Introduction to Github

Isabelle Langrock
(with some advice from Alvin & Tian)

October 8, 2021

Before we get started…

1. Download and install Git (https://git-scm.com/downloads)
2. Open up a Github account and share your username

What is Github?

Github is an internet platform for hosting code that works with the version control system **git.** Git is an open source system of version control that tracks changes to a given set of files and facilitates collaborations among coders.

*The github logo is an **octocat.** Why? Idk.*

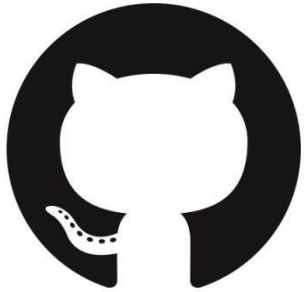
Github
- Cloud Repository
- UX
- Task Control

Git
- Version control
- Track changes
- collaborate

I think of Github as the shiny packaging of Git. Kind of like what Rstudio is to R.

+ **To Do:**
  Make a Github account!

+ **Book Recommendation:**
  Uncanny Valley by Anna Weiner



GitHub

Research

Teaching

Other Uses

(Personal website, cool projects, etc)

Github & The Computational Research Resources Environment

Hypothesis Generation

OSF

- Upload pre-registrations and any pre-analysis plans

Data Collection

. . . *WILL VARY* . . .

Analysis

RStudio®

- Writing & running all analysis scripts
- Finalizing figures and tables

GitHub

- Cloud repository for all scripts
- Allows for easy collaboration, replication, and tracking any changes

Final Stages

GitHub

- Well documented scripts
- History of all edits to scripts

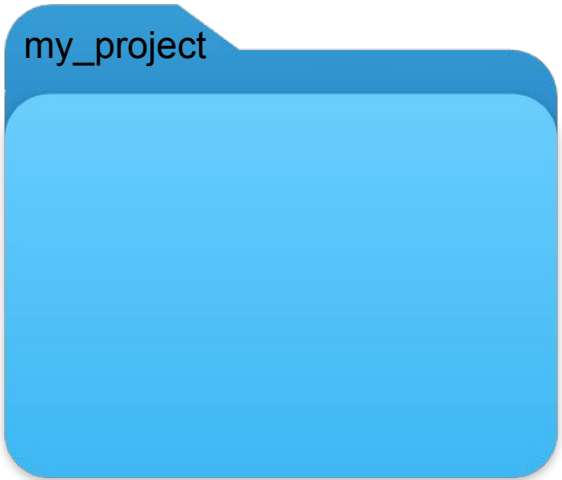
OSF

- Record of Pre-registrations
- Data

SSRN

- Working Paper

Github for Research: Organizing Your Code



my_project.Rproj

01_Writing *Keep all manuscripts drafts, reports, and presentations here.* ***Pro Tip! put the date in the document names of your drafts (e.g. 2021_10_08_manuscripts.docx)***

02_Scripts *Keep all your scripts in here.* ***Pro Tip! label your scripts with numbers: 01_description.R, 02_regressions.R, etc.***

