Intro to Git/Github

by: Philip Smith & Samantha Crane

with Gold Rush Robotics

Goals

By the end of this workshop you should be able to:

- Use Git and Github to manage your own projects
- Clone and collaborate on other projects
- Use a branch and create a Pull Request (PR)

What is git?

- Version Control
  - Backup
  - Revert
  - Collaborate
  - Branch
- Local
- Often Associated with code, but can be used for anything that is a file (binaries loose the ability for merge 😔)
- **Industry standard**

How Does it work?

- Commits
  - Change Snapshots
  - Commit message
- Branches
  - Protects main codebase
  - Allows you to test without breaking it

Workflow with git

1. Make a branch
2. Make changes
3. git add
4. git commit
5. Repeat 2-5 until you finish the goal of the branch
6. git merge branch back into main

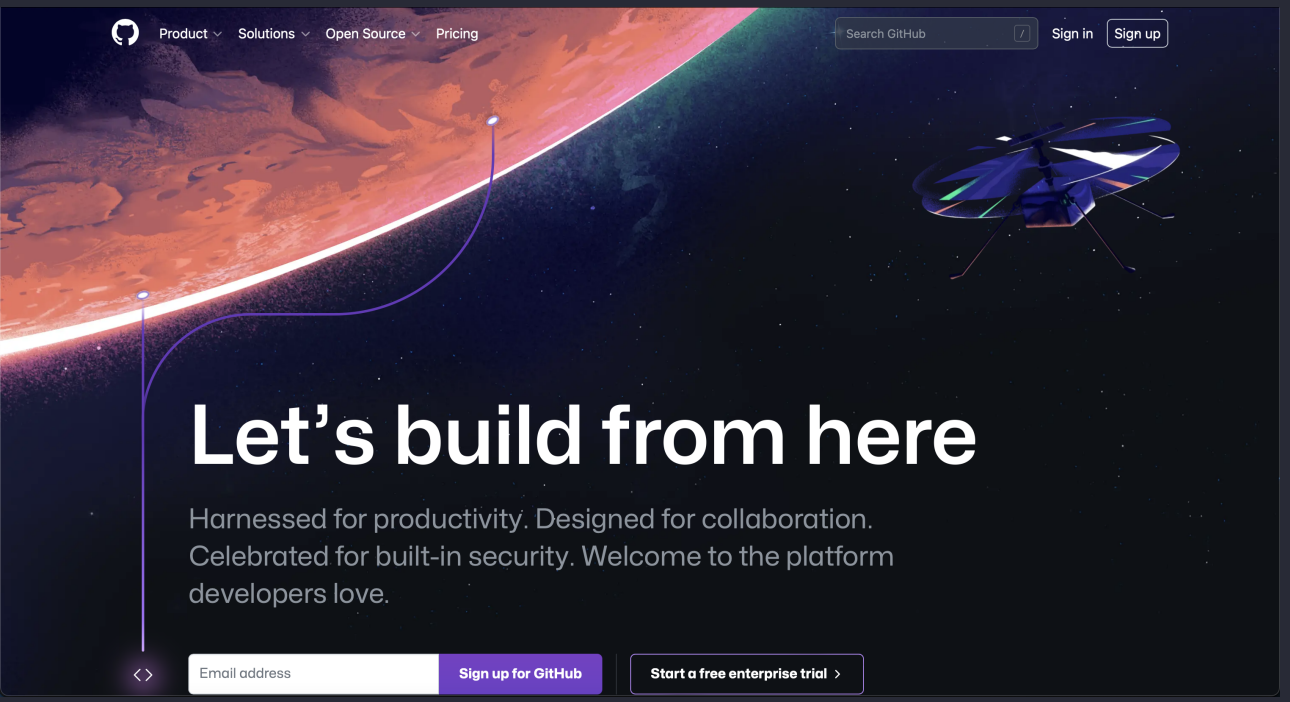
What is GitHub?

- Free Online Repository Hosting
- Easy Sharing
- Home to **ALMOST ALL** open source projects
- CI/CD tools
- Team and Project Managment Tools
- Issue Tracker
- Free Cloud Computing
- **AND SO MUCH MORE**

Adding GitHub to the git workflow

- Before working, make sure to fetch and then pull
- Do your standard git workflow
- Push your code
- Instead of merging locally, create a Pull Request (PR)
- Optional: add CI/CD workflows

Lets Do IT



Creating a GitHub Account

Really one time

Go to GitHub.com and look for the box to type your email address, enter the email you wish to use and click Sign-up for GitHub.

