

Introduction to Github

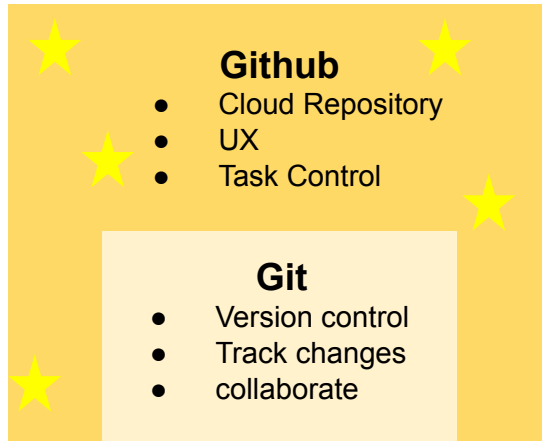
Isabelle Langrock
(with some advice from Alvin & Tian)

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.



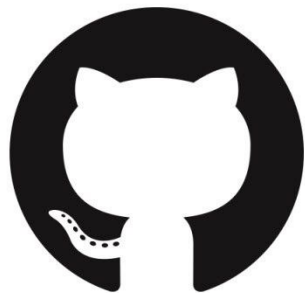
*I think of Github as the shiny packaging of Git.
Kind of like what Rstudio is to R.*



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

+ **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



- Upload pre-registrations and any pre-analysis plans

Data Collection

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Analysis



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



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

Final Stages



- Well documented scripts
- History of all edits to scripts



- Record of Pre-registrations
- Data



- 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. 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