03_Data *Put all *Raw* Data Files here*

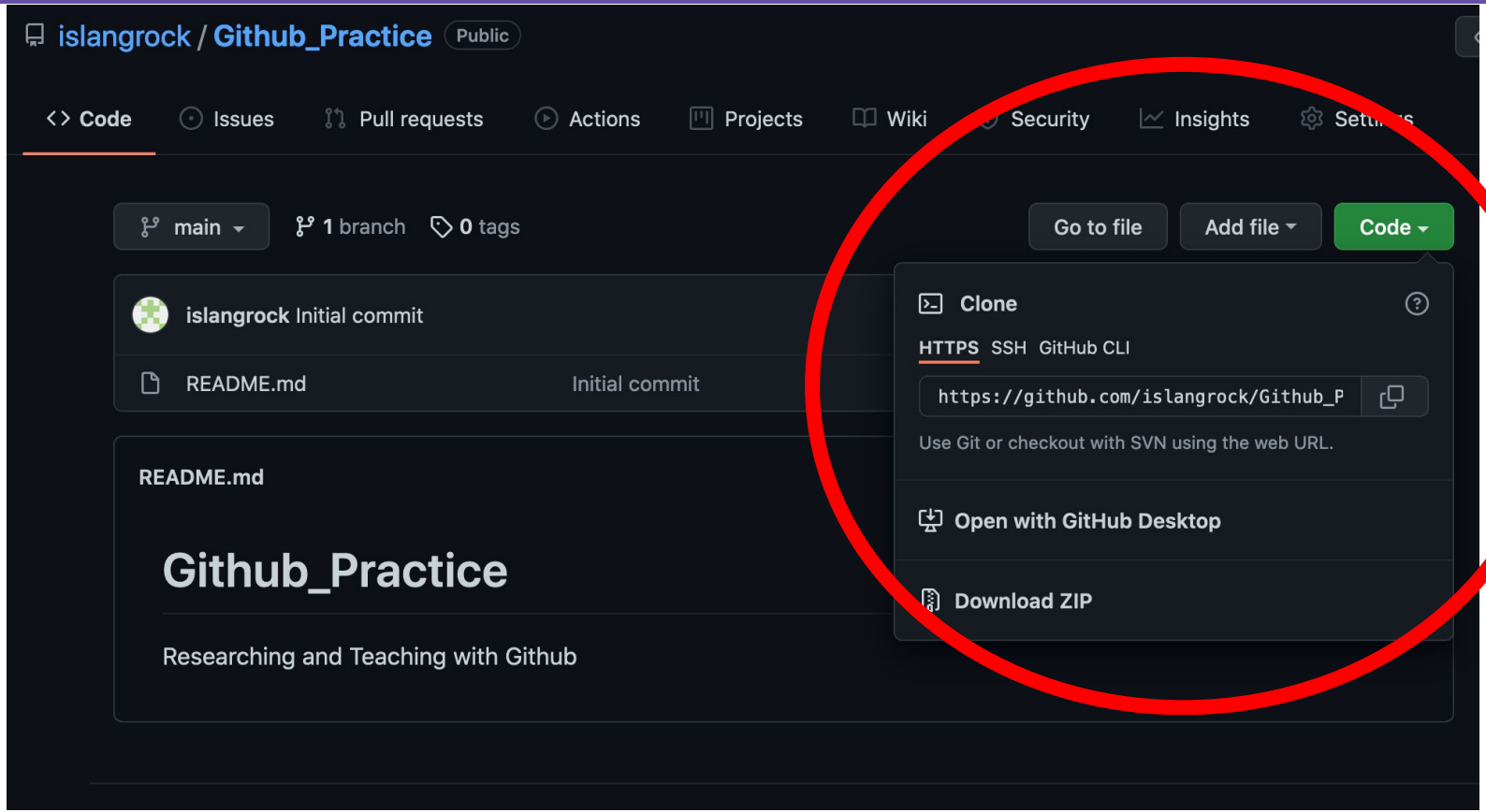
04_Outputs

- **01_Data** *All *cleaned* or *combined* data files*
- **02_Figures** *Any figures produced by the scripts**
- **03_Tables** *Any tables produced by the scripts**

