Quick introduction to GitHub and basic commands

Github and Github Classroom

CS-E407519 - Special Course in Machine Learning, Data Science and Artificial Intelligence: **Machine Learning for Climate Action**

GitHub: Introduction & basic git commands

What is GitHub?

- A web-based platform for version control and collaboration.
- Allows multiple people to work on projects simultaneously.
- Hosts repositories containing folders, files, images, videos, spreadsheets, and data sets.

Why GitHub?

- Track changes in projects over time.
- Collaborate with others seamlessly.
- Open-source projects and private repositories for individual or team use.

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Basic terminology:

- **Repository (Repo):** A directory or storage space for your projects.
- **Fork:** A copy of a repository for experimenting without affecting the original.
- **Branch:** A parallel version of a repository for new features or experiments.
- **Pull request:** Proposed changes to a repository submitted for review.

Basic git commands:

- `git clone [url]`: Clone a repository into a new directory.
- `git status`: Check the status of your files.
- `git add [file-name]`: Add a file to your next commit (stage).
- `git commit -m "commit message"`: Commit your staged content.
- `git push`: Update remote repository.
- `git pull`: Fetch and download content from a remote repository.

For more details and advanced commands, check
`https://coderefinery.github.io/git-intro/` or
`https://docs.github.com/en`.

GitHub: Setting up the SSH key

When cloning a remote repository, you need to do it via SSH (Secure Shell) option. SSH provides a secure connection between the Copernicus server and GitHub. It's necessary for operations like cloning, pushing, and pulling changes to/from remote repositories securely.

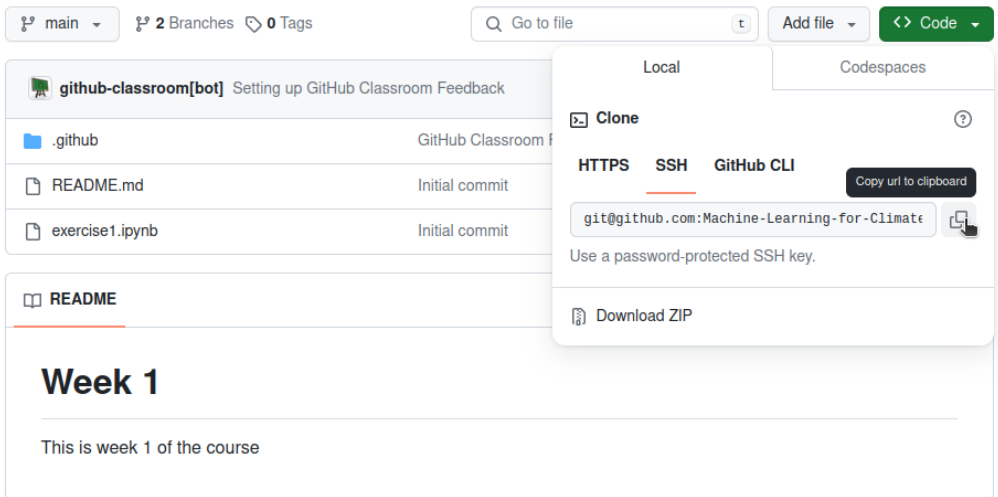
Before cloning, you must set up SSH keys between the Copernicus server and your GitHub account. This involves generating an SSH key pair on Copernicus, then adding the public key to your GitHub account.

Steps to Set Up SSH Keys:

1. **Generate SSH Key on Copernicus server**
   - 1.1 Open a terminal in the Copernicus JupyterLab environment.
   - 1.2 Run `ssh-keygen -t rsa -b 4096 -C "your_email@example.com"`.
   - 1.3 Press `Enter` to save the key to the default location.
   - 1.4 Optionally, add a passphrase for security.

GitHub: Setting up the SSH key

2. **Add public key to GitHub:**
   - 2.1 View public key with `cat ~/.ssh/id_rsa.pub`.
   - 2.2 Copy the key.
   - 2.3 In GitHub, go to *Settings* > *SSH and GPG keys*.
   - 2.4 Click *New SSH key*, paste your public key, and save.
3. **Cloning the repository:**
   - 3.1 After SSH setup, clone using SSH URL: `git clone git@github.com:username/repository.git`.
   - 3.2 Navigate to the desired directory in the terminal before cloning.



Once your SSH key pair is set up, you just need to copy your repository address from here.

GitHub Classroom

What is GitHub Classroom?

- An extension of GitHub designed specifically for educational purposes.
- Facilitates the use of GitHub for assignments and coursework in an academic setting.
- Teachers can distribute code, collect assignments, and provide feedback.

Key features of GitHub Classroom:

- **Assignment creation:** Instructors can create assignments with starter code.
- **Automated workflow:** Streamlines the process of distributing and collecting assignments.
- **Student repositories:** Students get their own copies of assignments, facilitating individual work.
- **Feedback and Grading:** Teachers can easily leave feedback directly on student submissions.

For more information, check `https://classroom.github.com`.