CPE 393 Machine Learning Operations

Lab-3 Git Tutorial with GitHub

Installation

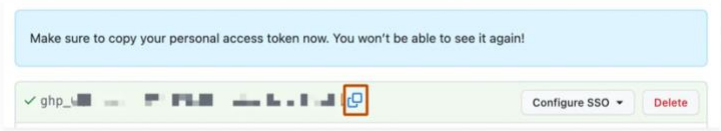
- For Windows: Download and install from git-scm.com.
- For macOS/Linux: Use the package manager (e.g., brew install git or sudo apt install git)
- **Check Git Version ~** git –version

Account Creation

- Sign up/in your GitHub account
- Confirm your email if you haven't done yet for verification

Create Personal Access Token (Keep Safe)

1. Verify your email address, if it hasn't been verified yet.
2. In the upper-right corner of any page on GitHub, click your profile photo, then click **Settings**.
3. In the left sidebar, click **Developer settings**.
4. In the left sidebar, under **Personal access tokens**, click **Tokens (classic)**.
5. Select **Generate new token**, then click **Generate new token (classic)**.
6. In the "Note" field, give your token a descriptive name.
7. To give your token an expiration, select **Expiration**, then choose a default option or click **Custom** to enter a date.
8. Select the scopes you'd like to grant this token. To use your token to access repositories from the command line, select **repo**. A token with no assigned scopes can only access public information. For more information, see Scopes for OAuth apps.
9. Click **Generate token**.
10. Optionally, to copy the new token to your clipbord, click .



11. To use your token to access resources owned by an organization that uses SAML single sign-on, authorize the token. For more information, see Authorizing a personal access token for use with SAML single sign-on in the GitHub Enterprise Cloud documentation.

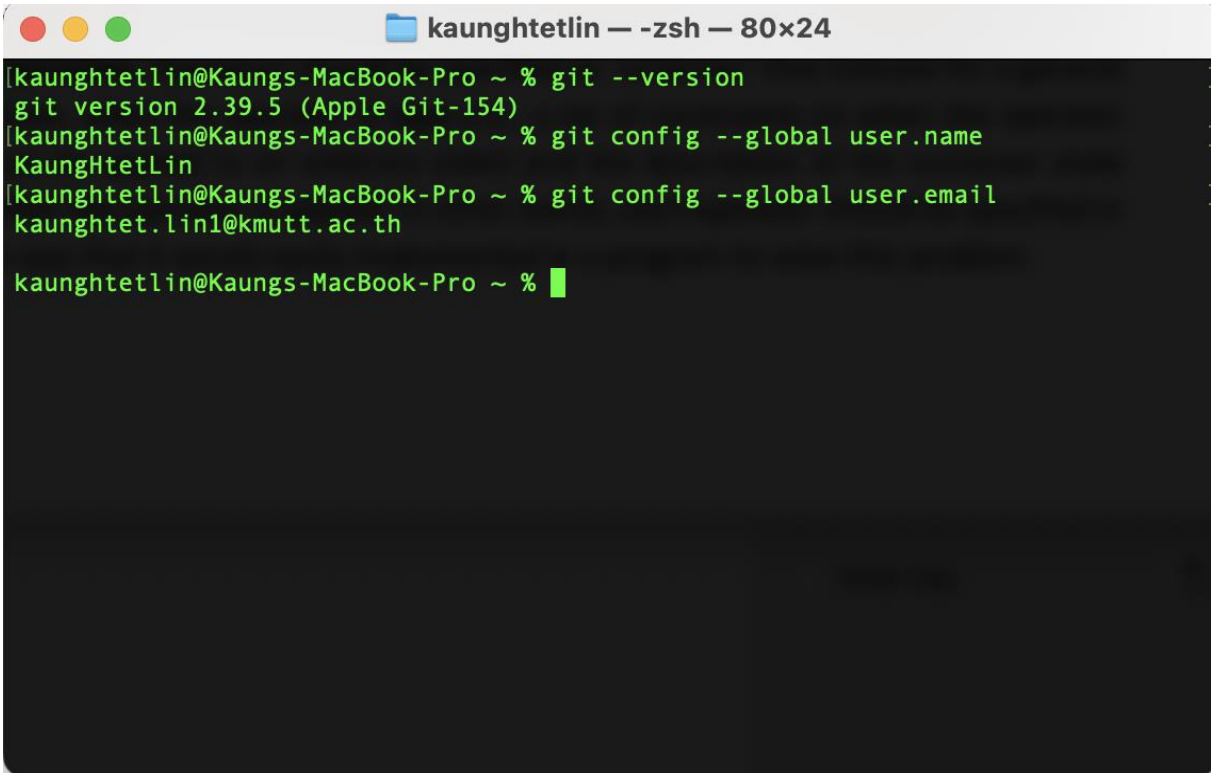
Assignment 1: Practicing Basic Git commands with command line interface

