake](#)?

Description (optional)

My first project files

Public

Anyone on the internet can see this repository. You choose who can commit.

Private

You choose who can see and commit to this repository.

Initialize this repository with:

Skip this step if you're importing an existing repository.

Add a README file

This is where you can write a long description for your project. [Learn more](#).

Add .gitignore

Choose which files not to track from a list of templates. [Learn more](#).

Choose a license

A license tells others what they can and can't do with your code. [Learn more](#).

This will set `main` as the default branch. Change the default name in your [settings](#).

[Create repository](#)

<https://github.com/new>



Search or jump to...

Pulls Issues Marketplace Explore



avahoffman / my\_first\_project

Unwatch 1

Star 0

Fork 0

Code

Issues

Pull requests

Actions

Projects

Wiki

Security

Insights

...

main

Go to file

Add file

Code

avahoffman Initial commit ...

README.md

Initial comm...

README.md

## my\_first\_project

My first project files

Clone

HTTPS SSH GitHub CLI

[https://github.com/avahoffman/my\\_first\\_project](https://github.com/avahoffman/my_first_project)

Use Git or checkout with SVN using the web URL.

Open with GitHub Desktop

Download ZIP

### About

My first project files

Readme

### Releases

No releases published

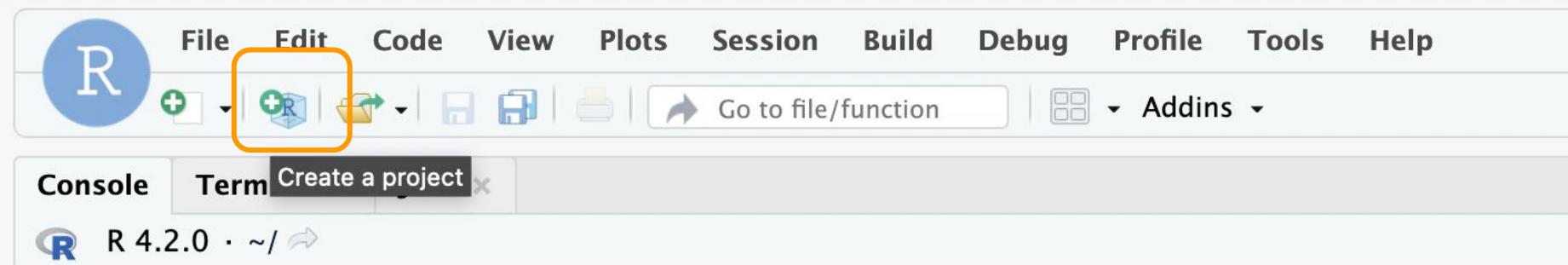
Create a new release

### Packages

No packages published

Publish your first package

# Step 2: Create “local” link

[DASHBOARD](#)[DATA](#)[NOTEBOOKS](#)[WORKFLOWS](#)[JOB HIST](#)

```
R version 4.2.0 (2022-04-22) -- "Vigorous Calisthenics"
Copyright (C) 2022 The R Foundation for Statistical Computing
Platform: x86_64-pc-linux-gnu (64-bit)
```

```
R is free software and comes with ABSOLUTELY NO WARRANTY.
You are welcome to redistribute it under certain conditions.
Type 'license()' or 'licence()' for distribution details.
```



123 MiB



## New Project Wizard

## Create Project



## New Directory

Start a project in a brand new working directory



## Existing Directory

Associate a project with an existing working directory



## Version Control

Checkout a project from a version control repository



Cancel

Environment is empty

## Viewer

 Upload  Delete

Size



Environment

History

Connections

Tutorial

New Project Wizard

123 MiB ▾



Back

## Create Project from Version Control

**Git**

Clone a project from a Git repository

**Subversion**

Checkout a project from a Subversion repository



Cancel

Environment is empty

Viewer

 Upload  Delete

Size



Environment

History

Connections

Build

Git

Tutorial

160 MiB ▾



## New Project Wizard

Back

## Clone Git Repository



Repository URL:

Project directory name:

Create project as subdirectory of:

Browse...

Create Project

Cancel

Environment is empty

## Viewer

Upload Delete Rename

Size M

741 B J

499 B J

2.2 KB J

169 B J

880.6 KB J

8.7 KB J

Avoid placing on OneDrive (Dropbox seems to be ok)

# Step 3: Change stuff

The screenshot shows the RStudio interface. The top menu bar includes File, Edit, Code, View, Plots, Session, Build, Debug, Profile, Tools, and Help. The title bar indicates the project is "my\_first\_project".

