



Assignment01

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1 Introduction

This is a technical report that describes how to use the git utility.

2 Git Technique Explanation

Git utility is widely used by developers. It is because there are several benefits on using the git utility. Main features of git are code sharing, work integration, version control, and open source contribution. At below, this paper explains the way of git usage.

2.1 Code Sharing

With the git utility, people can upload their local files to git repository. By this repository, the files can be shared. In order to upload files, init, add, remote, commit, push commands are needed.

2.1.1 Init

Start using the git utility on the local repository.

```
MINGW64:/c/Users/Joonoh/Desktop/assignment01
Joonoh@DESKTOP-LJ47FNL MINGW64 ~/Desktop/assignment01
$ git init
Initialized empty Git repository in C:/Users/Joonoh/Desktop/assignment01/.git/
Joonoh@DESKTOP-LJ47FNL MINGW64 ~/Desktop/assignment01 (master)
$ |
```

2.1.2 Add

Select the files that want to be committed.

```
MINGW64:/c/Users/Joonoh/Desktop/assignment01
Joonoh@DESKTOP-LJ47FNL MINGW64 ~/Desktop/assignment01 (master)
$ git add *
```

2.1.3 Commit

Commit the files to be shared with a comment.

```
MINGW64:/c/Users/Joohoh/Desktop/assignment01

Joohoh@DESKTOP-LJ47FNL MINGW64 ~/Desktop/assignment01 (master)
$ git commit -m "Test Commit"
[master (root-commit) 100d173] Test Commit
1 file changed, 1 insertion(+)
create mode 100644 assignment01.tex

Joohoh@DESKTOP-LJ47FNL MINGW64 ~/Desktop/assignment01 (master)
$ |
```

2.1.4 Remote

Define the certain Github repository.

```
MINGW64:/c/Users/Joohoh/Desktop/assignment01

Joohoh@DESKTOP-LJ47FNL MINGW64 ~/Desktop/assignment01 (master)
$ git remote add origin https://github.com/jooh95/assignment01

Joohoh@DESKTOP-LJ47FNL MINGW64 ~/Desktop/assignment01 (master)
$ |
```

2.1.5 Push

Upload committed files to the certain Github repository.

```
MINGW64:/c/Users/Joohoh/Desktop/assignment01

Joohoh@DESKTOP-LJ47FNL MINGW64 ~/Desktop/assignment01 (master)
$ git push --force origin master
Enumerating objects: 3, done.
Counting objects: 100% (3/3), done.
Writing objects: 100% (3/3), 217 bytes | 217.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0)
To https://github.com/jooh95/assignment01
+ 6a48a5a...100d173 master -> master (forced update)
```

People can view, download, and contribute on this repository. Details about code cloning and contributing will be covered below.

The screenshot shows the GitHub interface for the repository 'jooh95 / assignment01'. At the top, there's a search bar and navigation links for Pull requests, Issues, Marketplace, and Explore. Below this, the repository name is displayed along with statistics: 1 commit, 1 branch, 0 releases, and 1 contributor. There are buttons for Unwatch, Star, and Fork. The main content area shows the repository description: 'This is a repository for Computer Vision and Machine Learning Course assignment01.' Below the description, there's a section for the latest commit by 'jooh95' titled 'Test Commit', which was made 21 minutes ago. The commit message is 'Test Commit' and it affects the file 'assignment01.tex'.

2.2 Work Integration

Git utility is also useful when several people work on the same code or project. Status and pull commands give information about updates on the file so that integration jobs become much easier. Besides, work can be managed separately through the unit called 'branch.'

2.2.1 Pull

From the remote Github repository, one can copy others' work to his or her local directory.



