Google Colaboratory 사용법

Fast Campus
Start Deep Learning with TensorFlow

Github Address

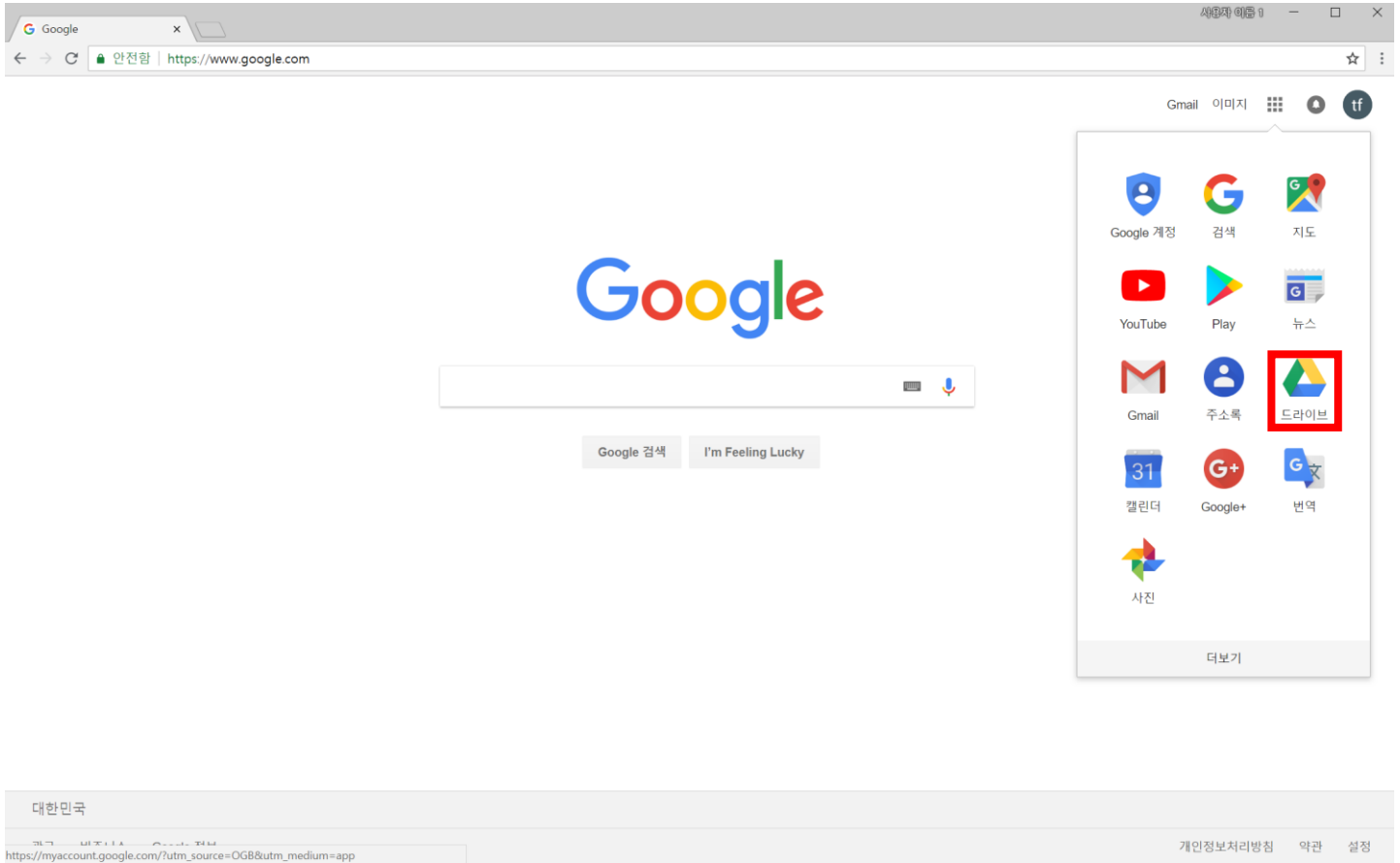
- https://github.com/jwlee-ml/Tensorflow_Training_11th

Colaboratory

- Colaboratory is a research tool for machine learning education and research.
- It's a Jupyter notebook environment that requires no setup to use.
- Up to 12 hours continuous use.
- FAQ : https://research.google.com/colaboratory/faq.html