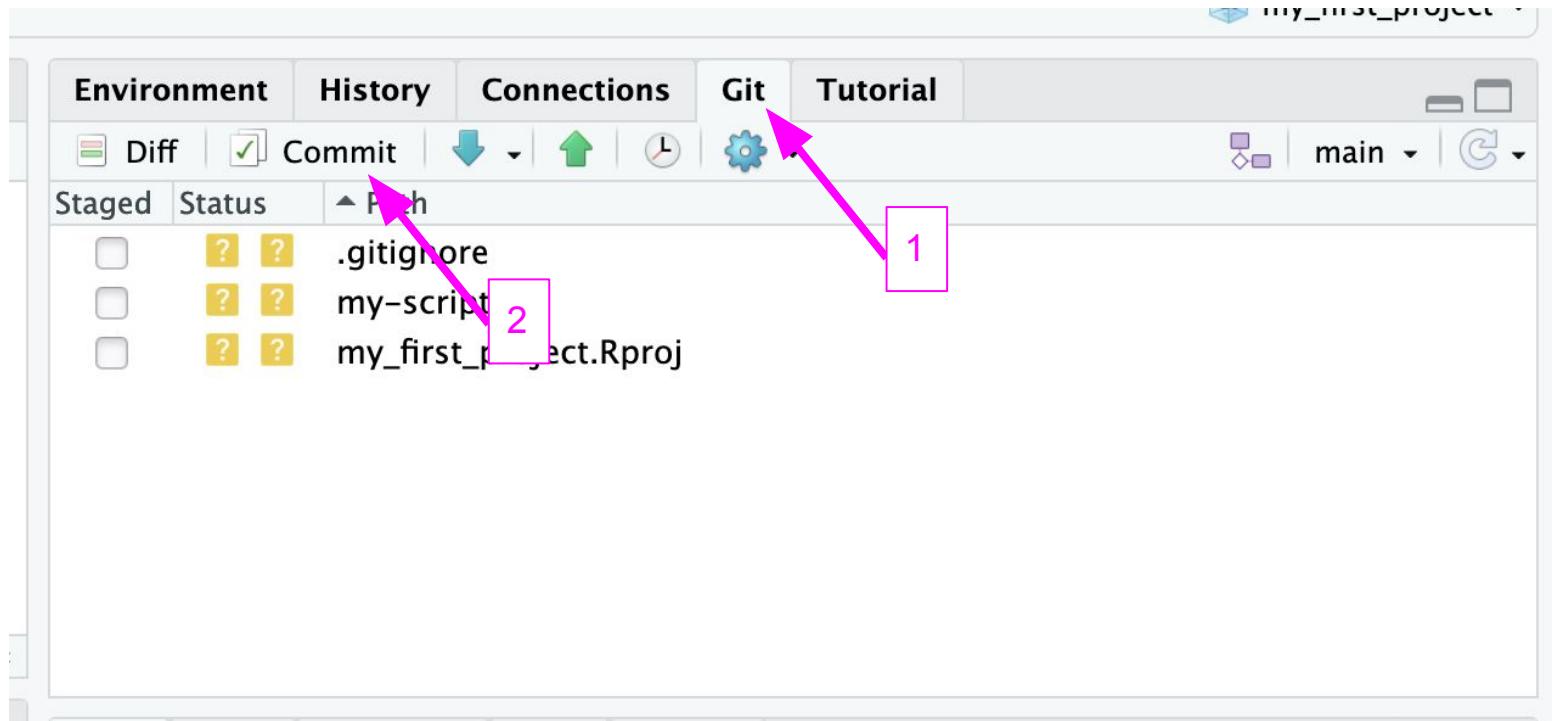
The left pane contains the "Code" editor with a pink border around the "my-script.R" tab. The code in the editor is:

```
1 # My first script
```

The right pane is the "Files" browser, showing the project structure:

Name	Size	Modified
..		
.gitignore	40 B	Jul 24, 2022, 9:42 PM
my_first_project.Rproj	205 B	Jul 24, 2022, 9:42 PM
my-script.R	17 B	Jul 24, 2022, 9:43 PM

A pink arrow points from the "my-script.R" entry in the file list towards the "my-script.R" tab in the code editor.