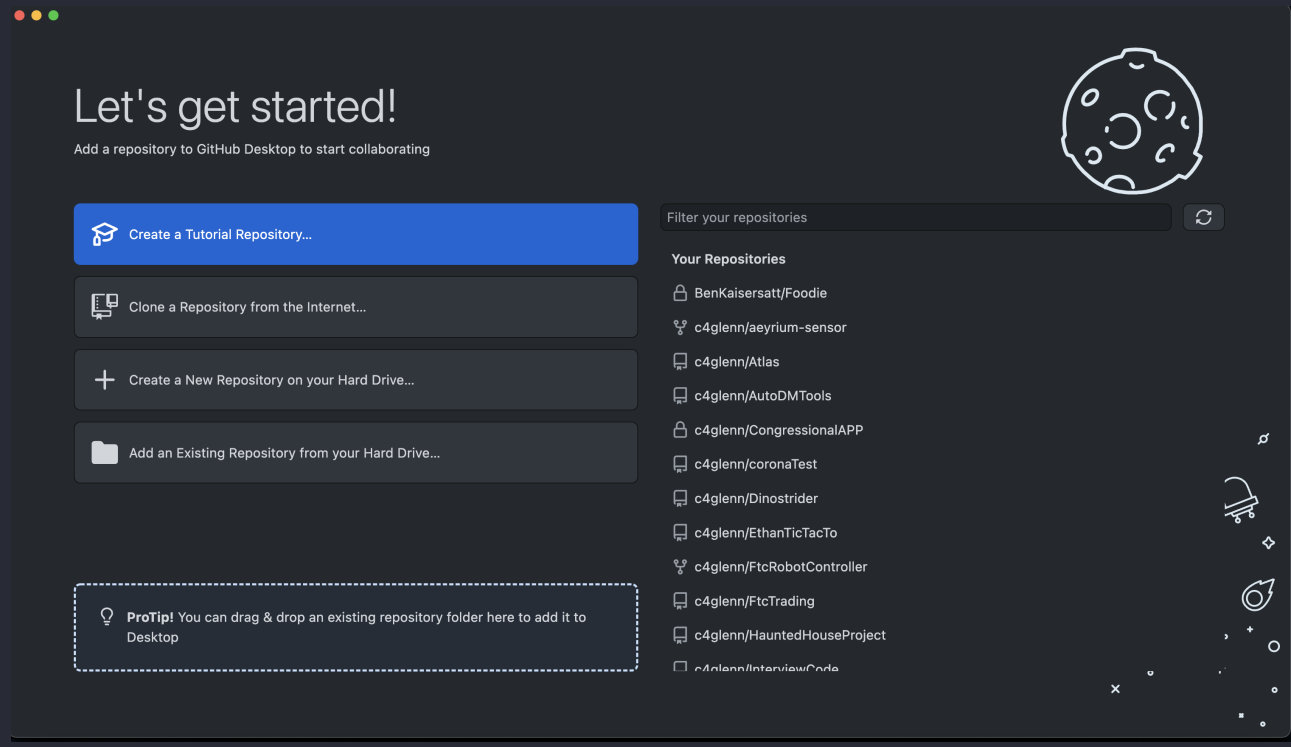
Follow the prompts and create your account!

Downloading GitHub Desktop

Really one time

go to desktop.github.com and download it

Sign in, you will see something like this



Let's get started!

Add a repository to GitHub Desktop to start collaborating

Create a Tutorial Repository...

Clone a Repository from the Internet...

Create a New Repository on your Hard Drive...