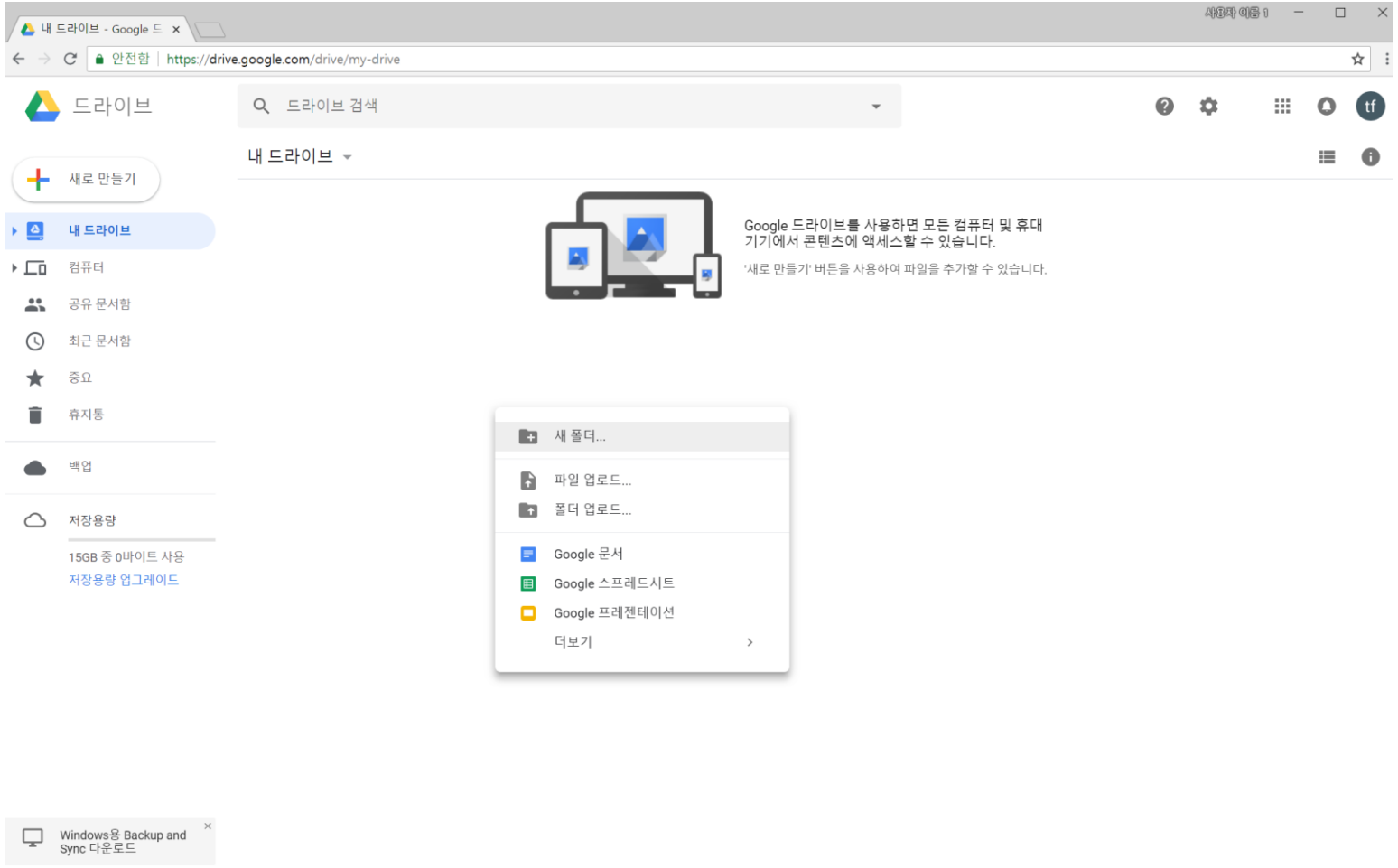
Colaboratory 사용법

- Google 계정으로 login
- Google Drive로 들어갑니다



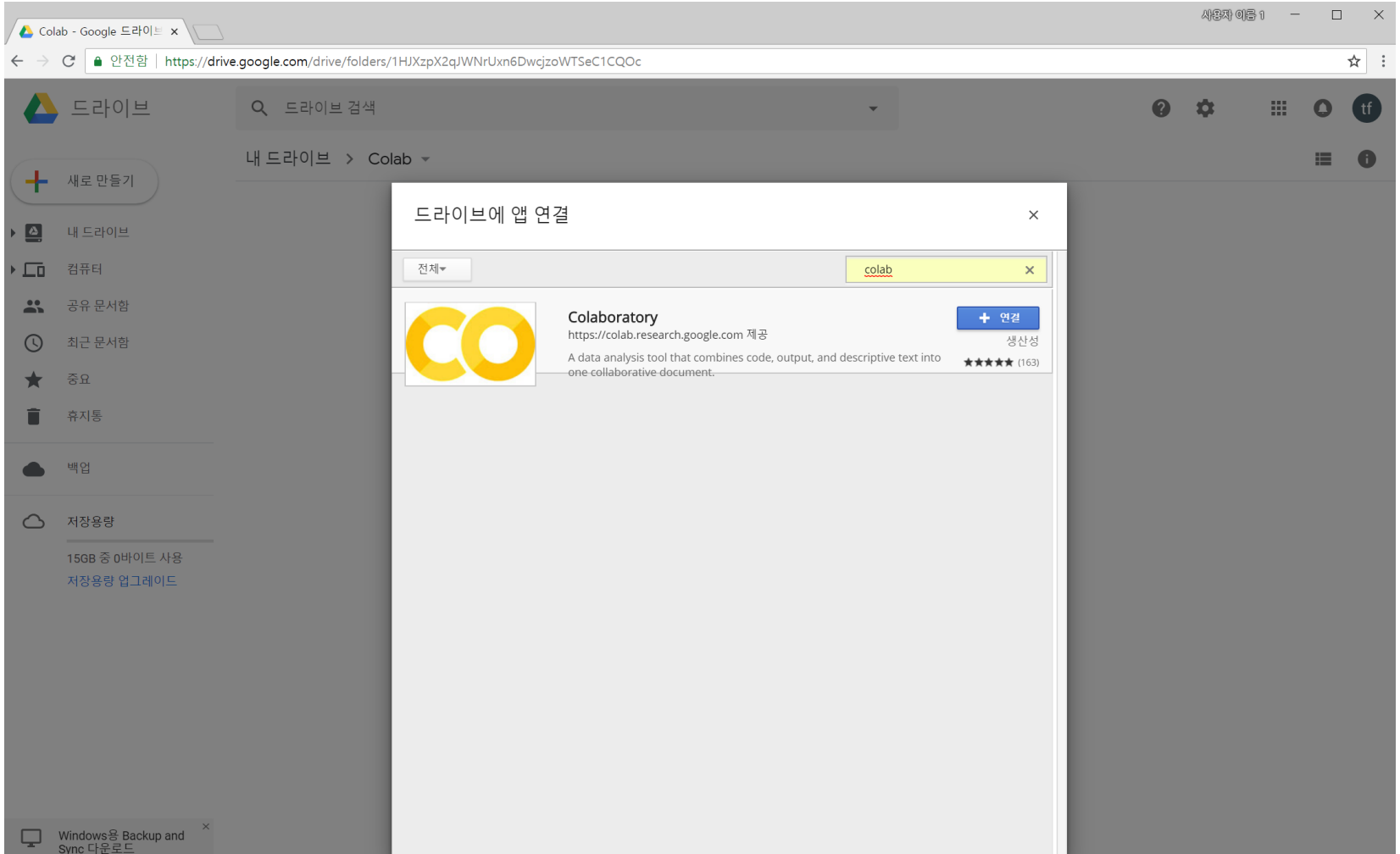
Colaboratory 사용법