Changes History main | Stage Revert Ignore Pull Push

Staged Status Path

.gitignore  
my-script.R  
my\_first\_project.Rproj

Commit message  
Created my script file  
22 characters

Amend previous commit Commit

1

2

3

Staged Unstaged Context 5 lines Ignore Whitespace Unstage All

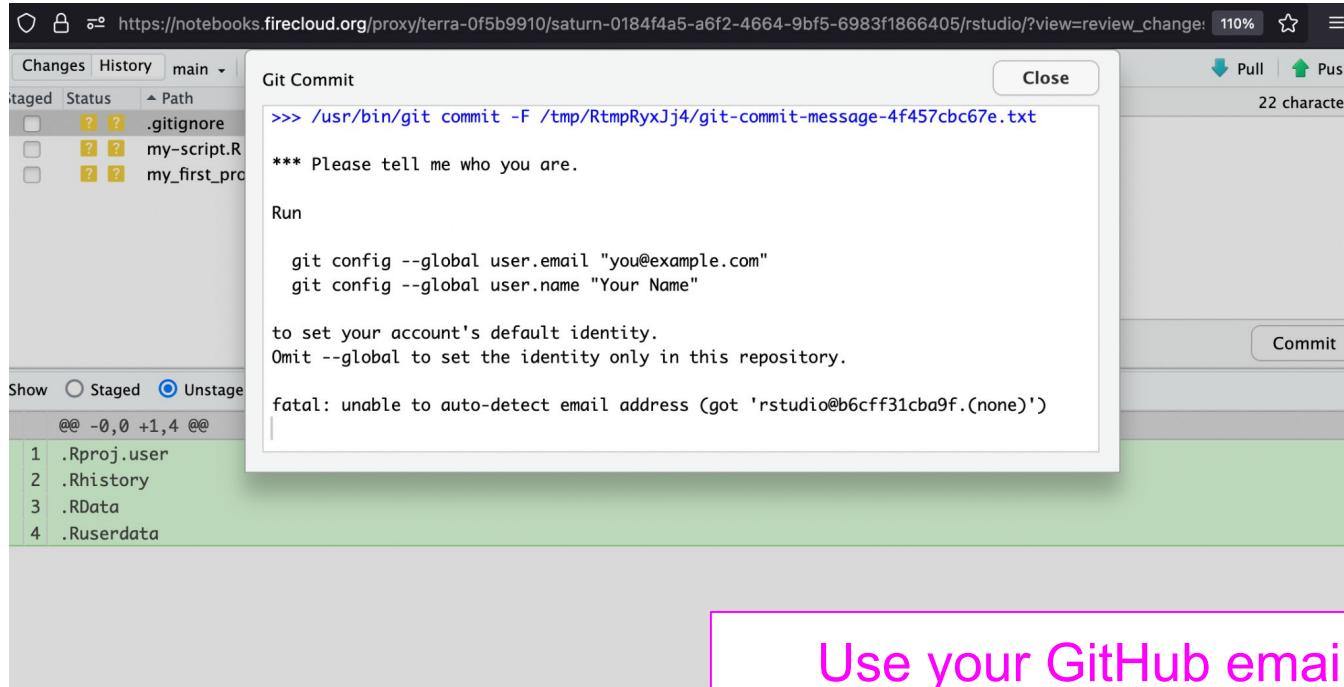
Unstage chunk

@@ -0,0 +1,4 @@

1 .Rproj.user  
2 .Rhistory  
3 .RData  
4 .Ruserdata

The screenshot shows the RStudio Git Changes interface. In the top left, there are tabs for 'Changes' and 'History', and a dropdown for 'main'. Below these are buttons for 'Stage', 'Revert', and 'Ignore'. On the right side, there are 'Pull' and 'Push' buttons. The main area shows a list of staged files: '.gitignore', 'my-script.R', and 'my\_first\_project.Rproj'. A pink box labeled '1' has an arrow pointing to the 'Staged' tab at the bottom. To the right, a 'Commit message' field contains 'Created my script file' with a character count of '22 characters'. A pink box labeled '2' has an arrow pointing to this field. At the bottom right, there is a 'Commit' button and a checkbox for 'Amend previous commit'. Another pink box labeled '3' has an arrow pointing to the 'Unstage chunk' button. The bottom part of the interface shows a diff view with lines 1 through 4, each containing a file path. There are also buttons for 'Context', '5 lines', 'Ignore Whitespace', and 'Unstage All'.