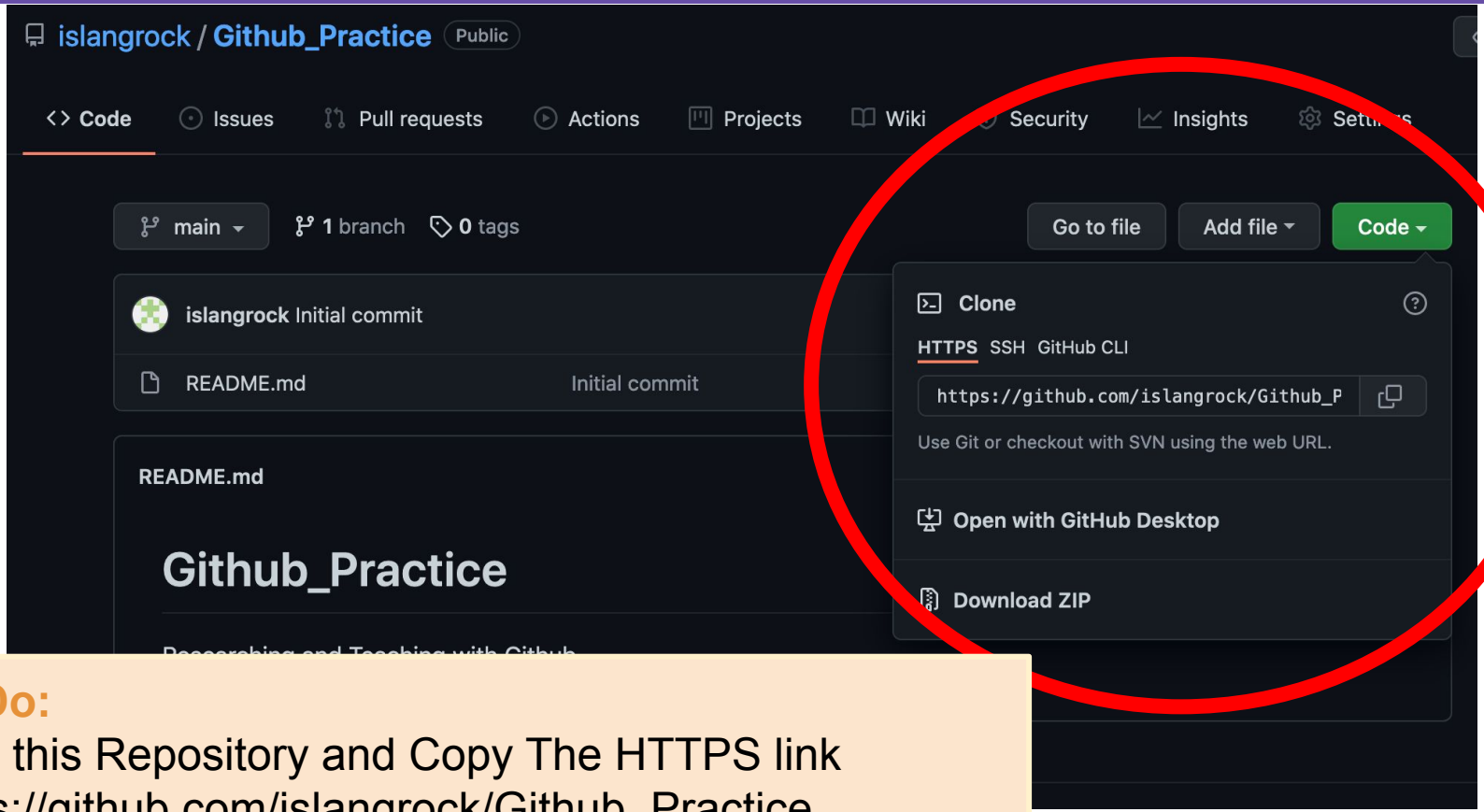
**Name figures with the number corresponding to the script (e.g. 01_distributions.png, 01_counts.png)*

+ **Book Recommendation:**
Kieran Healy's Guide to Plain Text Social Science

Github for Research: Cloning a Repository



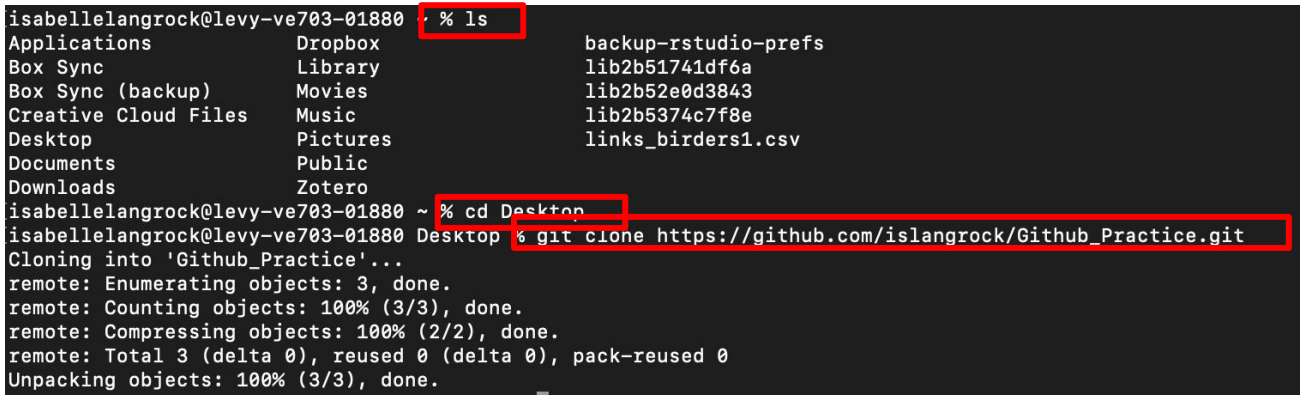
Github for Research: Cloning a Repository