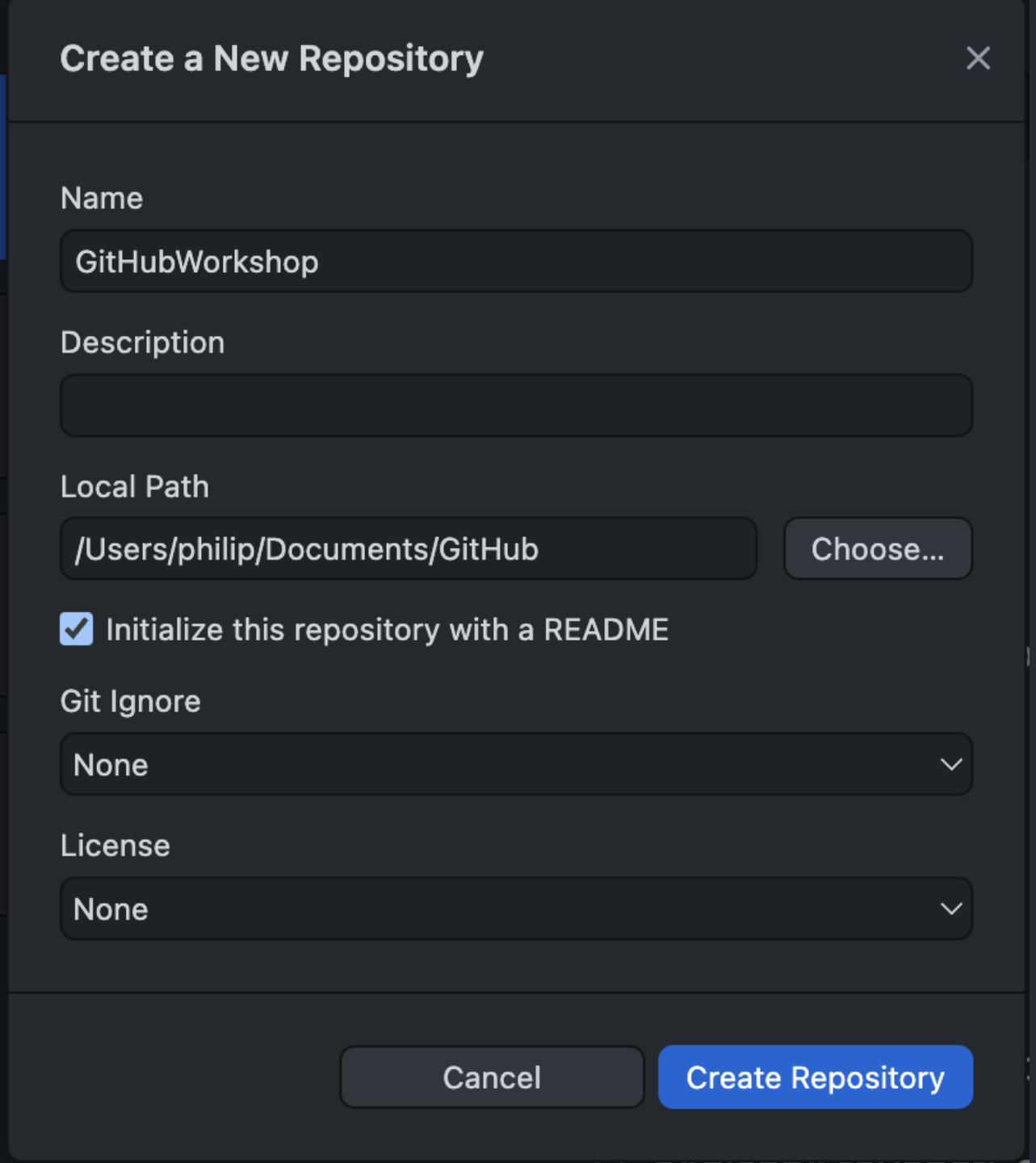
Add an Existing Repository from your Hard Drive...

ProTip! You can drag & drop an existing repository folder here to add it to Desktop