# You might be prompted for more information



Use your GitHub email and  
display name

# You might be prompted for more information



A screenshot of the RStudio interface. At the top, there's a header bar with "1:18" and "(Top Level) ▾" on the left, and "R Script" with a dropdown arrow on the right. Below the header are three tabs: "Console" (selected), "Terminal" (highlighted with a pink arrow), and "Jobs". The main area shows a terminal window titled "Terminal 1" with the path "/home/rstudio/my\_first\_project". The terminal output is as follows:

```
rstudio@b6cff31cba9f:~/my_first_project$ git config --global user.email "avamariehoffman@gmail.com"
rstudio@b6cff31cba9f:~/my_first_project$ git config --global user.name "AM Hoffman"
rstudio@b6cff31cba9f:~/my_first_project$ 
```

Use the RStudio Terminal

try main ▾

is ahead of 'origin'

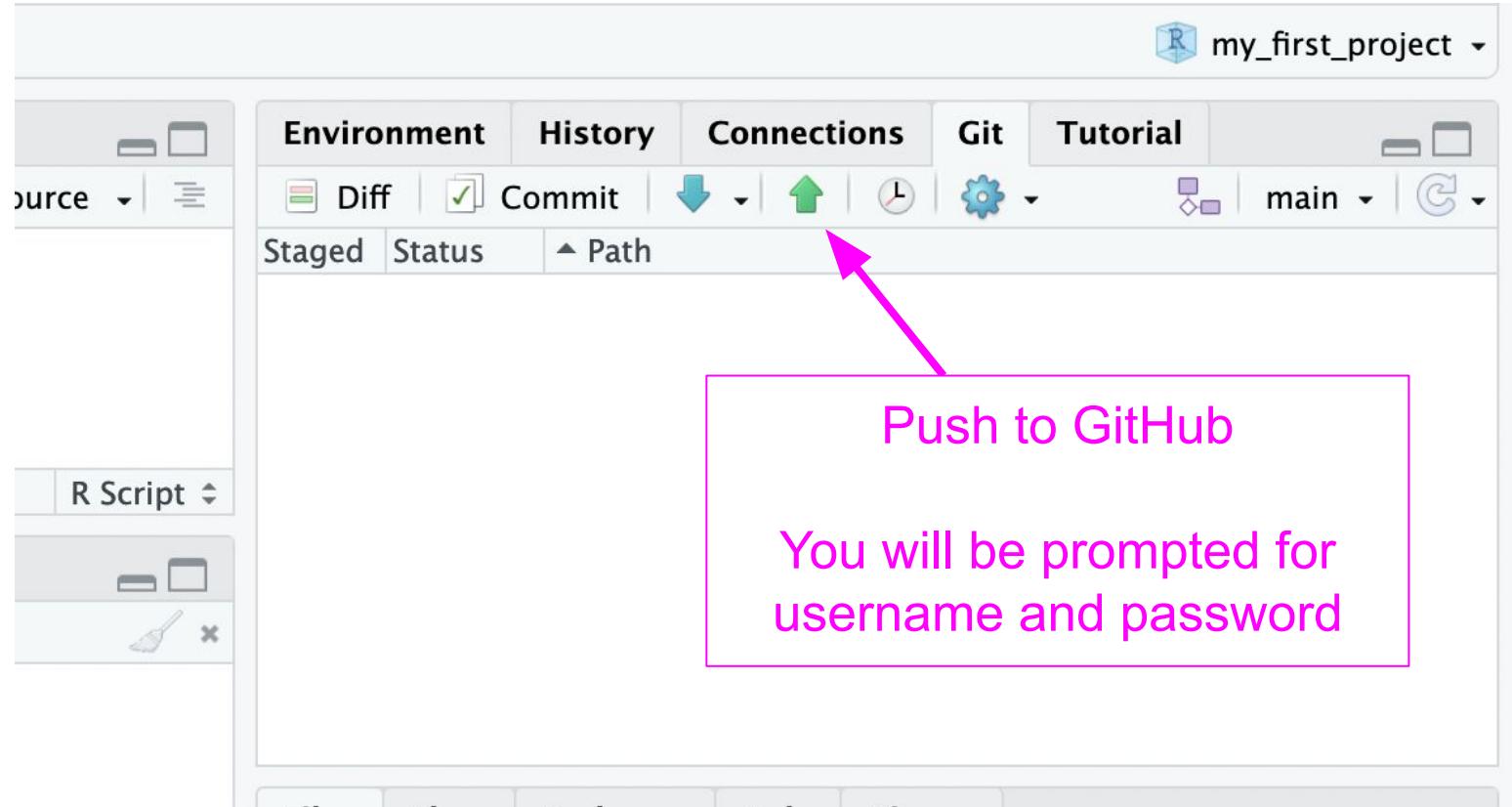
▲ Path

d ○ Unstage

## Git Commit

**Close**

```
>>> /usr/bin/git commit -F /tmp/RtmpRyxJj4/git-commit-message-4f4261ceab0.txt
[main 0e67afd] Created my script file
  3 files changed, 18 insertions(+)
   create mode 100644 .gitignore
   create mode 100644 my-script.R
   create mode 100644 my_first_project.Rproj
```



Push to GitHub

You will be prompted for  
username and password

[main](#)[2 branches](#)[0 tags](#)[Go to file](#)[Add file](#)[Code](#)

avahoffman Update README.md

0bf19d7 now 5 commits

[.gitignore](#)

Created my script file

4 minutes ago

[README.md](#)

Update README.md

now

[my-script.R](#)

Created my script file

4 minutes ago

[my\\_first\\_project.Rproj](#)

Created my script file

4 minutes ago

README.md

my\_ **Success!**

## About

My first project files

[Readme](#)[0 stars](#)[1 watching](#)[0 forks](#)

## Releases

No releases published

[Create a new release](#)