+ **To Do:**
Find this Repository and Copy The HTTPS link
https://github.com/islangrock/Github_Practice

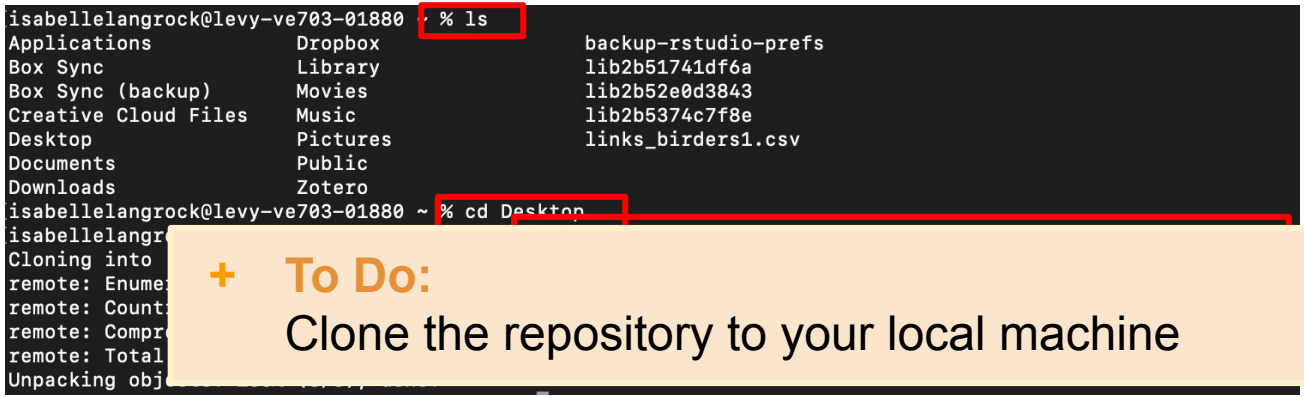
Github for Research: Cloning a Repository

1. Decide what folder on your local machine you want the repository (I chose Desktop)
2. For Mac Users:
   a. Open Terminal
   b. Commands:
      i. ls (*brings up list of folders in current directory)*
      ii. cd [folder] *(changes directory to stated folder, so I wrote cd Desktop)*
      iii. git clone [github repository url] *(clones github repository to your own desktop)*
3. Now a Folder with everything from the Github repository should be on your machine!



Github for Research: Cloning a Repository

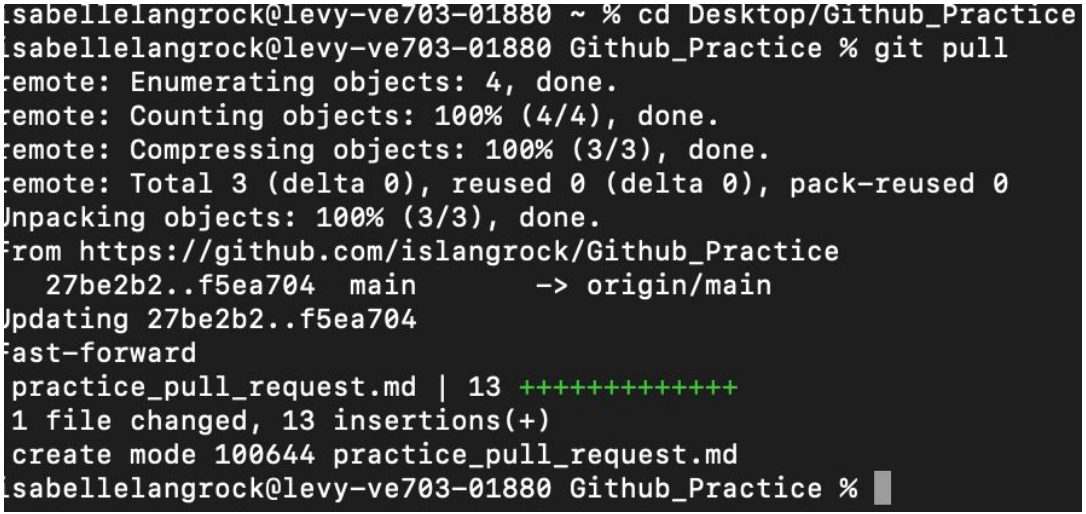
1. Decide what folder on your local machine you want the repository (I chose Desktop)
2. For Mac Users:
   a. Open Terminal
   b. Commands:
      i. ls (*brings up list of folders in current directory)*
      ii. cd [folder] *(changes directory to stated folder, so I wrote cd Desktop)*
      iii. git clone [github repository url] *(clones github repository to your own desktop)*
3. Now a Folder with everything from the Github repository should be on your machine!



