AGH

From Email Chaos to Seamless Collaboration: How Git Could Transform Research Teamwork

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Introduction

The Research Collaboration Challenge

- Multiple versions of documents scattered across emails
- `Final_v3_REAL_FINAL.docx` syndrome
- Lost work due to accidental deletions or overwrites
- Difficulty tracking who changed what and when
- Challenges merging contributions from multiple researchers
- No clear history of project evolution

What is Git?

Git is a distributed version control system that:

- Tracks changes in files over time
- Enables seamless collaboration between multiple contributors
- Maintains complete history of project evolution
- Works with any file type (code, documents, data, images)
- Operates both locally and remotely

A sophisticated ”track changes” system for your entire research project

Why Git Could Matters for Researchers

Core Benefits

- **Reproducibility:** Complete record of how research evolved
- **Collaboration:** Multiple researchers can work simultaneously without conflicts
- **Backup:** Distributed nature means your work is safely stored in multiple locations
- **Experimentation:** Try new approaches without fear of losing previous work
- **Transparency:** Clear attribution of contributions and changes

Key Git Concepts

Repository (Repo)

Your project folder with complete version history

- `git init` - Create a new repository
- `git clone https://github.com/user/project.git` - Copy existing repository

Commit

A snapshot of your project at a specific point in time

- `git add <filepath/.>` - Stage files for commit
- `git commit -m "Add analysis results"` - Save snapshot with message
- `git log` - View commit history

Branch

Parallel version of your project for testing new ideas

- `git branch experiment` - Create new branch
- `git checkout experiment` - Switch to branch
- `git branch -a` - List all branches

Merge

Combining changes from different branches or contributors

- `git checkout main` - Switch to main branch
- `git merge experiment` - Merge experiment branch into main

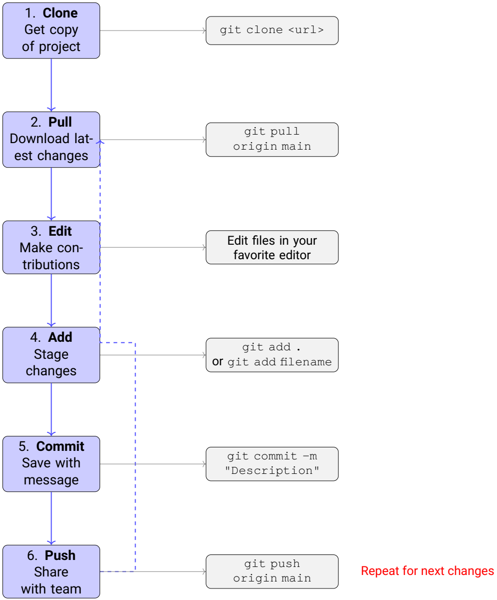
Remote

Online copy of your repository (e.g., GitHub, GitLab)

- `git remote add origin https://github.com/user/repo.git` - Add remote
- `git push origin main` - Upload changes to remote
- `git pull origin main` - Download changes from remote

Git Workflow for Research Teams

Git Collaboration Workflow



1. **Clone** Get copy of project

`git clone <url>`

2. **Pull** Download latest changes

`git pull origin main`

3. **Edit** Make contributions

Edit files in your favorite editor

4. **Add** Stage changes

`git add .` or `git add filename`

5. **Commit** Save with message

`git commit -m "Description"`

6. **Push** Share with team

`git push origin main`

Repeat for next changes

Key Points

- Start with **Clone** only once per project
- Always **Pull** before making changes
- The cycle **Pull** → **Edit** → **Add** → **Commit** → **Push** repeats
- Use descriptive commit messages for better collaboration

Thank You for attention.