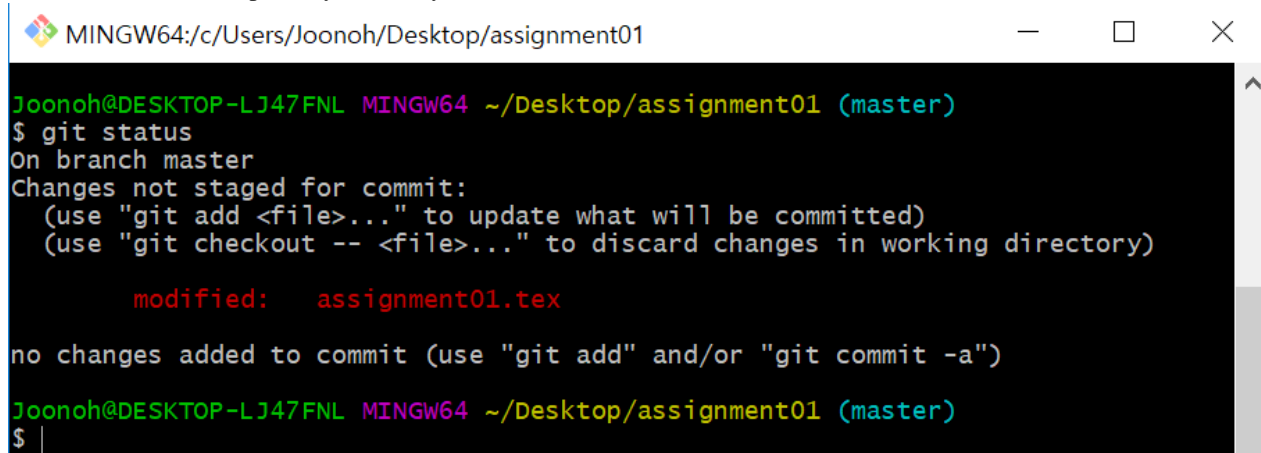
```
MINGW64:/c/Users/Joohnoh/Desktop/assignment01

Joohnoh@DESKTOP-LJ47FNL MINGW64 ~/Desktop/assignment01 (master)
$ git pull https://github.com/jooh95/assignment01 master
From https://github.com/jooh95/assignment01
 * branch          master      -> FETCH_HEAD
Already up to date.

Joohnoh@DESKTOP-LJ47FNL MINGW64 ~/Desktop/assignment01 (master)
$ |
```

2.2.2 Status

Modifications in the repository are easily checked.



```
MINGW64:/c/Users/Joohnoh/Desktop/assignment01

Joohnoh@DESKTOP-LJ47FNL MINGW64 ~/Desktop/assignment01 (master)
$ git status
On branch master
Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git checkout -- <file>..." to discard changes in working directory)

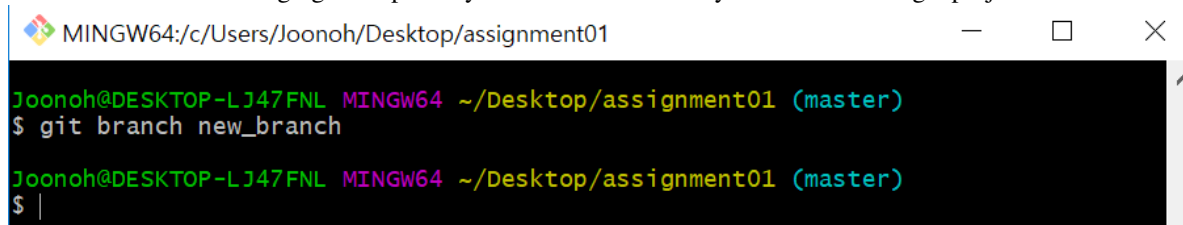
        modified:   assignment01.tex

no changes added to commit (use "git add" and/or "git commit -a")

Joohnoh@DESKTOP-LJ47FNL MINGW64 ~/Desktop/assignment01 (master)
$ |
```

2.2.3 Branch

Branch is a unit for managing the repository. There should be many branches in a single project.



```
MINGW64:/c/Users/Joohnoh/Desktop/assignment01

Joohnoh@DESKTOP-LJ47FNL MINGW64 ~/Desktop/assignment01 (master)
$ git branch new_branch

Joohnoh@DESKTOP-LJ47FNL MINGW64 ~/Desktop/assignment01 (master)
$ |
```

If there are updates, one can push that modification to the server. Thus, work is always in an integrated status.

2.3 Version Control

When working on a project, several version of code or documents are created. Git utility provide roll back function. Moreover, the history of commit is available.