- 우클릭하여 새 폴더를 하나 만들고 들어갑니다



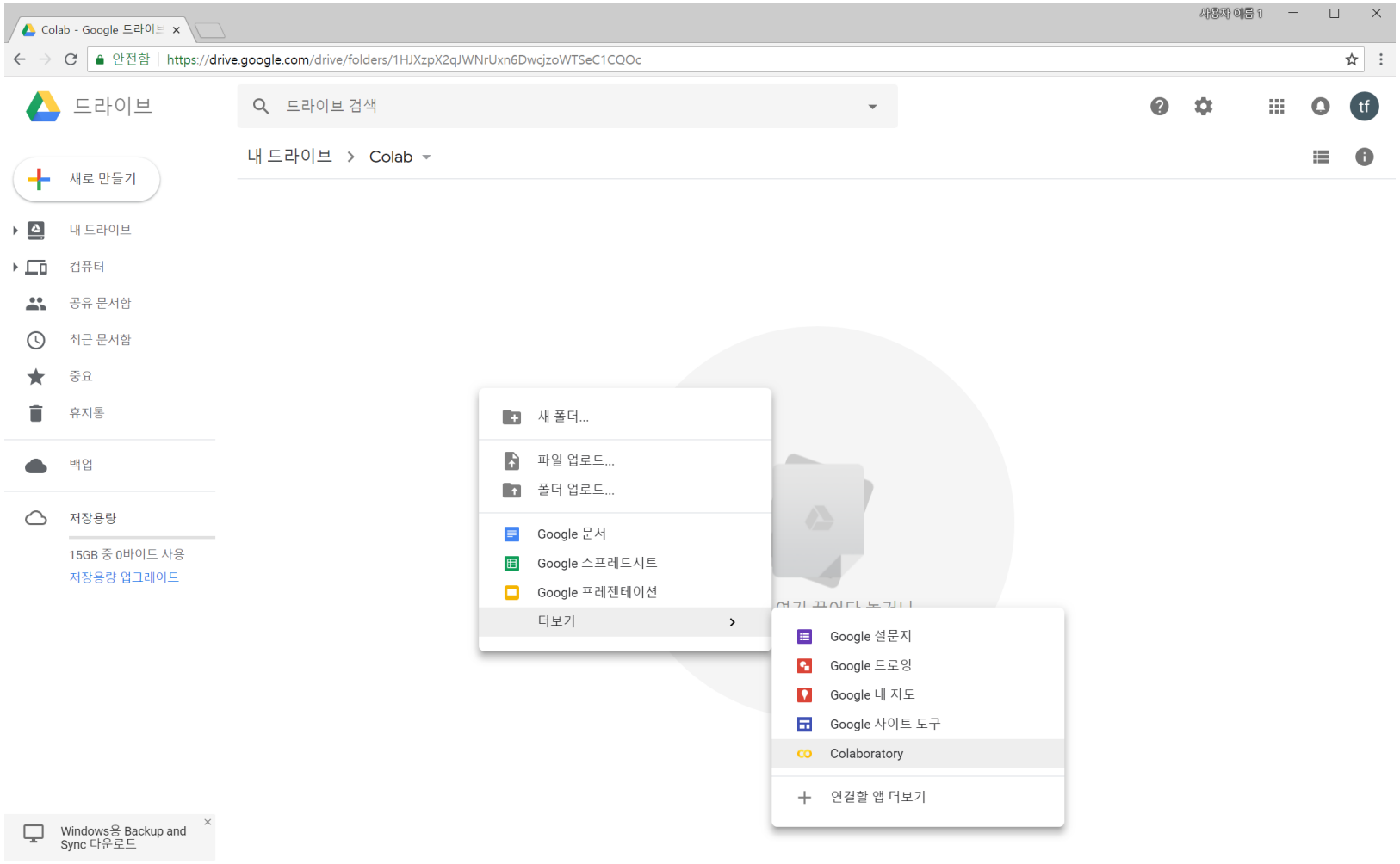
Colaboratory 사용법

- 우클릭 후, 연결할 앱 더보기에서 Colaboratory를 연결(or 설치)합니다



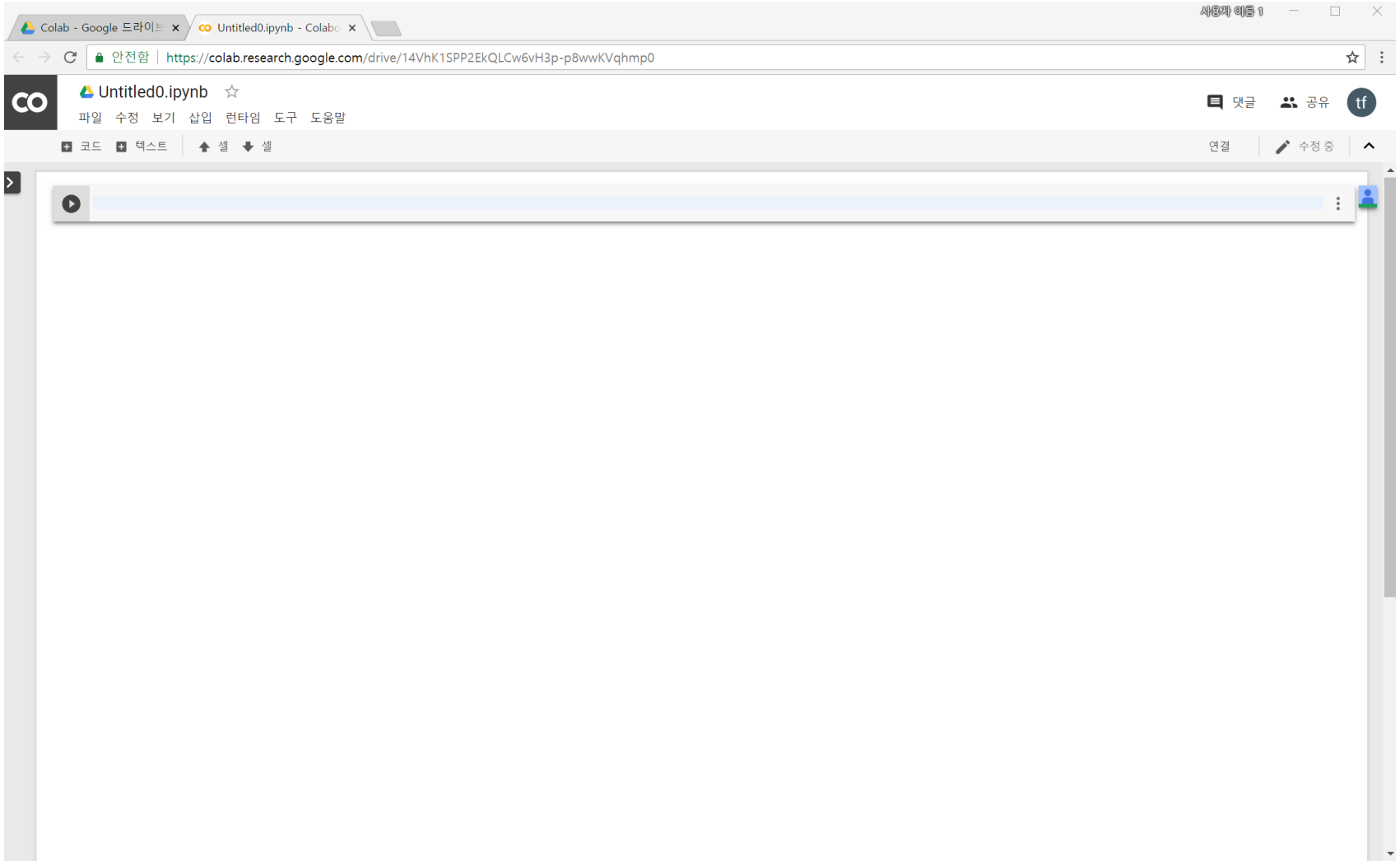