Filter your repositories

Your Repositories

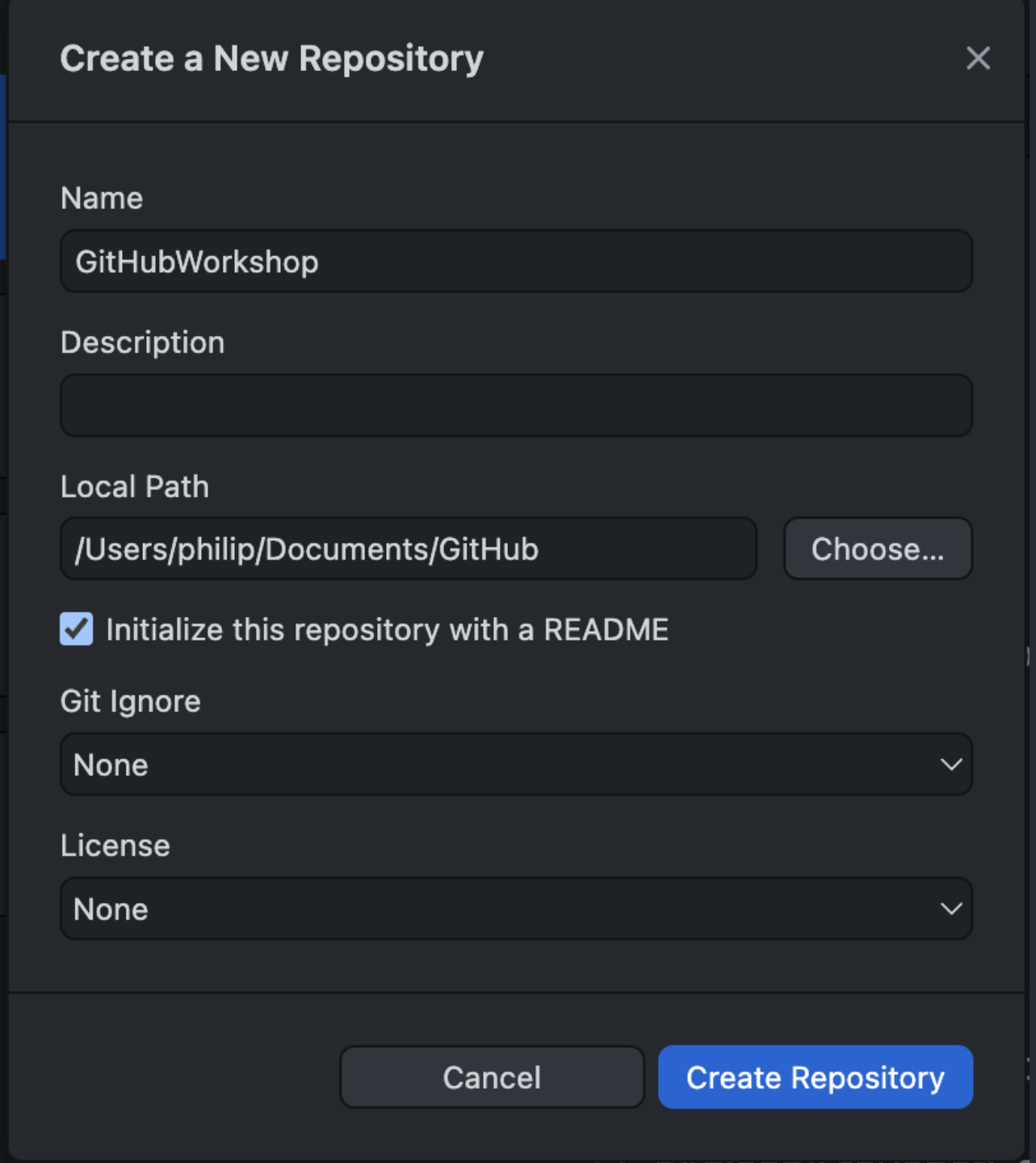
- BenKaisersatt/Foodie
- c4glenn/aeyrium-sensor
- c4glenn/Atlas
- c4glenn/AutoDMTools
- c4glenn/CongressionalAPP
- c4glenn/coronaTest
- c4glenn/Dinostrider
- c4glenn/EthanTicTacTo
- c4glenn/FtcRobotController
- c4glenn/FtcTrading
- c4glenn/HauntedHouseProject
- c4glenn/InterviewCode



Creating a Repo

Once per project

- Name: the name of the repo and the folder it will live in on your computer
- Description: helps populate the README
- Local Path: where the repo will live on your machine



Creating a Repo (cont)

- Initializing with a README: this creates a README.md, which is how other people understand your repo
- Git Ignore: this is powerful tool to help not flood your git history or gitHub with compiled files
- License: this allows you to pick a license for your repo (standard is MIT)

Current Repository
GitHubWorkshop

Current Branch
main

Publish repository
Publish this repository to GitHub

Changes | History

0 changed files

No local changes

There are no uncommitted changes in this repository. Here are some friendly suggestions for what to do next.

Publish your repository to GitHub
This repository is currently only available on your local machine. By publishing it on GitHub you can share it, and collaborate with others.
Always available in the toolbar for local repositories or ⌘ P

Publish repository

Open the repository in your external editor
Select your editor in Preferences
Repository menu or ⌘ ⇧ A

Open in Visual Studio Code

View the files of your repository in Finder
Repository menu or ⌘ ⇧ F

Show in Finder

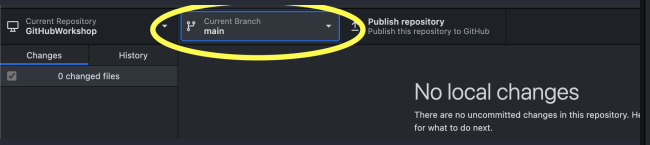
Summary (required)