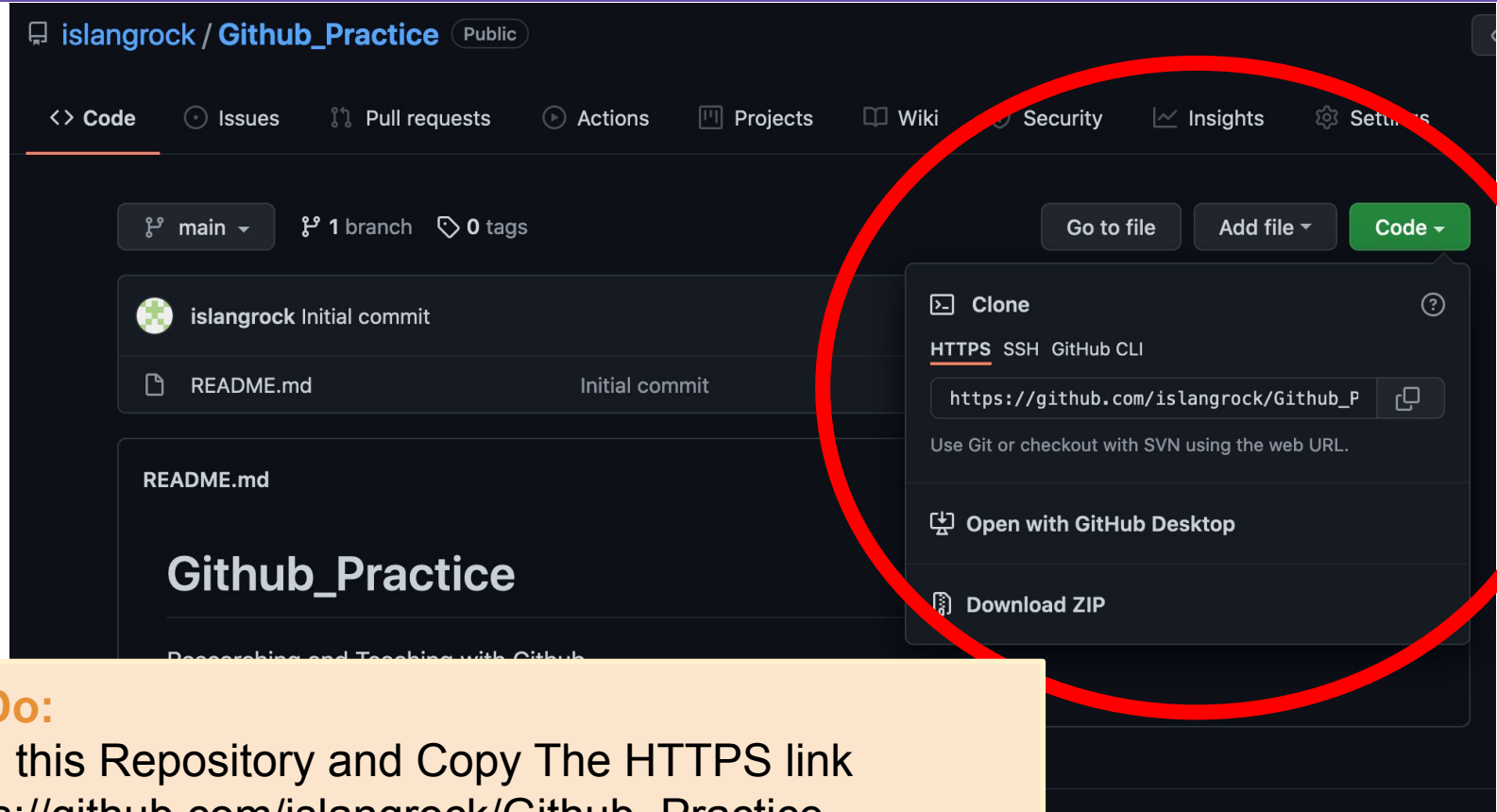
Any tables produced by the scripts*

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

my_project

+ **Book Recommendation:**
Kieran Healy's Guide to [Plain Text Social Science](#)

Github for Research: Cloning a Repository



The screenshot shows the GitHub interface for the repository 'islangrock / Github_Practice'. The 'Code' button is highlighted with a red circle, and the dropdown menu is open, displaying the following options:

- Clone** (with a question mark icon)
 - HTTPS** (selected), SSH, GitHub CLI
 - URL: `https://github.com/islangrock/Github_P` (with a copy icon)
 - Text: Use Git or checkout with SVN using the web URL.
- Open with GitHub Desktop** (with a desktop icon)
- Download ZIP** (with a ZIP icon)

The repository page also shows the 'main' branch, 1 branch, and 0 tags. The README.md file is visible, titled 'Github_Practice'.

+ 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 %
Cloning into '...'
remote: Enumerating objects: ...
remote: Counting objects: ...
remote: Compressing objects: ...
remote: Total ...
Unpacking objects: ...
```

+ 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.

+ 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 what's 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

main 1 branch 0 tags

Go to file Add file Code

Compare & pull request


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

H B I         

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

Leave a comment

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

Close pull request Comment

Pull request successfully merged and closed Delete branch

You're all set—the `branch_IL` branch can be safely deleted.

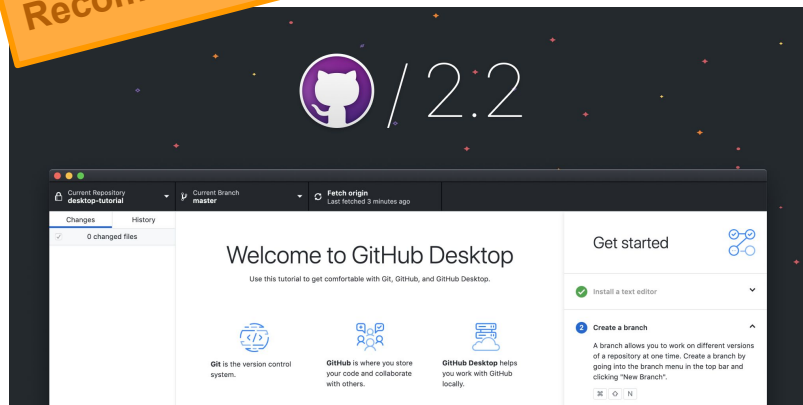
Github for Research: Tips for collaborating

- 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!



Read more here:

<https://docs.github.com/en/desktop>

Recommended by Tian!



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**