+ **To Do:**
  Clone the repository to your local machine

Github for Research: Pulling

git pull updates your local repository (the one on your computer) with the remote one (the one on Github). You run these requests when there might be discrepancies between the two.



+ **To Do:**
  Nothing! Since you just cloned your repository it should be all updated

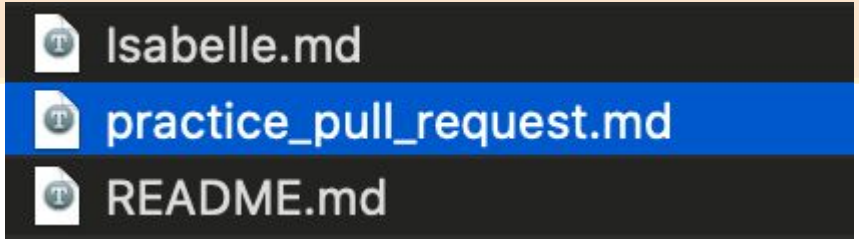
Github for Research: Branches and Pushing

+ **To Do:** (Also referenced in the practice_pull_request.md file)

First we need to create some edits that we can push!
Thus, on your local machine create a new .md file in your favorite text editor (Rstudio, Sublime, etc) that includes the following information:

1. Your favorite color
2. The last book you read or what you are currently reading
3. A TV or Movie Recommendation
4. Choose one: Donut or Croissant??

Save it with your name as the file name in the local repository.



Github for Research: Branches and Pushing

```
isabellelangrock@levy-ve703-01880 Github_Practice % git checkout -b branch_IL
Switched to a new branch 'branch_IL'
isabellelangrock@levy-ve703-01880 Github_Practice % git add Isabelle.md
isabellelangrock@levy-ve703-01880 Github_Practice % git commit -m "Adding my response"
[branch_IL 0c6b916] Adding my response
 1 file changed, 5 insertions(+)
 create mode 100644 Isabelle.md
isabellelangrock@levy-ve703-01880 Github_Practice % git status
On branch branch_IL
nothing to commit, working tree clean
isabellelangrock@levy-ve703-01880 Github_Practice % git push -u origin branch_IL
Enumerating objects: 4, done.
Counting objects: 100% (4/4), done.
Delta compression using up to 4 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 440 bytes | 440.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0)
remote:
remote: Create a pull request for 'branch_IL' on GitHub by visiting:
remote:      https://github.com/islangrock/Github_Practice/pull/new/branch_IL
remote:
To https://github.com/islangrock/Github_Practice.git
 * [new branch]      branch_IL -> branch_IL
Branch 'branch_IL' set up to track remote branch 'branch_IL' from 'origin'.
```