Colaboratory 사용법

- 다시 우클릭 후, Colab을 하나 생성합니다



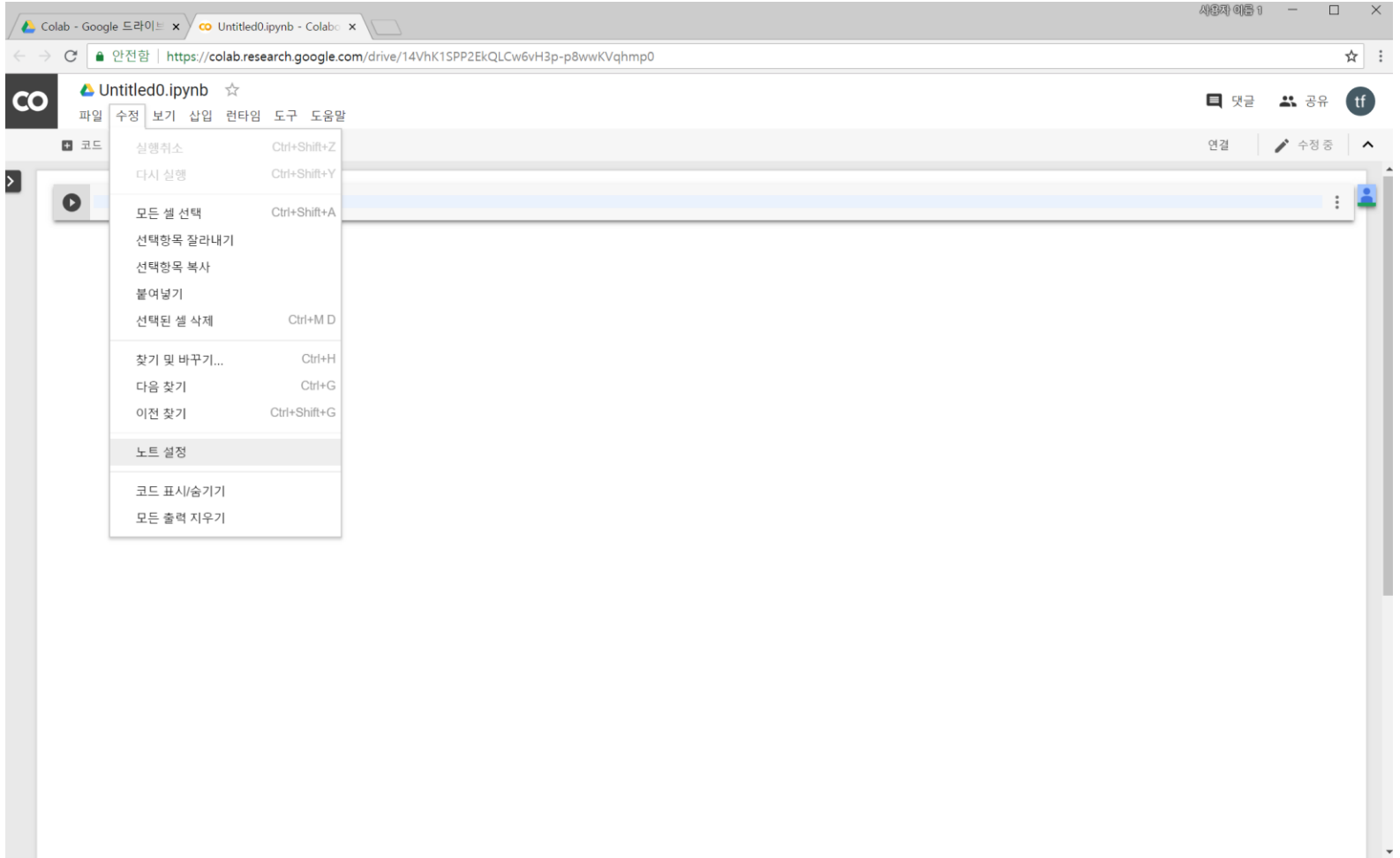
Colaboratory 사용법

- 사용할 준비완료



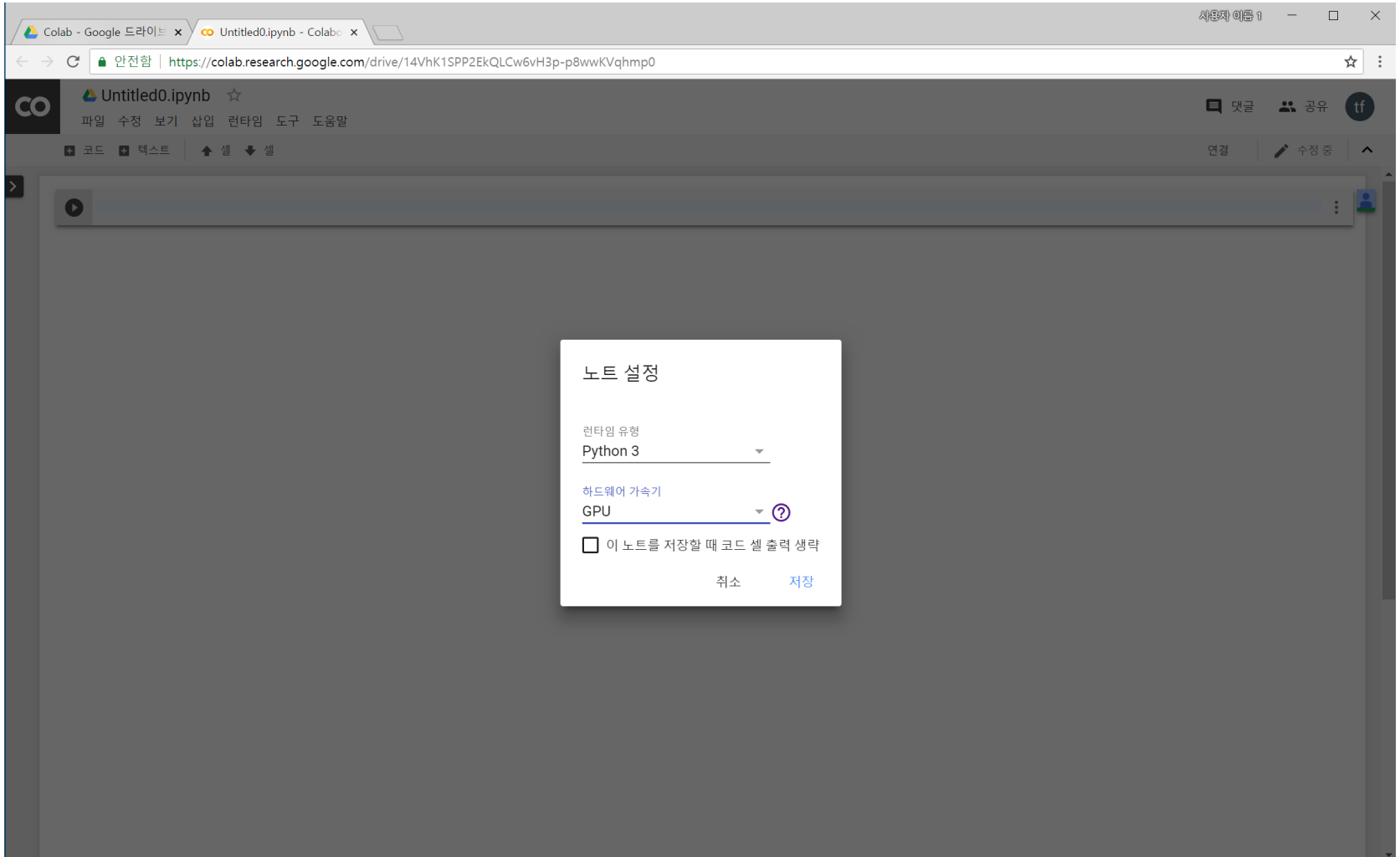