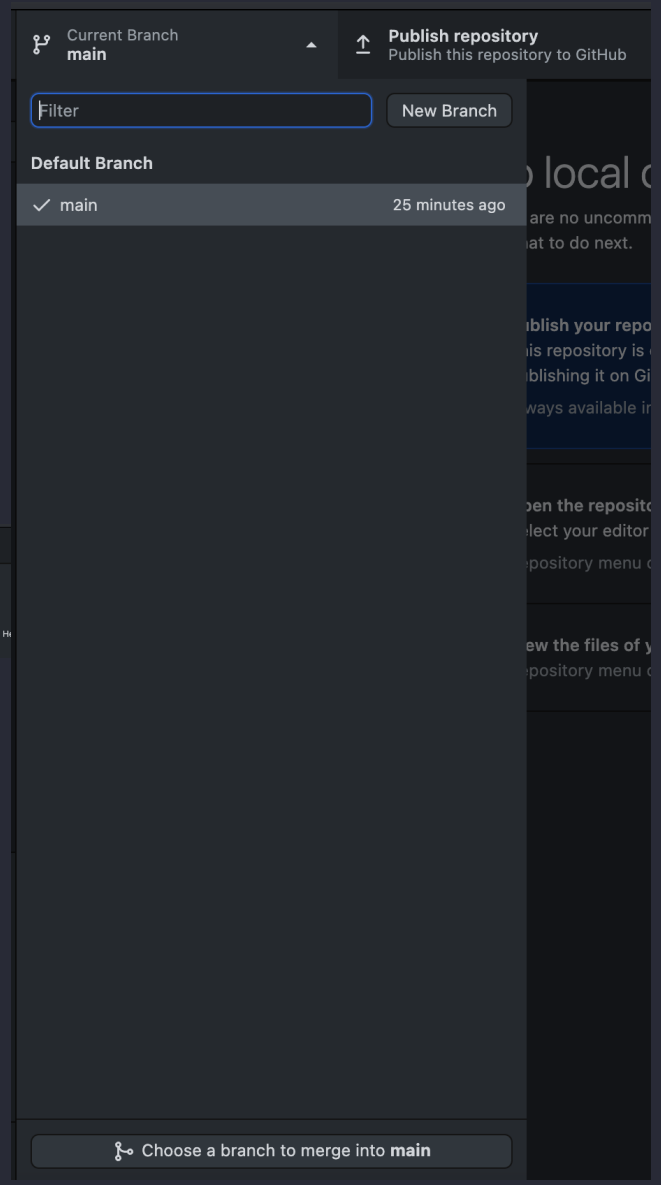
Description

Commit to **main**

Committed 3 minutes ago
Initial commit

Undo





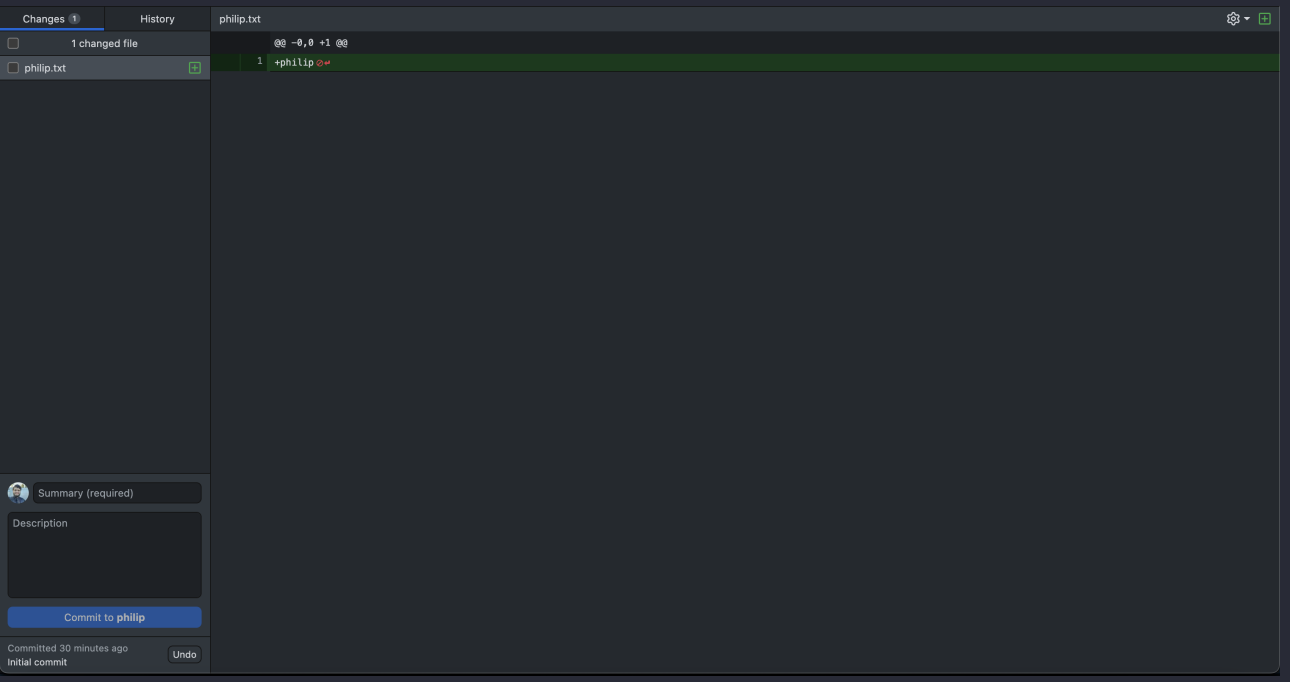
Branch Managment

- Click on the branch menu
- Click on the New Branch button
- Name it your name
- GitHub desktop automatically created it, and checked it out