Submission: GitHub URL of your repository

Configuration

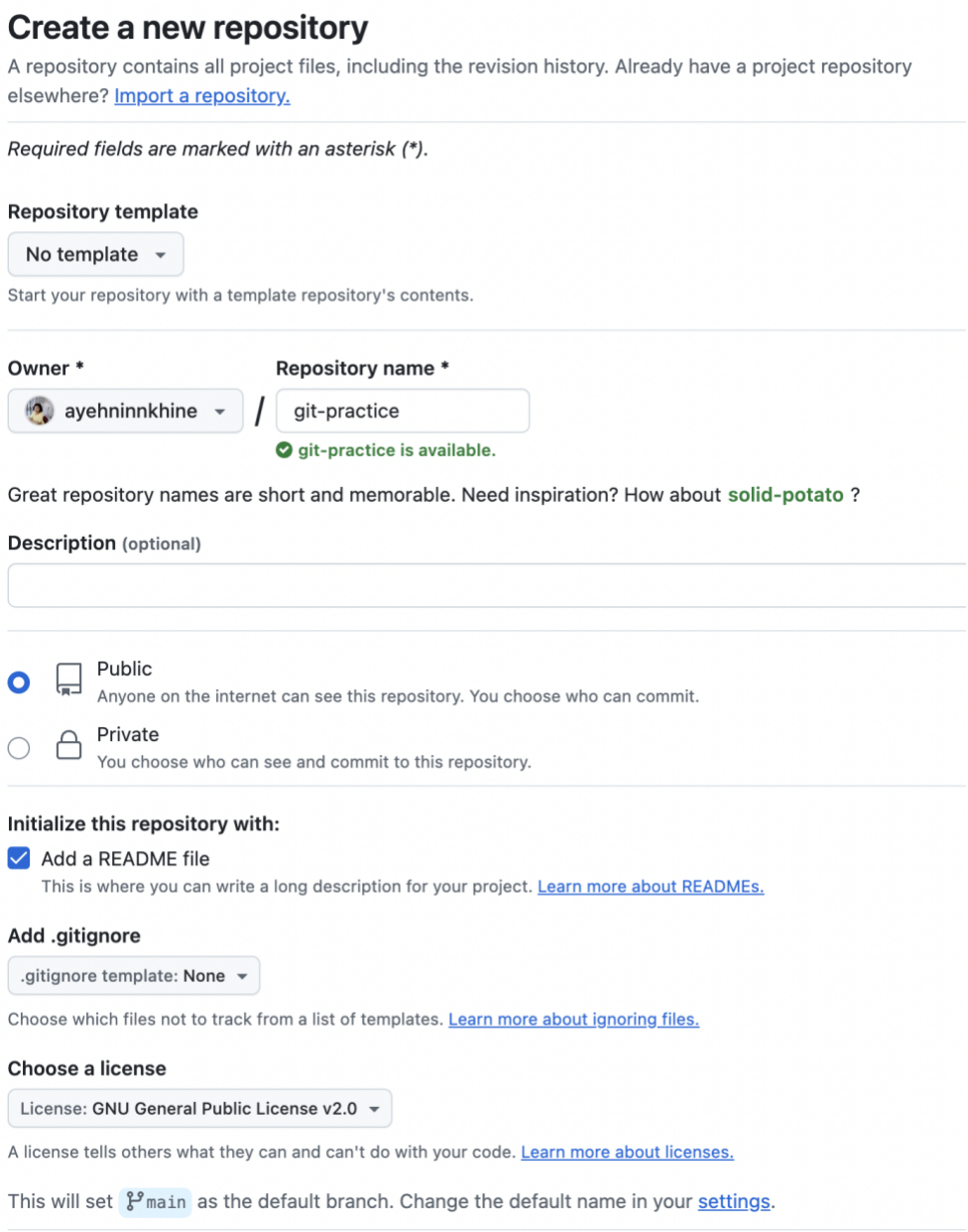
git config --global user.name "Your Name"