Colaboratory 사용법

- GPU를 사용하고 싶으면 '수정' → '노트설정' 에서 GPU를 선택하면 됩니다



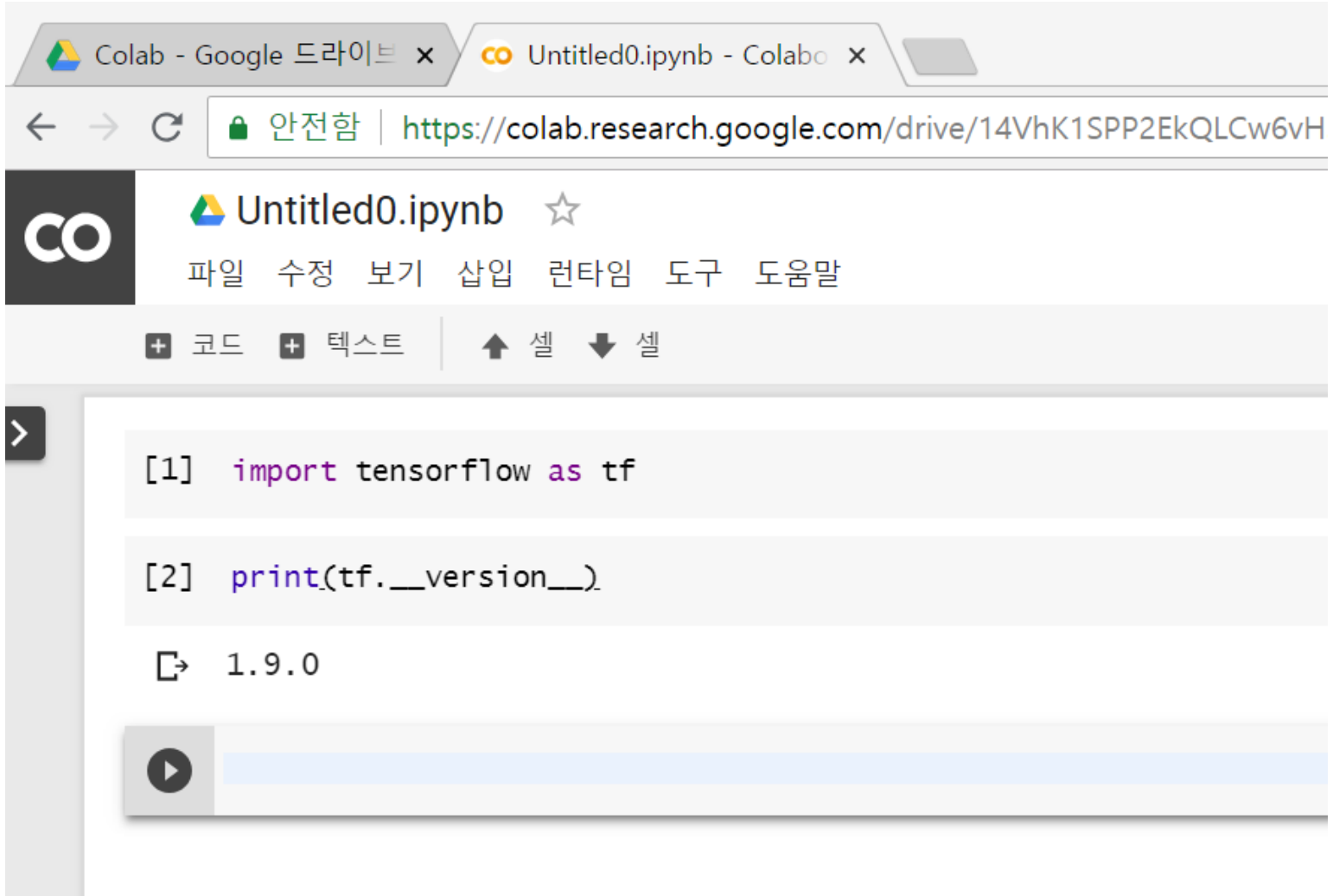
Colaboratory 사용법

- 런타임유형 : Python 3 , 하드웨어 가속기 : GPU 선택