Github for Research: Branches and Pushing

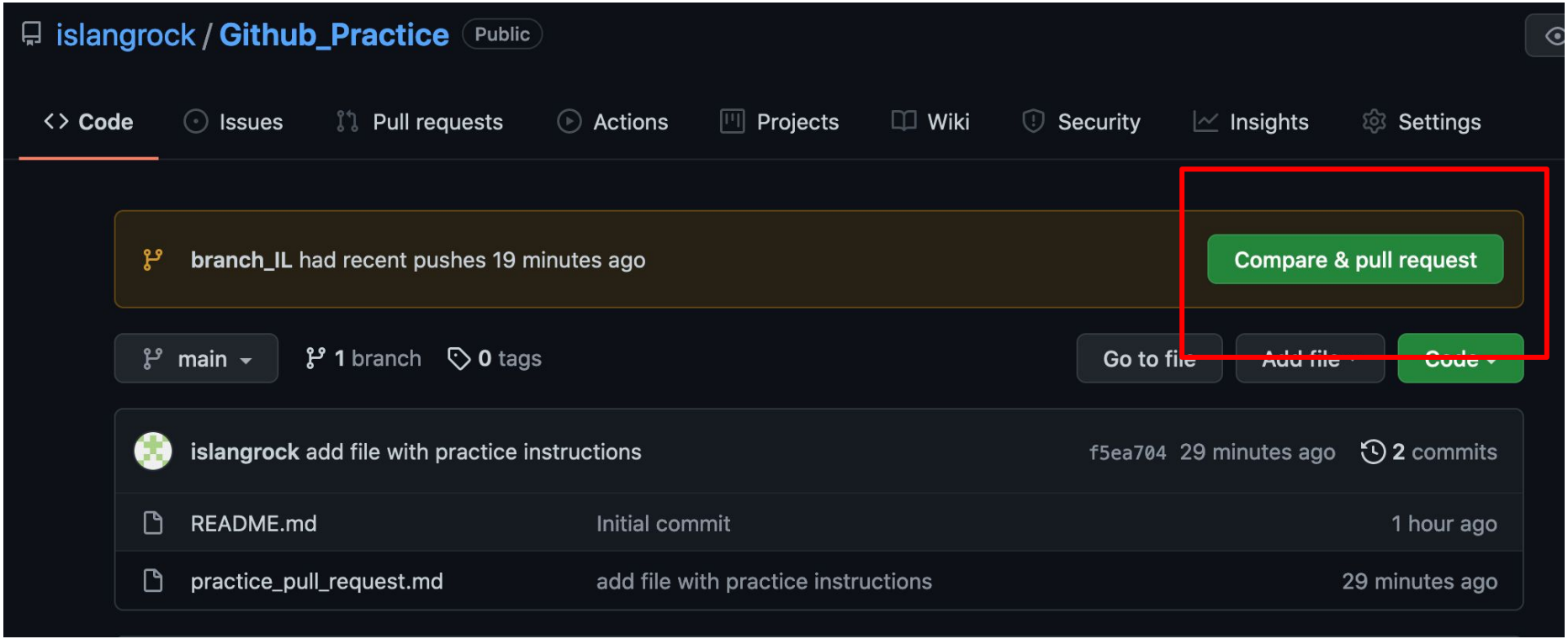
git checkout [branch] **git checkout -b [branch]**	Moves you to a specific branch. Branches are different versions of the repository that allow you to make pull requests and easily view the changes to the original code. Use git checkout [branch] when there's a branch already existing. Use git checkout -b [branch] when you want to create a new branch.
git add [file name]	This tracks the file you have added and prepares it to be added to the remote repository.
git commit -m " [comment]"	Commits all changes and new files and allows you to add a comment about what changes you made. Make these concise but description! There is room for longer comments in the pull requests.
git push -u origin [branch]	Pushes your commits to the remote repository -- they should now appear on Github.com
git status	If you lose track of whats been added or committed, run this! It will tell you.