2.3.1 Reset

Roll back to the previous commit according to the HEAD pointer with deleting commit history. HEAD is a pointer points the using branch.

MINGW64:/c/Users/JoonoH/Desktop/assignment01

```
JoonoH@DESKTOP-LJ47FNL MINGW64 ~/Desktop/assignment01 (master)
$ git reset --soft HEAD

JoonoH@DESKTOP-LJ47FNL MINGW64 ~/Desktop/assignment01 (master)
$ |
```

2.3.2 Checkout

Checkout command is similar to the reset command. However, the difference in on checkout command can roll back a certain file.

MINGW64:/c/Users/JoonoH/Desktop/assignment01

```
JoonoH@DESKTOP-LJ47FNL MINGW64 ~/Desktop/assignment01 (master)
$ git checkout assignment01.tex

JoonoH@DESKTOP-LJ47FNL MINGW64 ~/Desktop/assignment01 (master)
$ |
```

2.3.3 Revert

Revert is also similar to the reset command, but the commit history is kept.

MINGW64:/c/Users/JoonoH/Desktop/assignment01

```
JoonoH@DESKTOP-LJ47FNL MINGW64 ~/Desktop/assignment01 (master)
$ git revert master
[master a0ad357] Revert "Revert "Test Commit""
1 file changed, 1 insertion(+)
create mode 100644 assignment01.tex

JoonoH@DESKTOP-LJ47FNL MINGW64 ~/Desktop/assignment01 (master)
$ |
```

2.3.4 Log

History of users' commit can be tracked by the log command.

MINGW64:/c/Users/JoonoH/Desktop/assignment01

```
JoonoH@DESKTOP-LJ47FNL MINGW64 ~/Desktop/assignment01 (master)
$ git log
commit 100d1730c2d5e0a3c15ce00eece7365f1dd1986b (HEAD -> master, origin/master)
Author: jooh95 <jooh95@naver.com>
Date: Sat Sep 15 21:35:33 2018 +0900

    Test Commit

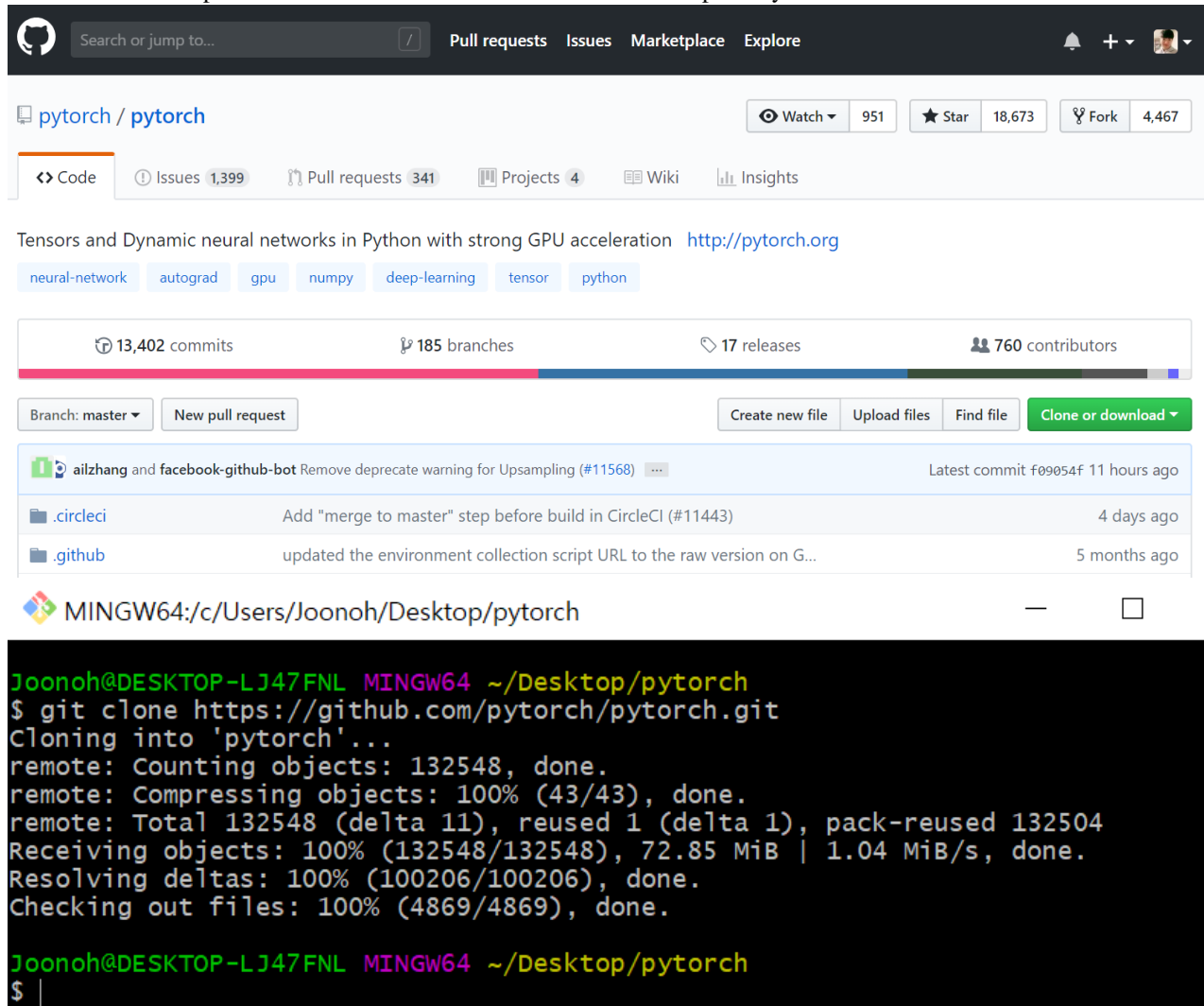
JoonoH@DESKTOP-LJ47FNL MINGW64 ~/Desktop/assignment01 (master)
$ |
```