git config --global user.email “your.email@example.com”

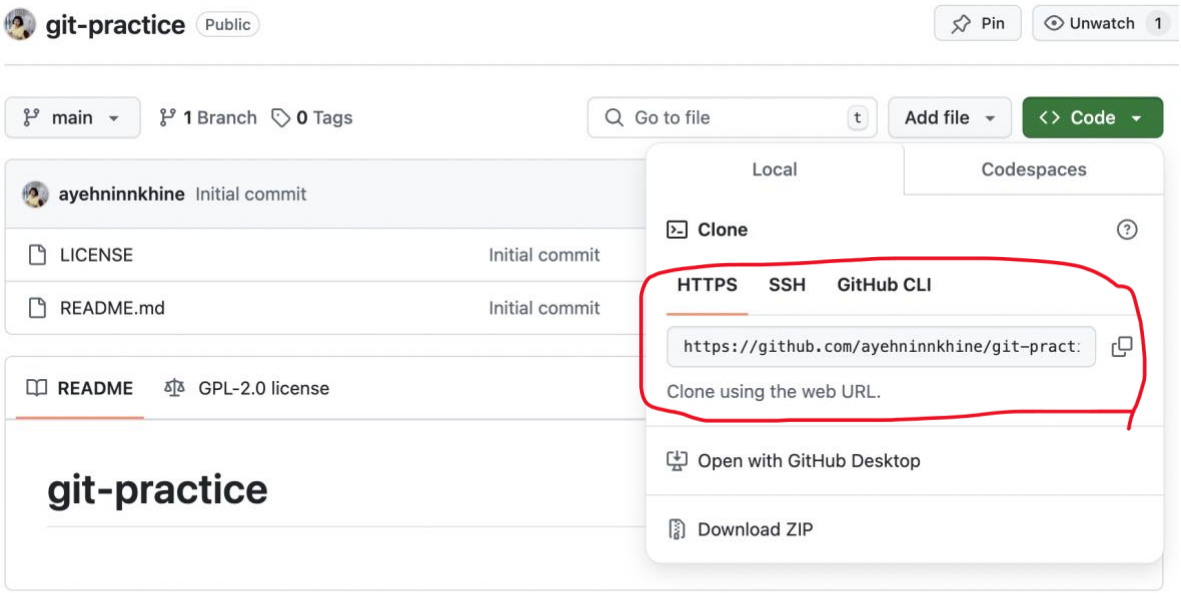


Part 1: Basic Git Workflow

1. Create a new repository for your project on GitHub website.



2. Clone a Git repository to local machine



Command ~ git clone https://github.com/ayehninnkhine/git-practice.git

After cloning the repository, you should see a folder on your local machine. Go to your cloned repository location in terminal.