## Packages

No packages published

[Publish your first package](#)

## Languages

R 100.0%

# Review

- You add/edit files in your project on your personal computer / cloud (your **local repository**).
- You publish/share these changes to a **remote repository** (GitHub) so that others may see them/incorporate them into their own work.
- Git commands (if you want to use command line)
  - `git status`
  - `git add .`
  - `git commit -m "A message here"`
  - `git push`

# Staging files and folders with git add

git add file_or_folder	stages <b>specified file or folder</b>
git add .	stages <b>new and modified files</b>
git add -u	stages <b>modified and deleted files</b>
git add -A	stages <b>new, modified, and deleted files</b>
git add *.csv	Stages <b>any files with .csv extension</b>
git add *	Use with caution: stages <b>everything</b>

Step 4: Incorporate changes  
made by others

&lt;&gt; Edit file

Preview

 Show diff

# my\_first\_project

Here is a description of the project.



## Commit changes

Update README.md

Add an optional extended description...

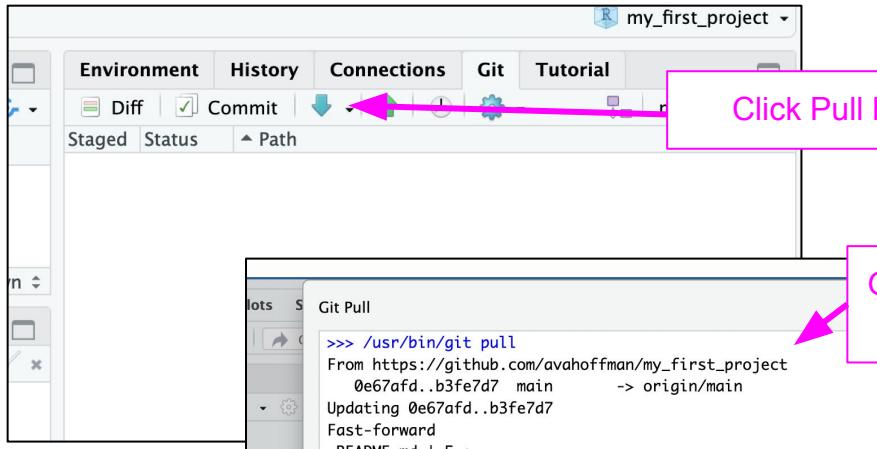
Updating the readme on remote  
(on GitHub) - simulates changes  
made by others

-o- Commit directly to the main branch.

! Create a new branch for this commit and start a pull request. Learn more about pull requests.

**Commit changes**

**Cancel**



A terminal window titled 'Git Pull' displays the command output:

```
>>> /usr/bin/git pull
From https://github.com/avahoffman/my_first_project
 0e67af..b3fe7d7  main      -> origin/main
Updating 0e67af..b3fe7d7
Fast-forward
 README.md | 5 +---->
 1 file changed, 1 insertion(+), 4 deletions(-)
```

A pink callout box with the text 'Shows files changed' points to the terminal output. The RStudio interface is visible in the background.