2.4 Open Source Contribution

In Github, millions of open source are free to implement. To use those, developers have to clone to their own local repository.

2.4.1 Clone

Clone command copies all files from the remote server to the local repository.



The image shows a screenshot of the GitHub repository page for 'pytorch/pytorch' and a terminal window. The GitHub page displays the repository name, navigation links (Code, Issues, Pull requests, Projects, Wiki, Insights), repository statistics (13,402 commits, 185 branches, 17 releases, 760 contributors), and a list of recent commits. The terminal window shows the execution of the 'git clone' command, cloning the repository into a local directory named 'pytorch'.

pytorch / pytorch

Watch 951 Star 18,673 Fork 4,467

Code Issues 1,399 Pull requests 341 Projects 4 Wiki Insights

Tensors and Dynamic neural networks in Python with strong GPU acceleration <http://pytorch.org>

neural-network autograd gpu numpy deep-learning tensor python

13,402 commits 185 branches 17 releases 760 contributors

Branch: master New pull request Create new file Upload files Find file Clone or download

ailzhang and facebook-github-bot Remove deprecate warning for Upsampling (#11568) Latest commit f09054f 11 hours ago

.circleci Add "merge to master" step before build in CircleCI (#11443) 4 days ago

.github updated the environment collection script URL to the raw version on G... 5 months ago

MINGW64:/c/Users/Joohoh/Desktop/pytorch

```
Joohoh@DESKTOP-LJ47FNL MINGW64 ~/Desktop/pytorch
$ git clone https://github.com/pytorch/pytorch.git
Cloning into 'pytorch'...
remote: Counting objects: 132548, done.
remote: Compressing objects: 100% (43/43), done.
remote: Total 132548 (delta 11), reused 1 (delta 1), pack-reused 132504
Receiving objects: 100% (132548/132548), 72.85 MiB | 1.04 MiB/s, done.
Resolving deltas: 100% (100206/100206), done.
Checking out files: 100% (4869/4869), done.

Joohoh@DESKTOP-LJ47FNL MINGW64 ~/Desktop/pytorch
$
```

Through the git, open source developers can improve original code, implement the code on their own projects, ask some questions in issues section, etc.

3 Github Link

<https://github.com/jooh95/assignment01>