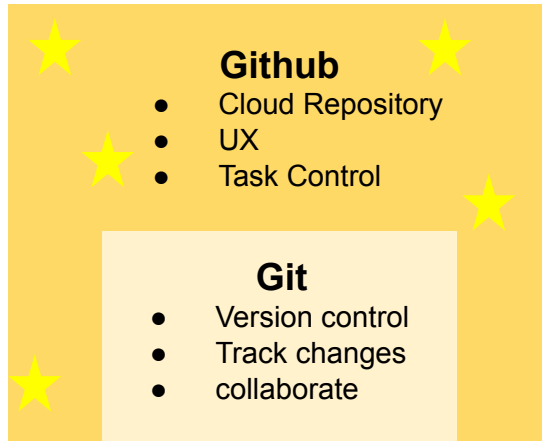# Introduction to Github

Isabelle Langrock
(with some advice from Alvin & Tian)

October 8, 2021

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.
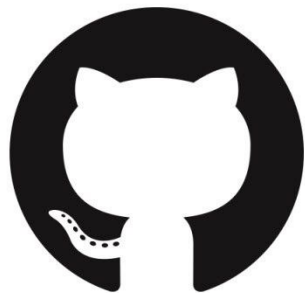

*The github logo is an **octocat.** Why? Idk.*

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 & The Computational Research Resources Environment

Hypothesis Generation

OSF

- Upload pre-registrations and any pre-analysis plans

Data Collection

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Analysis

R Studio

- 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

my_project

01_Writing — *Keep all manuscripts drafts, reports, and presentations here.* **Pro Tip! put the date in the document names of your drafts (e.g. manuscripts_10_8_2021.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

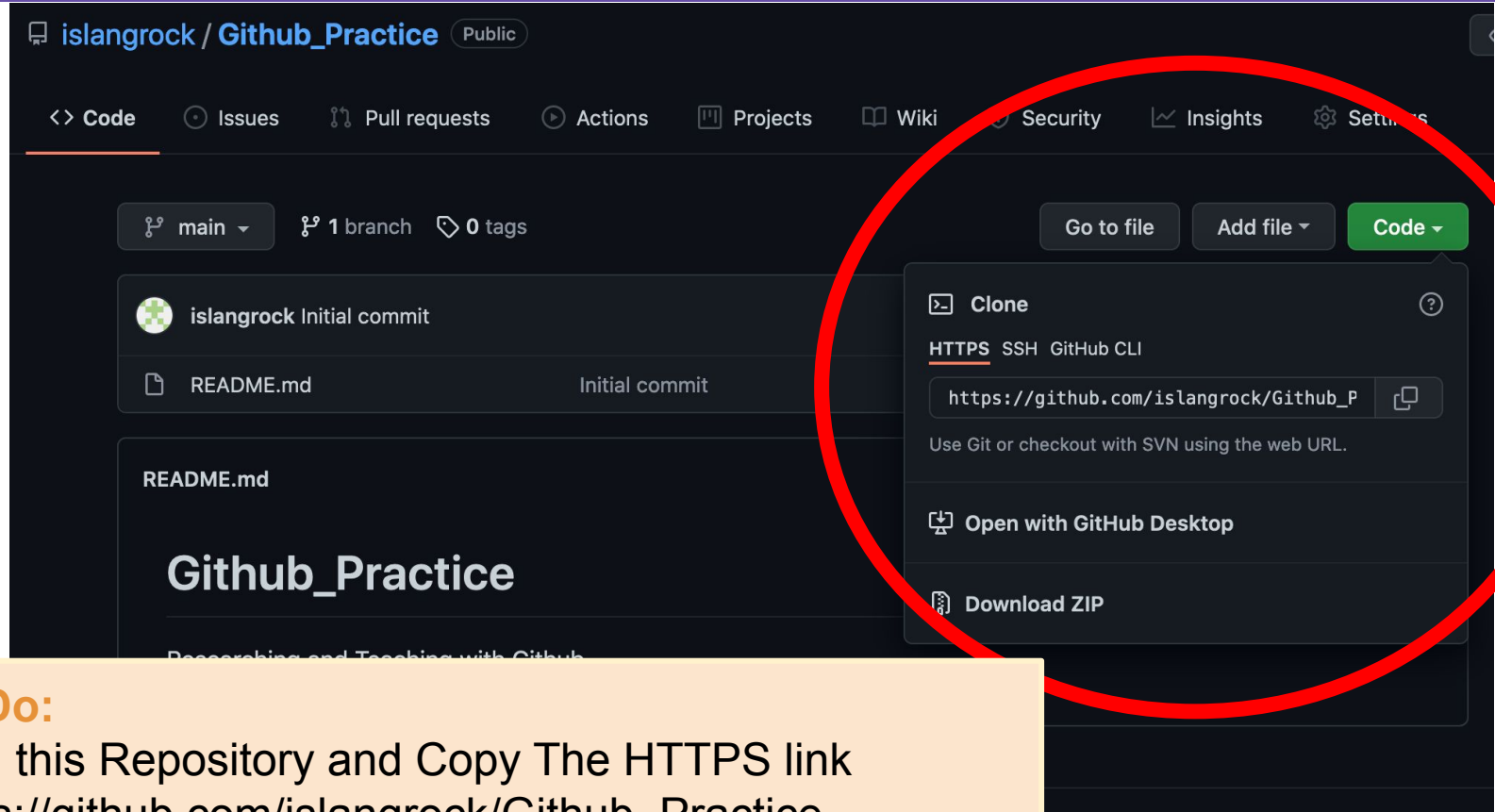# Github for Research: Cloning a Repository