Github for Research: Branches and Pushing

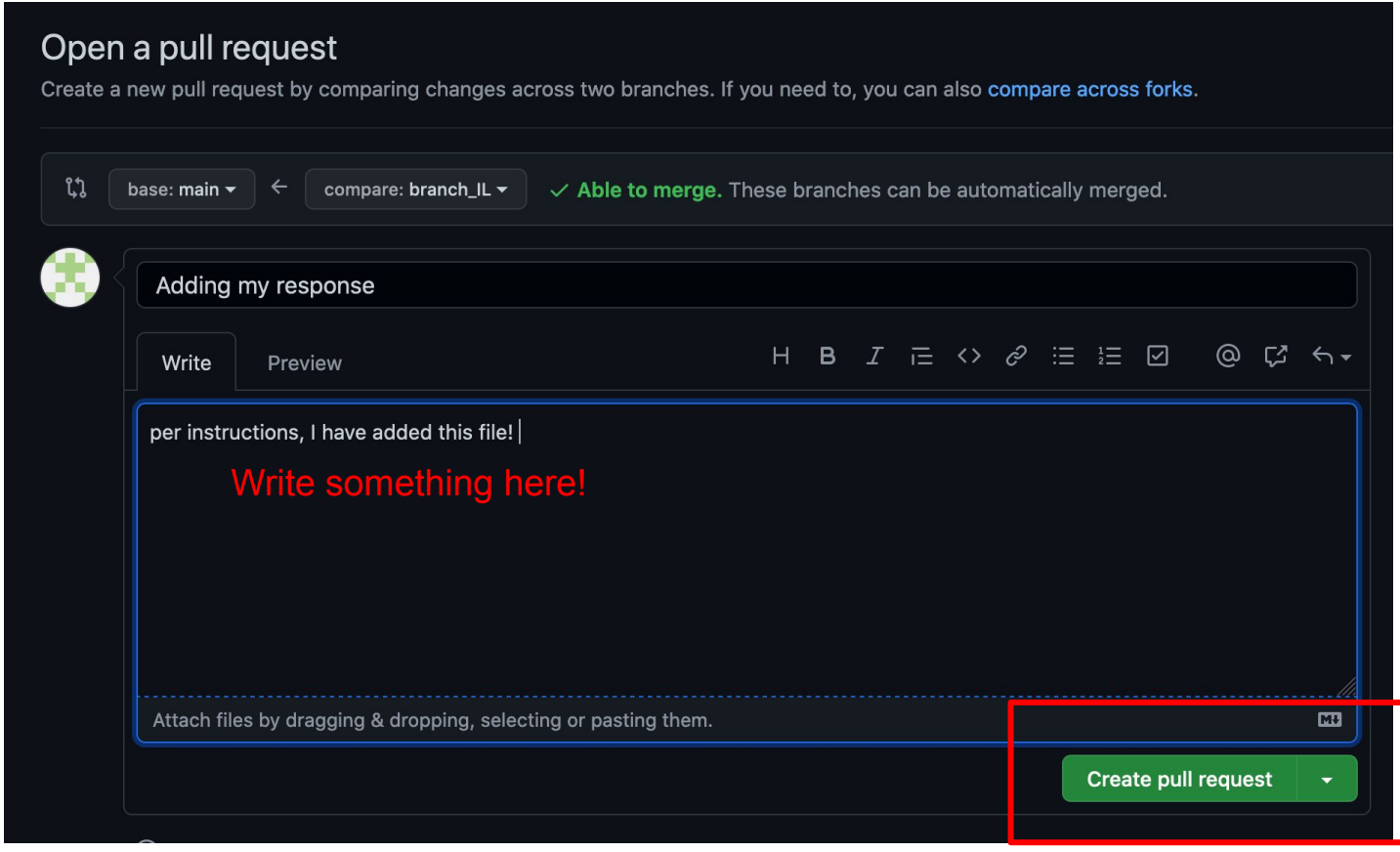
git checkout [branch] **git checkout -b [branch]**	Moves you to a specific branch. Branches are different versions of the repository that allow you to make pull requests and easily view the changes to the original code. Use git checkout [branch] when there's a branch already existing. Use git checkout -b [branch] when you want to create a new branch.
	for longer comments in the pull requests.
git push -u origin [branch]	Pushes your commits to the remote repository -- they should now appear on Github.com
git status	If you lose track of whats been added or committed, run this! It will tell you.

+ **To Do:**
  Create a new branch, add your file, commit with a comment and push it to the github repository!