Add Content

- Click on view the files of your repository
  - If you have an external editor installed click open in external editor instead
- Add a file at that location, name it yourname.txt
- open it up, and put your name in it
- save the file
- go back to github desktop

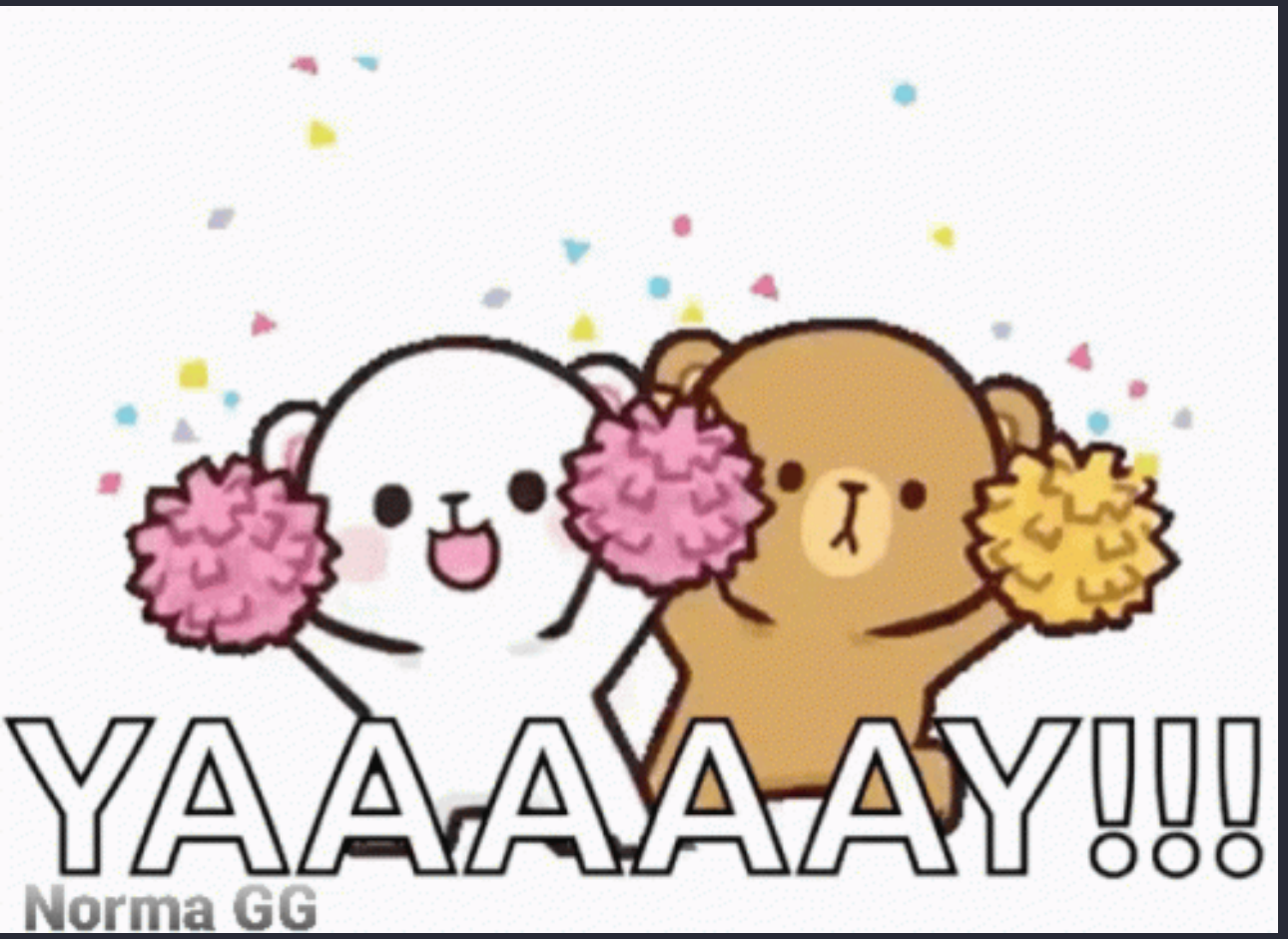
Changes view



- In the changes view, you see all the files changed since the last commmit
- You can see exactly what changed, Line by Line in each file
- Click the Checkbox next to the changes you want to save

