Version Control and Reproducible Research with GitHub

Tad Dallas

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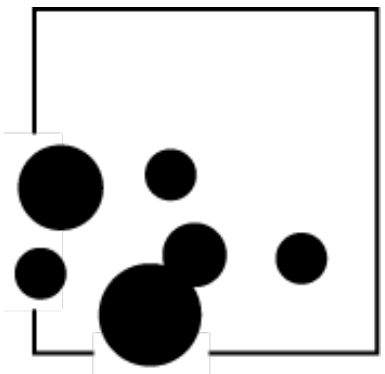

What is GitHub?

"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

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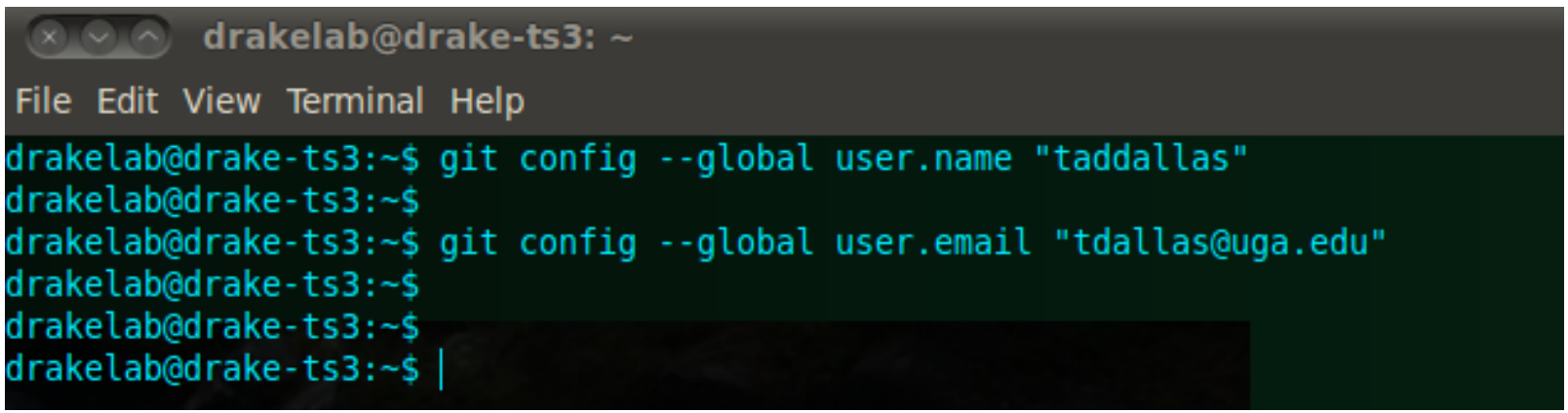

Okay. Now we have Git set up locally. Let's do something with it!

The GitHub framework

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 "F
irst 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 o
rigin 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

Forking a repo