Command ~ cd git-practice

3. Create a file called project_plan.txt
4. Add the initial content to the file
5. Stage and commit the file with a descriptive message
6. Make additional changes to the file
7. Stage and commit the new changes
8. View the commit history using git log

 # Create project plan file

echo "Project Outline: Machine Learning" > project_plan.txt

 # Stage and commit initial file

git add project_plan.txt

git commit -m "Initialize project plan document"

 # Make additional changes

echo "Added initial project goals and scope" >> project_plan.txt

 # Stage and commit changes

git add project_plan.txt

git commit -m "Update project plan with initial goals"

 # View commit history

git log

Part 2: Branching and Merging

1. Create a new branch called feature-branch
2. Switch to the new branch
3. Create a new file called feature_details.txt
4. Add content to the file
5. Stage and commit the changes
6. Switch back to the main branch
7. Merge the feature branch into main
8. Resolve any merge conflicts if they occur

Create and switch to feature branch

git checkout -b feature-branch

Create feature details file

echo "Feature 1: User Authentication System" > feature_details.txt

git add feature_details.txt

git commit -m "Add initial feature details for authentication"

Switch back to main branch and merge

git checkout main

git merge feature-branch

Part 3: Commit Message Practice

1. Make a series of small, incremental changes
2. Write descriptive, meaningful commit messages for each change
3. Use git commit --amend to modify the most recent commit message

Make incremental changes

echo "Updated authentication requirements" >> feature_details.txt

git add feature_details.txt

```
git commit -m "Refine authentication feature requirements"

# Amend last commit message

git commit --amend -m "Comprehensive authentication feature requirements"
```

Part 4: Remote Repository Simulation

1. Create a new repository on GitHub
2. Clone the repository to your local machine
3. Create a new branch and make changes
4. Push the branch to the remote repository
5. Create a pull request
6. Practice merging the pull request

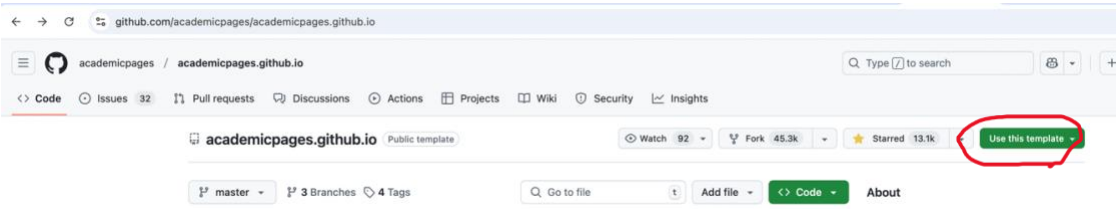
```
# Create GitHub repository (through GitHub web interface)
git remote add origin https://github.com/yourusername/git-lab-project.git

# Create and push new branch
git checkout -b remote-feature
echo "Remote feature implementation" > remote_feature.txt
git add remote_feature.txt
git commit -m "Add remote feature implementation"
git push -u origin remote-feature (paste your personal access token when password is asked)

# Create pull request via GitHub web interface or GitHub CLI
gh pr create
```

Part 5: Merging branches

You should see a PR on your repository in GitHub. Merge your pull request on your repository in web interface.

Assignment 2: Building Academic Portfolio

Go to academic pages repository
(https://github.com/academicpages/academicpages.github.io)



1. Click the "Use this template" button in the top right.
2. On the "New repository" page, enter your repository name as "[your GitHub username].github.io", which will also be your website's URL.
3. Set site-wide configuration and add your content.
4. Upload any files (like PDFs, .zip files, etc.) to the files/ directory. They will appear at https://[your GitHub username].github.io/files/example.pdf.
5. Check status by going to the repository settings, in the "GitHub pages" section
6. Edit the template with your information.
7. Push the updated files to the repository.
8. Visit https://username.github.io to view your customized page.

Submission – Take a screenshot of your profile, include your GitHub.io URL and Git repository URL in a PDF.