The RStudio interface shows an updated 'my-script.R' file and a 'README.md' file. The 'README.md' file contains:

```
1 # my_first_project
2
3 Here is a description of the project.
4
```

A pink callout box with the text 'Files automatically update!' points to the updated 'README.md' file. Below, a terminal window titled 'Terminal 1' shows the command:

```
rstudio@b6cff31cba9f:~/my_first_project$ git config --global user.email "avamariehoffman@gmail.com"
rstudio@b6cff31cba9f:~/my_first_project$ git config --global user.name "AM Hoffman"
rstudio@b6cff31cba9f:~/my_first_project$
```

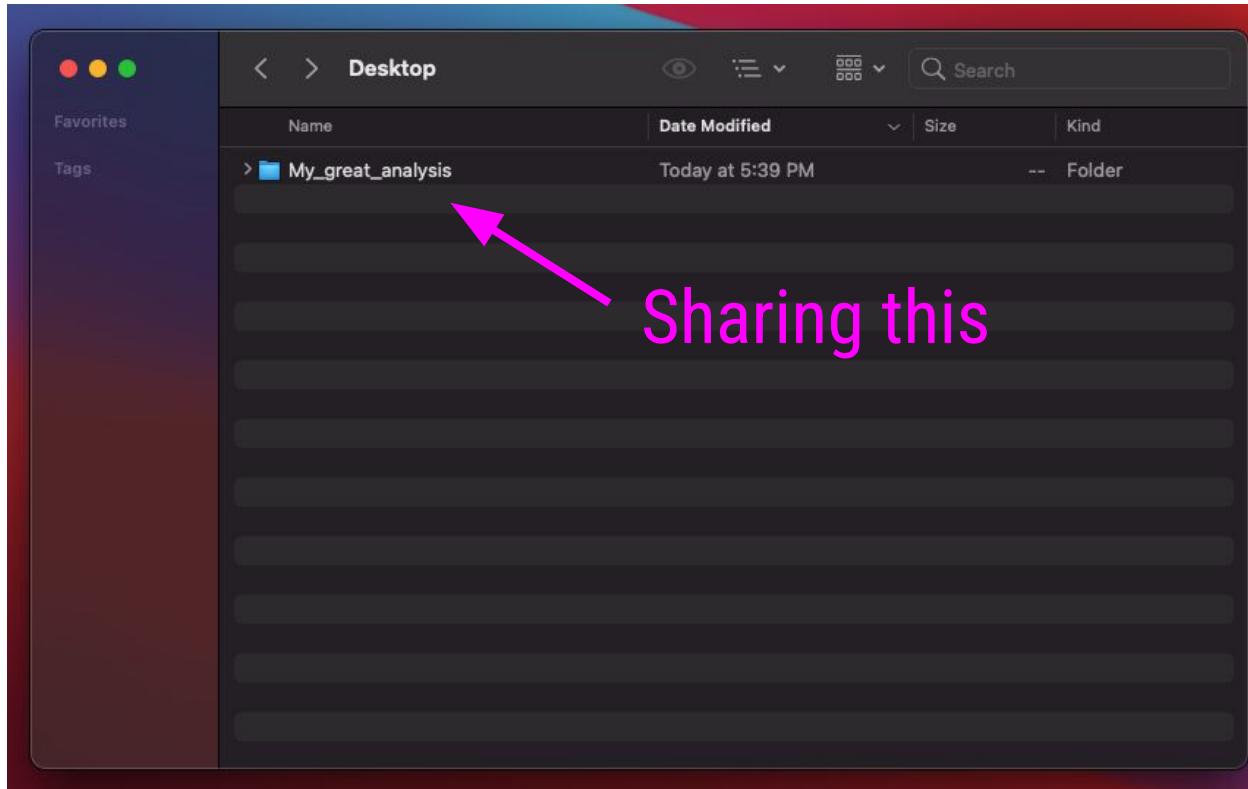
# Pulling

- Others have pushed changes to the remote repository.
- You want to incorporate those changes into your local repository.
- Git commands
  - `git pull`

