# Open code:
## Git, GitHub and others

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## Why use GitHub?

1. Always have access to all your code

2. Write code in collaboration

3. Share/publish your code
   - Open Science Framework
   - DOI

## Why use GitHub?

1. Always have access to all your code
   - Online backup
   - Full history of code
2. Write code in collaboration
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any file type

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Bitbucket.com

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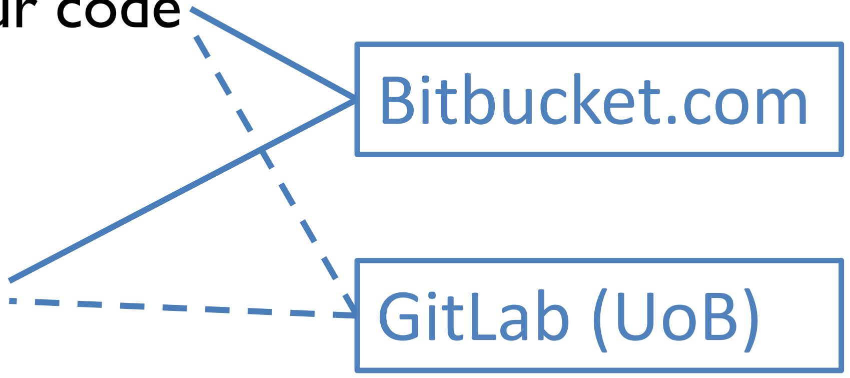

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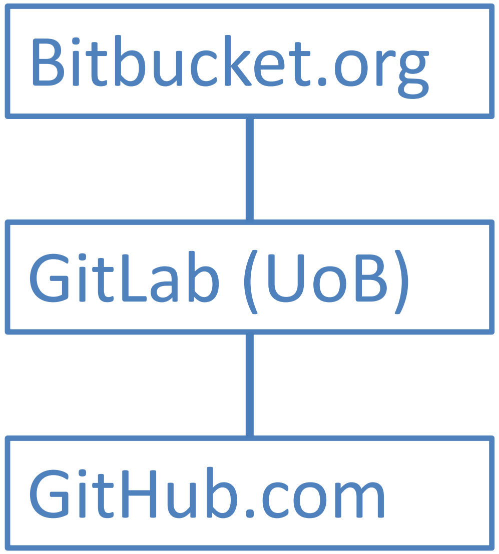

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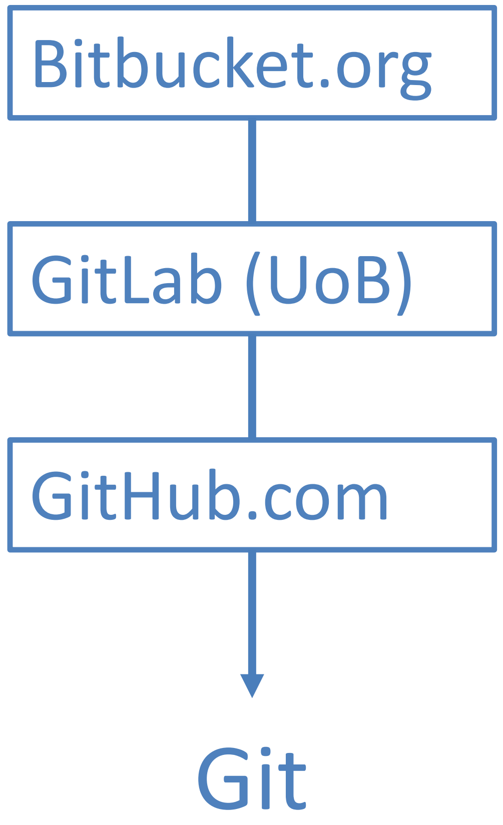


## What is Git and why use it?

**Version control:**

- Git is software that keeps track of files.
- Open source & super fast.

**The power of git:**

- Storing snapshots
  *Message:*
  'bug fixed in getSpectra'
- Branching
- Merging

## Git & GitHub?

GitHub = Git ‘**web-server**’