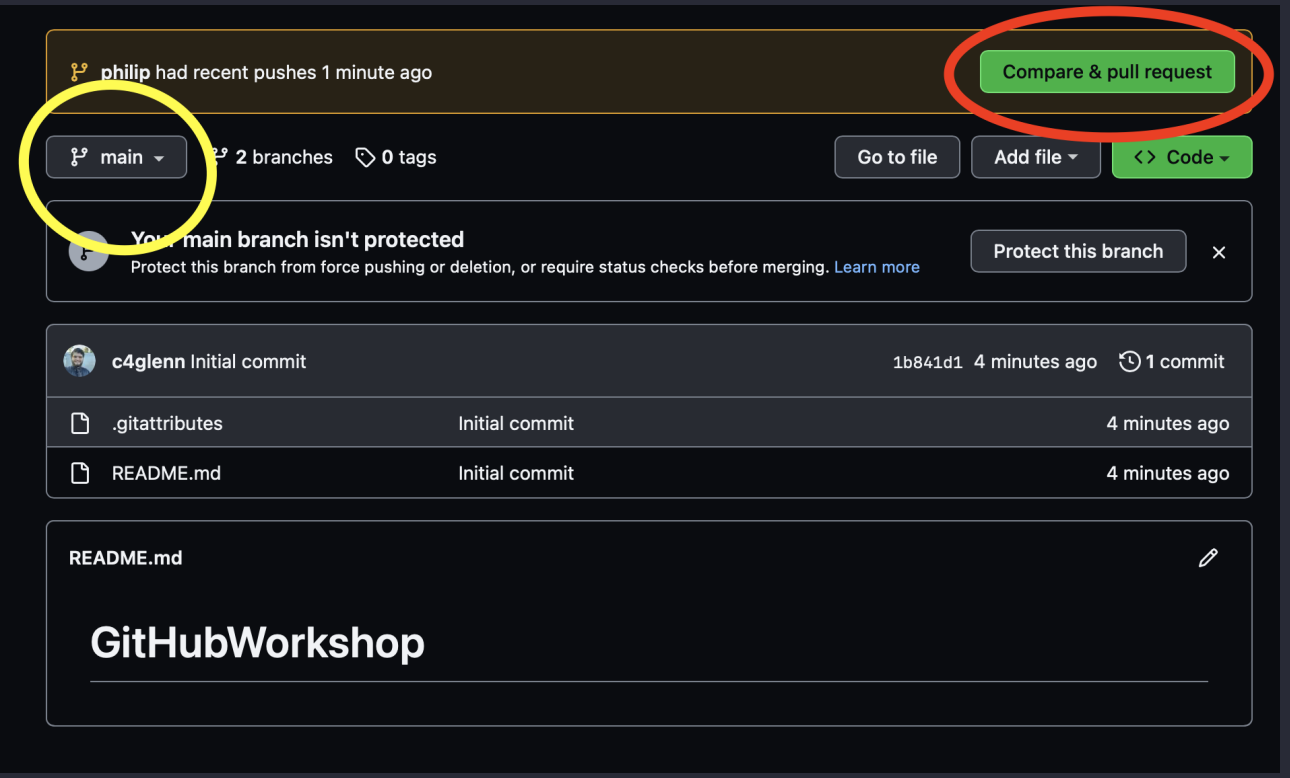
Making your first commit

- Once you add the file by clicking the checkbox, fill in the summary, or accept GitHub Desktops auto summary
- You can also add a description if you wish to add more info about the changes
- Then in the top menu, click publish branch (will become "push changes" if you had already worked on the branch)



Success

- **You** now have something you wrote on GitHub (first time is the hardest)
- Lets go have a look...
  - Open GitHub
  - look on the sidebar for your repo
  - click on it
  - wait... what wheres {name}.txt ????