**Pro tip:** pull before you start working on new local changes!

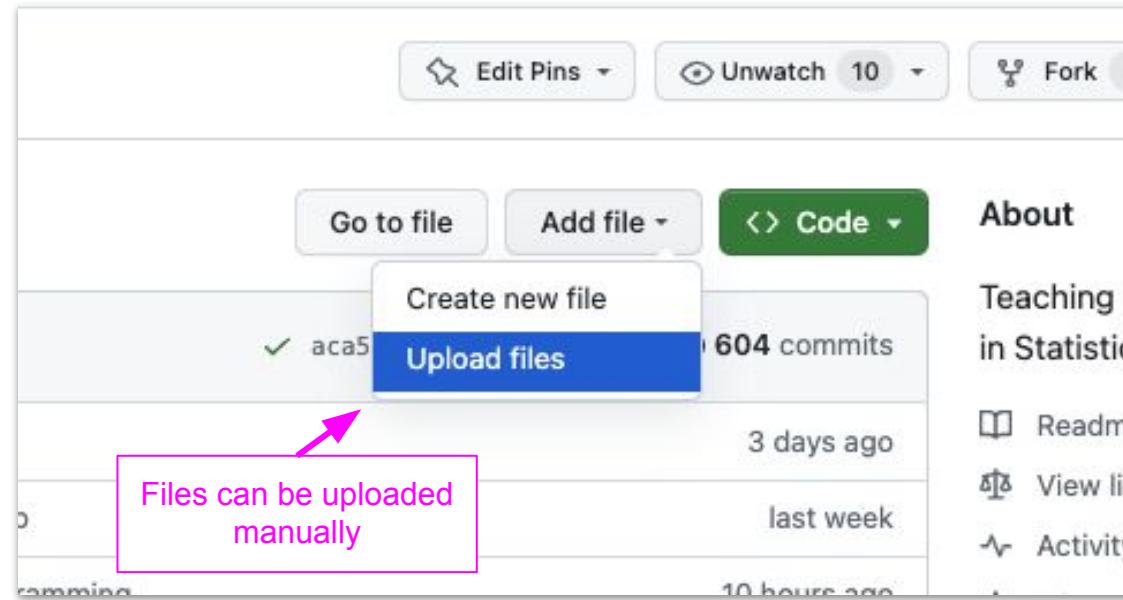
When working with others, you should create **branches** so you don't overwrite work by others. Let us know if you want to learn more about this!

# What is the goal of making code?



# If nothing else...

Use github as a place to store and share your code!



# Resources!

<https://git-school.github.io/visualizing-git/>

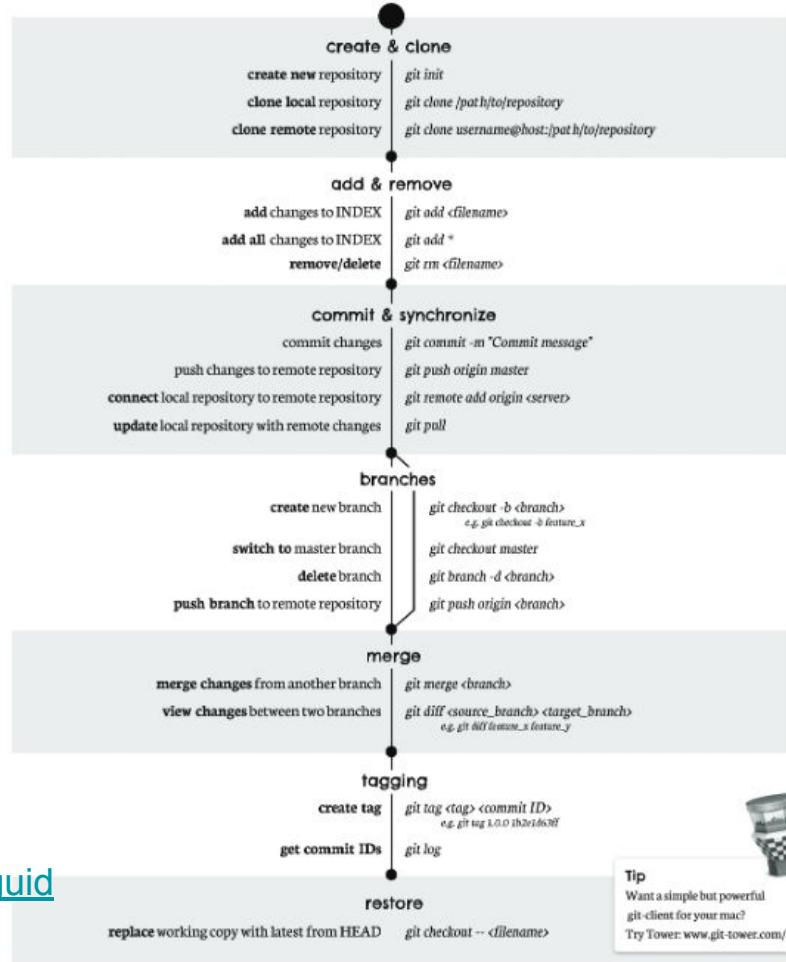
<https://rogerdudler.github.io/git-guide/>