Colaboratory 사용법

- Tensorflow가 깔려있는지 확인해봅시다 – 실행은 Shift + Enter

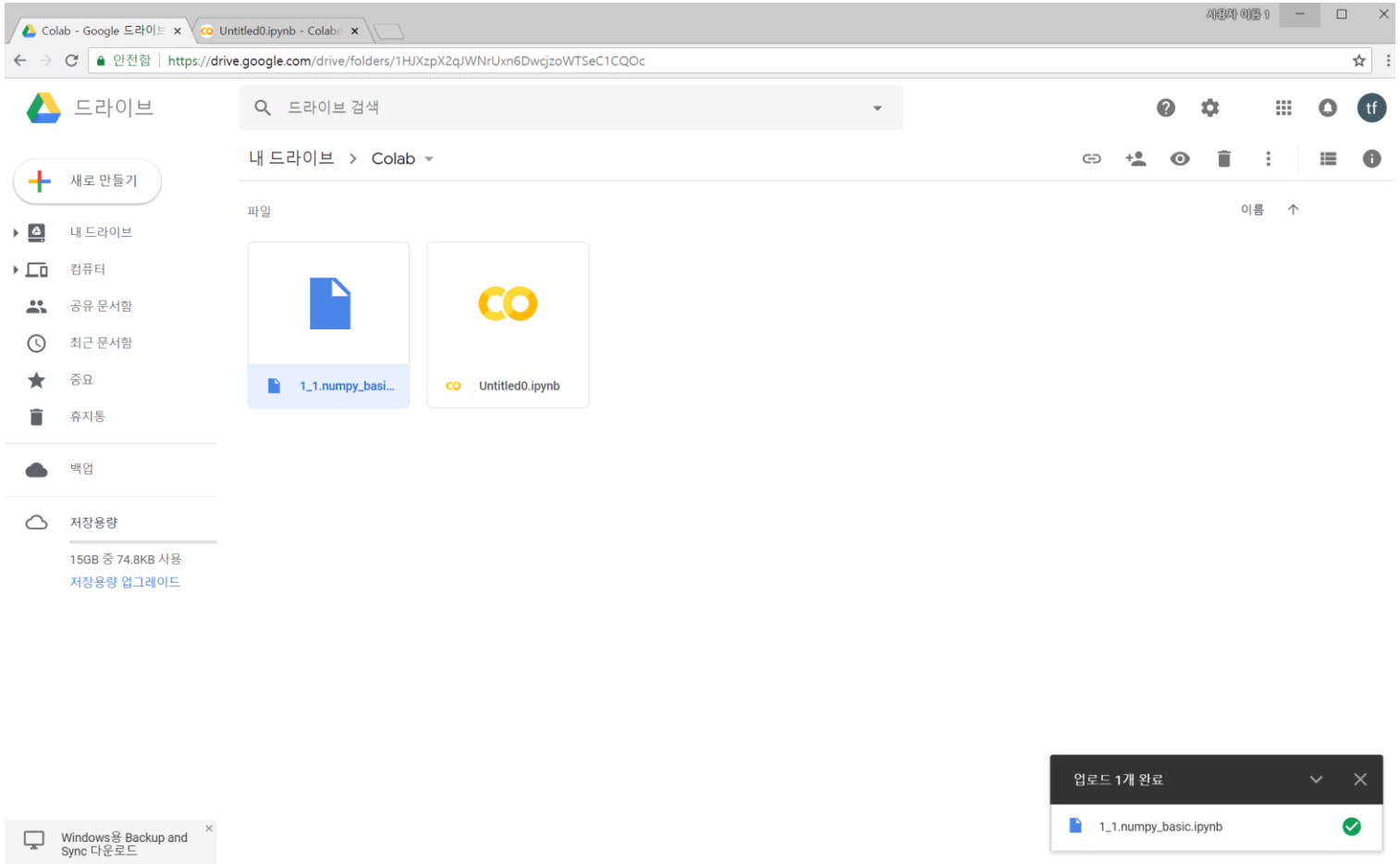


Colaboratory 사용법

- 셀 실행은 Shift + Enter 혹은 Ctrl + Enter
- 아래에 셀 추가는 Ctrl + M + B
- 위에 셀 추가는 Ctrl + M + A
- 셀 삭제는 Ctrl + M + D
- 행번호 출력(출력상태에서는 감춤)은 Ctrl + M + L
- 기타 단축키가 보고 싶거나 추가로 설정하고 싶으면 Ctrl + M + H