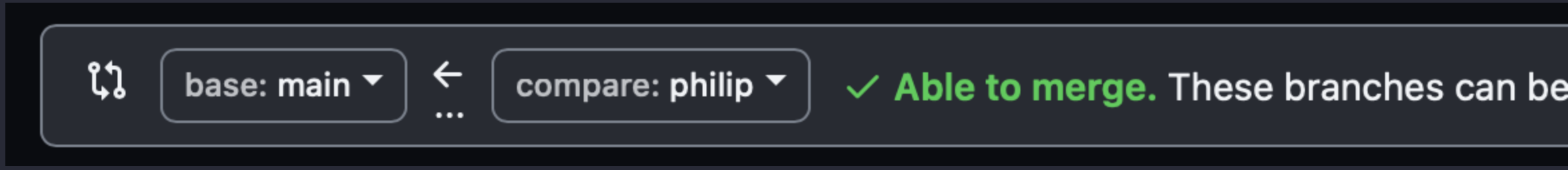


Oh right... Branches

- To view the code on a branch, click the dropdown circled in yellow
- You should see that file now!
- Thats all we need on that branch, Time for a PR (Pull Reqeuest)

Pull Requests

- There should be a giant banner at the top with a button that says "Compare and Pull Request" (GitHub is smart...) Click it
- Since it says "Able to merge" up at the top, we can click the create pull request down at the bottom.



- GitHub will quickly check that it can sucessfully merge the branches again then a Merge Pull Request button will show up --> "Confirm merge" button --> "Delete Branch" button

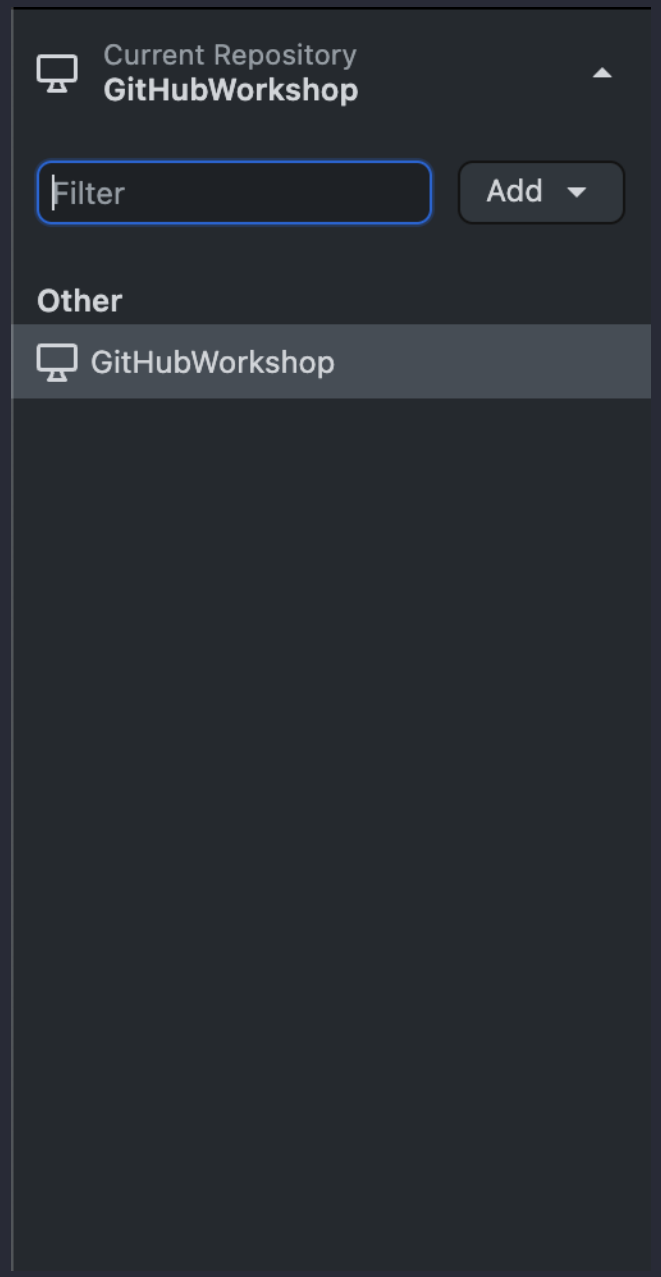
Summary

- While it might take a bit to setup, Git and Github gives you power over your code and keeps you from being able to loose it. Cloud Backups FTW.
- In addition to creating your own repos, You can clone other peoples public repos!
  - Try it out with this repo: https://github.com/Gold-Rush-Robotics/GithubTeaching
    - Just click on the code button
    - And then the Open in Github Desktop button

Summary pt 2

- git and GitHub are powerful tools that we have **BARELY** scratched the surface of today
- If we have time, Philip will show how the workflow goes once it is all setup!

Thanks For Comming!



Bonus Hint

Repo Management

You can change which repo you have selected in the Top right corner of GitHub desktop

Questions?

if you have any now or later feel free to shoot me an email (philip@randomsmiths.com or psmit145@uncc.edu)