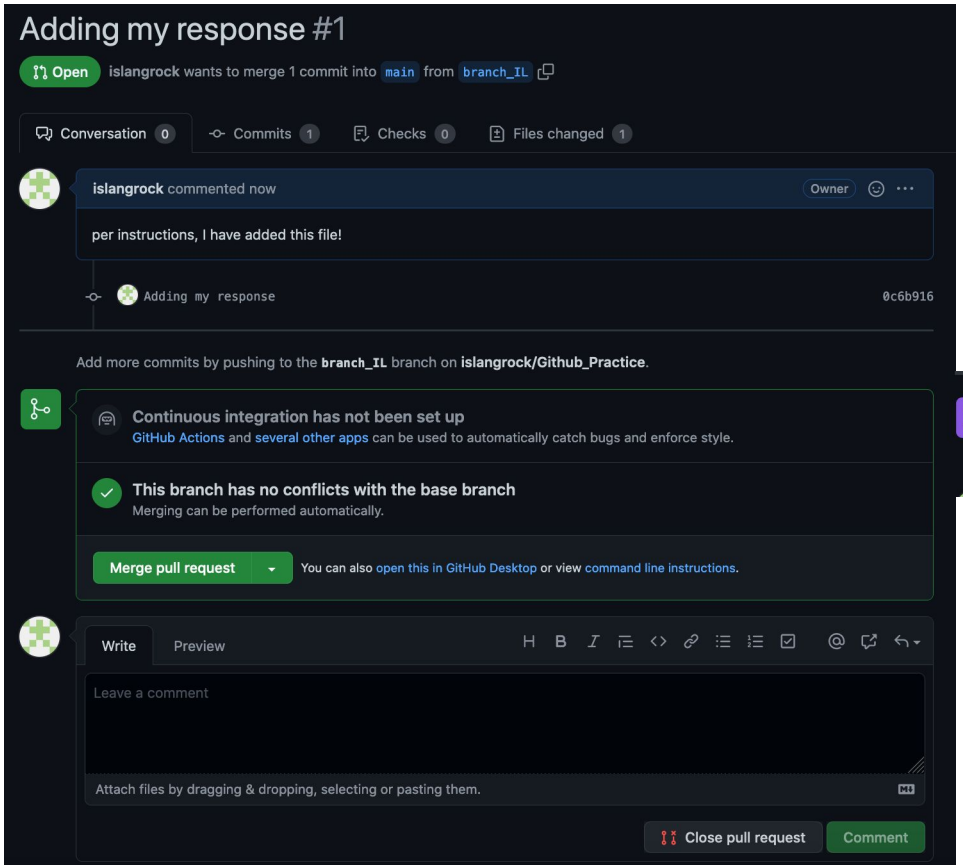
Github for Research: Pull Requests

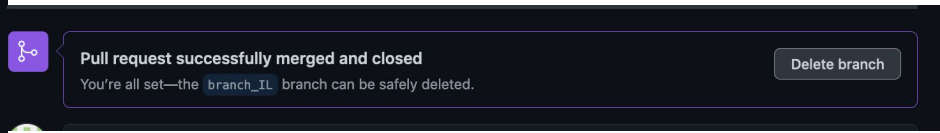


Github for Research: Pull Requests



Github for Research: Pull Requests





Github for Research: Tips for collaborating

- Work with one branch for each round of revisions and/or collaborator
  - Multiple branches make things more complicated
- Review code before merging pull requests
- Document all your changes in the pull requests
- Make simple and descriptive comments on your commits

Good Commit Comments

“Streamlined script for data collection”

“Updates to figures 03 and 05”

“Updating variable X with new data”

“Adding regression models with interaction”

Bad Commit Comments

“ “

“Added new files”

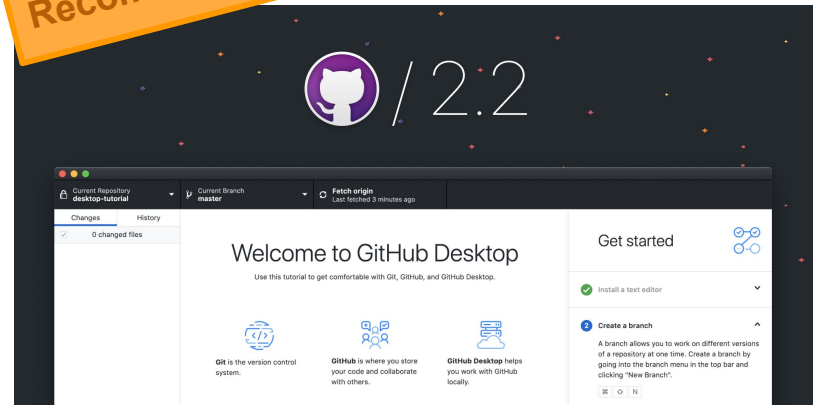
“New code”

“Changed the scripts”

“updates”

Github for Research: Other Methods of Using Github

Recommended by Alvin!



Read more here:
https://docs.github.com/en/desktop

Recommended by Tian!

RStudio®

Read more here:
https://r-pkgs.org/git.html

Github for Teaching

PROS

Easy
Code Review

Encouraging collaboration

Accessible host for course materials

CONS

There is a learning curve!

Read this!

THE VERGE

File not found

A generation that grew up with Google is forcing professors to rethink their lesson plans

By Monica Chin on September 22, 2021 8:00 am

Illustrations by Micha Huigen

Github for Other Things!

Make & Host Your Own Website!

find code + niche r packages that can help your work

Shiny Apps & Other Work

Share Presentations, Talks, And Workshops