1   Introduction to Git and GitHub

Arni Magnusson

Overview

Examples   *SPC software/analyses/information*

fisheries software, open data, personal notes

Benefits   *track changes, backups, collaboration, dissemination*

Git concepts   *repositories, commits, tags, branches, gitignore*

GitHub features   *releases, assets, forks, pull requests, issues,*

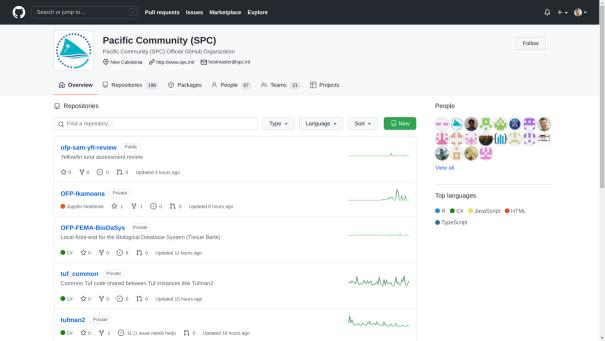*browse, access control, authentication*

Level of Expertise

1. Have downloaded things from GitHub   *for example,* `install_github("somePackage")`

2. Have a GitHub account and Git is installed on my laptop

3. Have created my own repo   *personal or within an organization*

4. Have forked a repo and submitted a pull request   *contributing to a project*

5. Have helped a colleague with Git/GitHub and starred a repo

6. Have tagged a commit and created a GitHub release

7. Happy with my Git tools and configuration   *edit, commit, browse, etc.*

8. Have worked across branches and solved a merge conflict

9. Could give a one-day workshop on using Git and Github 🙂

GitHub Examples

Pacific Community (SPC)

Pacific Community (SPC) Official GitHub Organization

New Caledonia   http://www.spc.int/   hostmaster@spc.int

Follow

🏠 Overview   📦 Repositories 198   ⊙ Packages   👤 People 67   👥 Teams 21   📋 Projects

📖 Repositories

Find a repository…   Type ▾   Language ▾   Sort ▾   📱 New

ofp-sam-yft-review Public

Yellowfin tuna assessment review

☆ 0   ⑂ 0   ⊙ 0   ⊥ 0   Updated 3 hours ago

OFP-Ikamoana Private

🔴 Jupyter Notebook   ☆ 1   ⑂ 1   ⊙ 0   ⊥ 0   Updated 8 hours ago

OFP-FEMA-BioDaSys Private

Local front-end for the Biological Database System (Tissue Bank)

🟢 C#   ☆ 0   ⑂ 0   ⊙ 6   ⊥ 0   Updated 11 hours ago

tuf_common Private

Common Tuf code shared between Tuf instances like Tufman2

🟢 C#   ☆ 0   ⑂ 0   ⊙ 0   ⊥ 0   Updated 15 hours ago

tufman2 Private

🟢 C#   ☆ 0   ⑂ 1   ⊙ 11 (1 issue needs help)   ⊥ 0   Updated 16 hours ago

People

View all

Top languages

🔵 R   🟢 C#   🟡 JavaScript   🔴 HTML
🔵 TypeScript

Repositories

SPC software   TUFMAN2, MD2, MFCL, MFCL viewer, FLR4MFCL, LaTeX utilities

SPC analyses   CPUE analysis, Yellowfin 2020 assessment, Skipjack 2022 assessment

SPC information   Yellowfin review, Condor tutorial, Condor notes, TAF demo

Fisheries software ADMB, TMB, VAST, SAM, Gadget, CASAL, Stock Synthesis, TAF

Open data   US West Coast fisheries, Covid data

Personal notes   Covid analysis, Computer settings

Benefits of Using Git and GitHub

Benefits

Track changes Who changed what, when, and why

Backups Online

Restore previous state

Collaboration Local, regional, international

Software development, analyses, other projects

Dissemination Software

Open science, data hub

Products

Git Concepts

Git and GitHub

Git

A program   *that you can install*

Version control software   *tracking changes*

Load and save project snapshots   *clone, commit*

Free software   *created by Linus Torvalds in 2005*

GitHub

A website   *open 'github.com' in a browser*

Service for Git projects   *pull requests, issues*

Browse online   *view changes, download*

Basic functionality is free   *created 2008, owned by Microsoft since 2018*

Popular in fisheries science since around 2015

Git Concepts

Repository Project folder with tracked changes *a sequence of commits*

Commit Saved snapshot *example: bc4b374*

Tag Nickname for a significant commit *example: 2.0.0*

Branch Parallel sequence of commits *can be merged later with the main branch*

Gitignore List of local files that should be ignored *not uploaded to repository*

GitHub Features

Git Concepts

Repository Project folder with tracked changes *a sequence of commits*

Commit Saved snapshot *example: bc4b374*

Tag Nickname for a significant commit *example: 2.0.0*

Branch Parallel sequence of commits *can be merged later with the main branch*

Gitignore List of local files that should be ignored *not uploaded to repository*

GitHub Features

Release GitHub page pointing to a tag *guaranteed to work, human-readable history*

Assets Downloadable files for a given release *installer.exe, everything.zip, poster.pdf*

Fork Personal copy of a collaborative project repo *edit things, add features*

Pull request Request project owner to consider your additions *from your fork to main repo*

Issue Discussion related to project *question, bug, idea*

GitHub Features (cont)

Browse Organization/user *repos (pinned/starred/search), people, teams*

Repo *activity, releases, contributors, files, issues, pull requests, review comment*

Commits *history, log entries, changed files, changed lines*

Access control public, private *read/write/admin, teams*

Authentication login, clone, push *password, windows credentials, ssh keys*

Examples   *SPC software/analyses/information*

   fisheries software, open data, personal notes

Benefits   *track changes, backups, collaboration, dissemination*

Git concepts   *repositories, commits, tags, branches, gitignore*

GitHub features   *releases, assets, forks, pull requests, issues,*

   browse, access control, authentication