**Option 1:** Use Git on your own machine

- Version control

**Option 2:** Upload directly to GitHub

- Collaboration
- Sharing

**Option 3:** Use Git on your own machine & sync with GitHub

- 👍

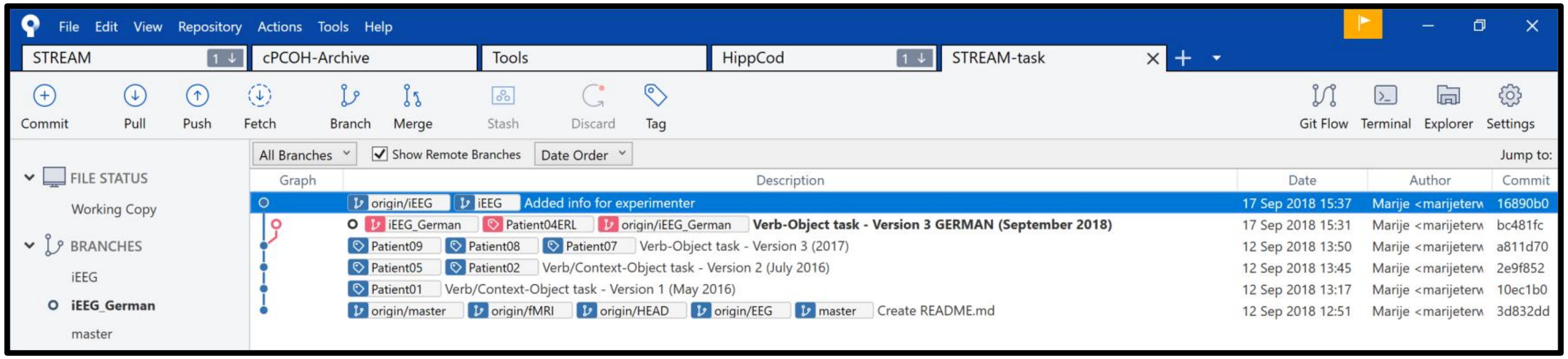
## GETTING STARTED

# STEP 0: 2 GUI or not 2 GUI

- Git is a **command line** program:
  - Terminal on Linux or Mac
  - Powershell on Windows

- There are many good **GUIs** out there
  - Buttons instead of memorized commands
  - Visualizations of your work history

Have a look at: https://www.git-scm.com/downloads/guis



| Graph | Description | Date | Author | Commit |
|---|---|---|---|---|
| | origin/iEEG iEEG Added info for experimenter | 17 Sep 2018 15:37 | Marije <marijeterw | 16890b0 |
| | iEEG_German Patient04ERL origin/iEEG_German **Verb-Object task - Version 3 GERMAN (September 2018)** | 17 Sep 2018 15:31 | Marije <marijeterw | bc481fc |
| | Patient09 Patient08 Patient07 Verb-Object task - Version 3 (2017) | 12 Sep 2018 13:50 | Marije <marijeterw | a811d70 |
| | Patient05 Patient02 Verb/Context-Object task - Version 2 (July 2016) | 12 Sep 2018 13:45 | Marije <marijeterw | 2e9f852 |
| | Patient01 Verb/Context-Object task - Version 1 (May 2016) | 12 Sep 2018 13:17 | Marije <marijeterw | 10ec1b0 |
| | origin/master origin/fMRI origin/HEAD origin/EEG master Create README.md | 12 Sep 2018 12:51 | Marije <marijeterw | 3d832dd |

## **STEP 1:** Setting up a (free) Github account

- Go to https://www.github.com
- **Sign up** to create a free account
  - Only public repositories

**OPTIONAL:**

- Go to the Education page: https://education.github.com
- Apply for a free student/researcher account
  - Unlimited public & private repositories

## **STEP 2:** Setting up Git on your computer

- Download **Git** from git-scm.org

OR

- Download a **Git GUI** – these usually also install Git
  - Most GUIs can integrate with your Github account – it'll ask you to log in

## **STEP 3:** Setting up a repo

- **Make or look up** a remote repo

- ‘**Clone**’ the remote repo to a **local repo**:
  - Click the green [Clone or download] button
  - Copy the URL
  - Create a folder on your pc for your clone
  - Link up your folder with the remote …
    - using your GUIs ‘Clone’ function
      OR
    - through the Git command line (git clone)

## STEP 4: Adding, changing or deleting files

- Make the **changes** like you usually would:
  - Save files to your local repo folder
  - Modify code using your Matlab editor

- **Stage** the files you changed (or simply all files in the repo):
  Using the staging function in the GUI (File status tab)
  OR
  Using Git add

- Write a commit message and **commit:**
  Using the commit button in the GUI
  OR
  Using Git commit

- **Push** to the central repo:
  Using the push button in the GUI
  OR
  Using Git push

## STEP 5: Branching and merging

**Branching:**

- Online first:
  - Click the ‘Branch: [branch-name]’ button and type in the name of the new branch
  - Pull your new branch to your local repo
- Local first:
  - Click the branch button in your GUI
    OR
    Git branch
  - Push to the remote repo

**Merging:**

- Pick the commit you want to merge into your current branch
- Click the merge button in your GUI
  OR
  Git merge

## OPEN CODE

## Open code using GitHub

- **Releases:**
  - E.g.: code for a paper, task code for an experiment
  - Notifications of new releases

- Communication:
  - Documentation & **wiki**
  - Feedback: **issue**/bug reports, suggestions

- Referencing:
  - **Open Science Framework:** link GitHub repo to OSF project
  - **DOI:** log in with GitHub on Zenodo or link to Figshare

- Don't forget to add licence info (MIT, GNU, Creative Commons,…)

## Resources

| | |
|---|---|
| **Git:** | https://git.scm.com |
| ▪ The Git book: | https://git-scm.com/book/en/v2 |
| ▪ Atlassian tutorial: | https://www.Atlassian.com/git/tutorials |
| ▪ Lab wiki: | https://coginition-and-oscillations-lab.bham.ac.uk |
| **GitHub:** | https://www.github.com |
| ▪ Getting started: | https://guides.github.com/activities/hello-world/ |
| ▪ DOIs: | https://guides.github.com/activities/citable-code/ |
| **Git GUIs:** | https://git-scm.com/downloads/guis/ |
| **UoB:** | |
| ▪ Carpentries workshops: https://intranet.birmingham.ac.uk/it/teams/infrastructure/research/bear/rsg/The-Carpentries-Courses.aspx | |
| ▪ GitLab | |
| **Licenses:** | https://choosealicense.com |