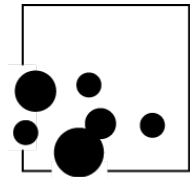


Version Control and Reproducible Research with GitHub

Tad Dallas
December 2013



What is GitHub?

“Dropbox on crack”

Code sharing, publishing and development service for collaborative projects

Why use it?

- Version control
- Open collaboration with other scientists
- Creepily watch what other people are working on!

Under the hood

- Git is the version control language that GitHub is the GUI for
- Created by Linus Torvalds, a central developer of the Linux OS
- Command-line, but really straight-forward

A couple quick definitions

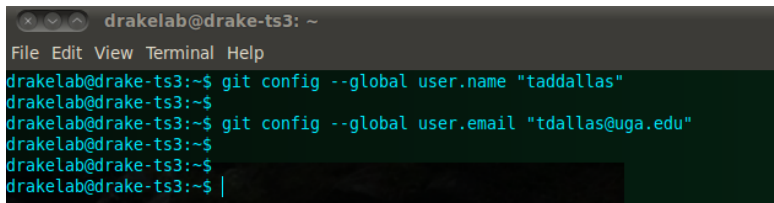
- **Repository:** Storage space where your projects reside
- **Commit:** Takes 'snapshot' of your repository, so you can log a new change, or revert to a previous state (Common command)
- **Branch:** Think of a folder within a repository, but cooler. More on this later
- **Fork:** What it sounds like. You're taking someone's project and making a copy of it for your own use (either to collaborate and to merge later or to use as a template for a different project)
- **Push:** The act of updating your project files (you will "push" your **commits**)
- **Pull:** Gets commits from a repository to your machine
- **Fetch:** A better version of **pull** that doesn't merge **commits**

How to begin

- 1 Set up an account (go to <https://github.com/>) and download Git (<http://git-scm.com/downloads>)
- 2 Open a terminal window

How to begin

- 1 Set up an account (go to <https://github.com/>) and download Git (<http://git-scm.com/downloads>)
- 2 Open a terminal window

A terminal window titled 'drakelab@drake-ts3: ~' with a menu bar (File, Edit, View, Terminal, Help). The terminal shows the following commands and output:

```
drakelab@drake-ts3:~$ git config --global user.name "taddallas"
drakelab@drake-ts3:~$ 
drakelab@drake-ts3:~$ git config --global user.email "tdallas@uga.edu"
drakelab@drake-ts3:~$ 
drakelab@drake-ts3:~$ 
drakelab@drake-ts3:~$ |
```

Okay. Now we have Git on our machines and GitHub accounts.

The GitHub framework

Getting your files on GitHub

- Do work in a local directory
- Create a Git repo in this local directory
- **Add** and **commit** your files ('put stones in the catapult')
- **Push** your files to Github ('catapult those stones')

Pulling files from GitHub

Two ways:

- **'Fork and Pull' model**
- **'Shared Repository' model**

Make your directory

```
drakelab@drake-ts3:~$ cd /media/MYLIFE/githubTutorial
drakelab@drake-ts3:/media/MYLIFE/githubTutorial$ mkdir githubTutorial
drakelab@drake-ts3:/media/MYLIFE/githubTutorial$ cd githubTutorial
drakelab@drake-ts3:/media/MYLIFE/githubTutorial/githubTutorial$ git init
Initialized empty Git repository in /media/MYLIFE/githubTutorial/githubTutorial/.git/
drakelab@drake-ts3:/media/MYLIFE/githubTutorial/githubTutorial$ touch README
drakelab@drake-ts3:/media/MYLIFE/githubTutorial/githubTutorial$ |
```

Commit your README file

```
drakelab@drake-ts3:/media/MYLIFE/githubTutorial/githubTutorial$ git add README
drakelab@drake-ts3:/media/MYLIFE/githubTutorial/githubTutorial$ git commit -m "First commit"
[master (root-commit) 0784b55] First commit
 1 file changed, 0 insertions(+), 0 deletions(-)
 create mode 100644 README
drakelab@drake-ts3:/media/MYLIFE/githubTutorial/githubTutorial$ |
```


Push it!


```
drakelab@drake-ts3:/media/MYLIFE/githubTutorial/githubTutorial$ git remote add origin https://github.com/taddallas/githubTutorial.git
drakelab@drake-ts3:/media/MYLIFE/githubTutorial/githubTutorial$
drakelab@drake-ts3:/media/MYLIFE/githubTutorial/githubTutorial$ git push origin master
Username for 'https://github.com': taddallas
Password for 'https://taddallas@github.com':
```

General framework for edits thereafter





- 1 Edit your files locally
- 2 `$ git add *your files*`
- 3 `$ git commit -m "message about this commit"`
- 4 `$ git push origin master`


This skips the *git remote add origin 'your repo'* step, as you do this once per repo.




Forking a repo

 This repository

[Explore](#) [Gist](#) [Blog](#) [Help](#)

 **taddallas**   

PUBLIC  **taddallas / metacom**

 Unwatch 1  Star 0  Fork 0



R package for the analysis of metacommunity structure — Edit

 **29** commits


 **1** branch








 **0** releases

 **1** contributor


 branch: **master**  **metacom**

Update README.md

 **taddallas** authored 18 hours ago latest commit 01216c949d

 R	update to allow ordination based on abundance data	19 hours ago
 data	second commit with updated names	22 days ago
 man	third commit	22 days ago
 DESCRIPTION	first commit	22 days ago
 NAMESPACE	first commit	22 days ago
 README.md	Update README.md	18 hours ago
 metacom_1.3.tar.gz	update to allow ordination based on abundance data	19 hours ago

 **Code**

 **Issues** 0

 **Pull Requests** 0

 **Wiki**


 **Pulse**

 **Graphs**

 **Network**

 **Settings**

HTTPS clone URL



You can clone with **HTTPS**, **SSH**.