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!

```
isabellelangrock@levy-ve703-01880  % ls
Applications          Dropbox              backup-rstudio-prefs
Box Sync              Library              lib2b51741df6a
Box Sync (backup)     Movies               lib2b52e0d3843
Creative Cloud Files  Music                lib2b5374c7f8e
Desktop               Pictures             links_birders1.csv
Documents             Public
Downloads             Zotero
isabellelangrock@levy-ve703-01880 ~ % cd Desktop
isabellelangrock@levy-ve703-01880 Desktop % git clone https://github.com/islangrock/Github_Practice.git
Cloning into 'Github_Practice'...
remote: Enumerating objects: 3, done.
remote: Counting objects: 100% (3/3), done.
remote: Compressing objects: 100% (2/2), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
Unpacking objects: 100% (3/3), done.
```

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
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```
isabellelangrock@levy-ve703-01880 ~ % ls
Applications           Dropbox              backup-rstudio-prefs
Box Sync               Library              lib2b51741df6a
Box Sync (backup)      Movies               lib2b52e0d3843
Creative Cloud Files   Music                lib2b5374c7f8e
Desktop                Pictures             links_birders1.csv
Documents              Public
Downloads              Zotero
isabellelangrock@levy-ve703-01880 ~ % cd Desktop
isabellelangr
Cloning into
remote: Enume
remote: Count
remote: Compr
remote: Total
Unpacking obj
```

+   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.

```
isabellelangrock@levy-ve703-01880 ~ % cd Desktop/Github_Practice
isabellelangrock@levy-ve703-01880 Github_Practice % git pull
remote: Enumerating objects: 4, done.
remote: Counting objects: 100% (4/4), done.
remote: Compressing objects: 100% (3/3), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
Unpacking objects: 100% (3/3), done.
From https://github.com/islangrock/Github_Practice
   27be2b2..f5ea704  main        -> origin/main
Updating 27be2b2..f5ea704
Fast-forward
 practice_pull_request.md | 13 ++++++++++++
 1 file changed, 13 insertions(+)
 create mode 100644 practice_pull_request.md
isabellelangrock@levy-ve703-01880 Github_Practice %
```

+   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.

Isabelle.md
practice_pull_request.md
README.md

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.

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

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: Pull Requests

islangrock / **Github_Practice** (Public)

<> Code ⊙ Issues ⑁ Pull requests ▷ Actions ▦ Projects 📖 Wiki ⊘ Security 📈 Insights ⚙ Settings

⑁ branch_IL had recent pushes 19 minutes ago

Compare & pull request

⑁ main ⑁ 1 branch ⬡ 0 tags

Go to file   Add file   Code

islangrock add file with practice instructions   f5ea704 29 minutes ago ⟲ 2 commits

README.md   Initial commit   1 hour ago

practice_pull_request.md   add file with practice instructions   29 minutes ago

Github for Research: Pull Requests

Open a pull request

Create a new pull request by comparing changes across two branches. If you need to, you can also **compare across forks**.

base: main ← compare: branch_IL ✓ **Able to merge.** These branches can be automatically merged.

Adding my response

| Write | Preview |

per instructions, I have added this file!

Write something here!

Attach files by dragging & dropping, selecting or pasting them.

Create pull request ▾

Github for Research: Pull Requests

Adding my response #1

Open · **islangrock** wants to merge 1 commit into `main` from `branch_IL`

Conversation 0 · Commits 1 · Checks 0 · Files changed 1

islangrock commented now — Owner

per instructions, I have added this file!

◦ Adding my response — 0c6b916

Add more commits by pushing to the `branch_IL` branch on **islangrock/Github_Practice**.

Continuous integration has not been set up
GitHub Actions and several other apps can be used to automatically catch bugs and enforce style.

✓ **This branch has no conflicts with the base branch**
Merging can be performed automatically.

Merge pull request ▾ You can also open this in GitHub Desktop or view command line instructions.

Write | Preview

H B I ⊞ ⟨⟩ 🔗 ⊟ ☰ ☑ @ ⧉ ↩

Leave a comment

Attach files by dragging & dropping, selecting or pasting them.

Close pull request | Comment

Pull request successfully merged and closed
You're all set—the `branch_IL` branch can be safely deleted.

Delete branch

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

Other Recommendations??

Github for Research: Other Methods of Using Github

Recommended by Alvin!
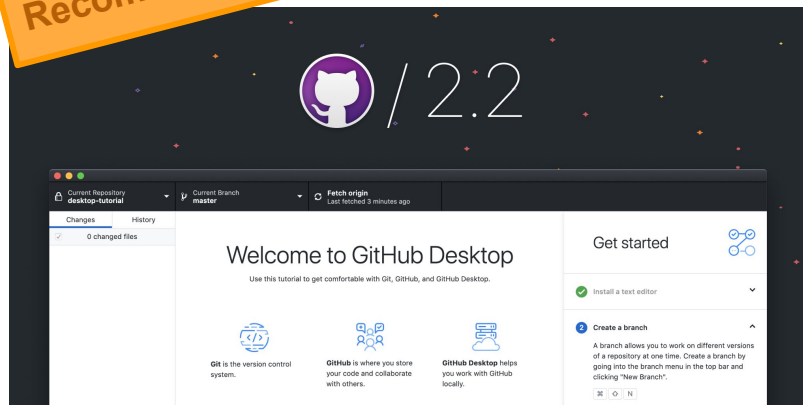
Recommended by Tian!

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

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