<https://www.katacoda.com/courses/git>

[https://github.com/Meghansaha/please\\_let\\_me\\_merge?tab=readme-ov-file#resources-for-improving-git-knowledge](https://github.com/Meghansaha/please_let_me_merge?tab=readme-ov-file#resources-for-improving-git-knowledge)

# git cheat sheet

learn more about git the simple way at [rogerdudler.github.io/git-guide/](https://rogerdudler.github.io/git-guide/)  
cheat sheet created by Nina Joeschke of [ninajs.de](http://ninajs.de)



[https://rogerdudler.github.io/git-guide/files/git\\_cheat\\_sheet.pdf](https://rogerdudler.github.io/git-guide/files/git_cheat_sheet.pdf)

https://desktop.github.com/



Overview Release Notes Help

# GitHub Desktop

Focus on what matters instead of fighting with Git. Whether you're new to Git or a seasoned user, GitHub Desktop simplifies your development workflow.

[Download for macOS](#)

Download the native macOS build for [Apple silicon machines](#). If you don't know whether your machine has an Apple or Intel chip, see the [Apple docs](#).

[Download for Windows](#)

By downloading, you agree to the [Open Source Applications Terms](#).

Current Repository: desktop    Current Branch: esc-pr #3972    Fetch origin: Last fetched 3 minutes ago

Changes History Add event handler to dropdown component

Appease linter iAmWillShepherd and Markus Olsson committed a day ago

Add event handler to dropdown component iAmWillShepherd and Markus Olsson...

Move escape behavior to correct co... iAmWillShepherd and Markus Olsson...

Remove event handler from the bran... iAmWillShepherd and Markus Olsson...

Merge branch 'master' into esc-pr iAmWillShepherd committed a day ago

Merge pull request #4044 from des... Neha Batra committed a day ago

Merge pull request #4070 from desk... Brendan Forster committed 2 days ago

bump to beta3 Brendan Forster committed 2 days ago

Merge pull request #4057 from desk... Brendan Forster committed 2 days ago

Merge pull request #4067 from desk... Brendan Forster committed 2 days ago

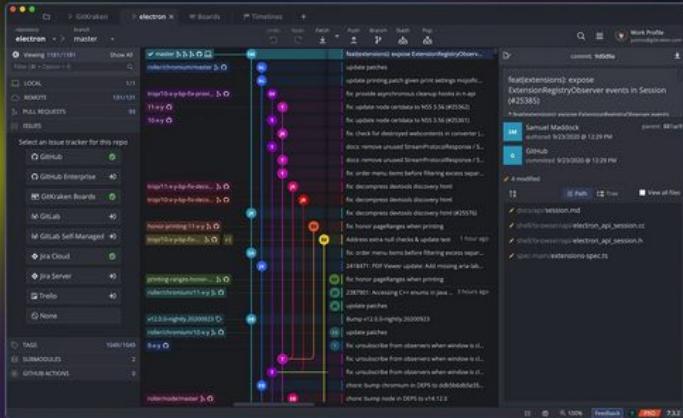
Release to 1.1.0-beta2

```
@@ -145,6 +145,10 @@ export class ToolbarDropdown extends React.Component<
 145   this.state = { clientRect: null }
 146 }
 147
 148 + private get isOpen() {
 149 +   return this.props.dropdownState === 'open'
 150 +
 151 +
 152   private dropdownIcon(state: DropdownState): OcticonSymbol {
 153     // @TODO: Remake triangle octicon in a 12px version,
 154     // right now it's scaled badly on normal dpi monitor
 155   }
 156
 157   @@ -249,6 +253,13 @@ export class ToolbarDropdown extends React.Component<
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# GitKraken

Legendary Git GUI client for Windows, Mac & Linux



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