Colaboratory 사용법

- Jupyter notebook file을 외부에서 가져오고 싶으면 Google Drive로 upload(drag and drop)한 후에 실행하면 자동으로 colab과 연결됩니다



Colaboratory 사용법

- 내 PC에 있는 file을 upload하거나 download하는 방법
- https://colab.research.google.com/notebooks/io.ipynb

Local file system

Uploading files from your local file system

`files.upload` returns a dictionary of the files which were uploaded. The dictionary is keyed by the file name, the value is the data which was uploaded.

```
[ ]  from google.colab import files

     uploaded = files.upload()

     for fn in uploaded.keys():
       print('User uploaded file "{name}" with length {length} bytes'.format(
           name=fn, length=len(uploaded[fn])))
```

Downloading files to your local file system

`files.download` will invoke a browser download of the file to the user's local computer.

```
[ ]  from google.colab import files

     with open('example.txt', 'w') as f:
       f.write('some content')

     files.download('example.txt')
```

Colaboratory 사용법

- 현재 dir 내의 file들을 보고 싶으면 !ls
- Dir을 이동할 때는 cd 혹은 os.chdir()을 사용합니다

```
[5]  import os
```

```
[6]  !ls
```

```
datalab
```

```
[7]  !pwd
```

```
/content
```

```
[8]  os.chdir("/")
```

```
[9]  !ls
```

```
bin
boot
colabtools
content
datalab
dev
etc
gpu-tensorflow-1.9.0-cp27-cp27mu-linux_x86_64.whl
gpu-tensorflow-1.9.0-cp36-cp36m-linux_x86_64.whl
home
```

Colaboratory 사용법

- Github에 있는 file을 colab에서 바로 실행하는 방법
- https://colab.research.com/github/ {github .ipynb 파일 경로}
  - github 주소 :
    https://github.com/jwlee-ml/Tensorflow_Training_11th/blob/master/1_1.numpy_basic.ipynb
  - Colab 주소 :
    https://colab.research.google.com/github/jwlee-ml/Tensorflow_Training_11th/blob/master/1_1.numpy_basic.ipynb
- Chrome 웹스토어에서 Open in Colab 설치하면 편하게 사용가능

Colaboratory 사용법

- Google drive를 mount 하는 방법
- https://medium.com/deep-learning-turkey/google-colab-free-gpu-tutorial-e113627b9f5d

```
!apt-get install -y -qq software-properties-common python-software-properties module-init-tools
!add-apt-repository -y ppa:alessandro-strada/ppa 2>&1 > /dev/null
!apt-get update -qq 2>&1 > /dev/null
!apt-get -y install -qq google-drive-ocamlfuse fuse
from google.colab import auth
auth.authenticate_user()
from oauth2client.client import GoogleCredentials
creds = GoogleCredentials.get_application_default()
import getpass
!google-drive-ocamlfuse -headless -id={creds.client_id} -secret={creds.client_secret} < /dev/null 2>&1 | grep URL
vcode = getpass.getpass()
!echo {vcode} | google-drive-ocamlfuse -headless -id={creds.client_id} -secret={creds.client_secret}
```

Colaboratory 사용법

```
!apt-get install -y -qq software-properties-common python-software-properties module-init-tools
!add-apt-repository -y ppa:alessandro-strada/ppa 2>&1 > /dev/null
!apt-get update -qq 2>&1 > /dev/null
!apt-get -y install -qq google-drive-ocamlfuse fuse
from google.colab import auth
auth.authenticate_user()
from oauth2client.client import GoogleCredentials
creds = GoogleCredentials.get_application_default()
import getpass
!google-drive-ocamlfuse -headless -id={creds.client_id} -secret={creds.client_secret} < /dev/null 2>&1 | grep URL
vcode = getpass.getpass()
!echo {vcode} | google-drive-ocamlfuse -headless -id={creds.client_id} -secret={creds.client_secret}
```

```
Selecting previously unselected package python-software-properties.
Preparing to unpack .../20-python-software-properties_0.96.24.17_all.deb ...
Unpacking python-software-properties (0.96.24.17) ...
Selecting previously unselected package python3-software-properties.
Preparing to unpack .../21-python3-software-properties_0.96.24.17_all.deb ...
Unpacking python3-software-properties (0.96.24.17) ...
Selecting previously unselected package software-properties-common.
Preparing to unpack .../22-software-properties-common_0.96.24.17_all.deb ...
Unpacking software-properties-common (0.96.24.17) ...
Selecting previously unselected package unattended-upgrades.
Preparing to unpack .../23-unattended-upgrades_0.98ubuntu1.1_all.deb ...
Unpacking unattended-upgrades (0.98ubuntu1.1) ...
Setting up python-apt-common (1.4.0~beta3build2) ...
Setting up python3-apt (1.4.0~beta3build2) ...
Setting up iso-codes (3.75-1) ...
Setting up distro-info-data (0.36ubuntu0.2) ...
Setting up python-pycurl (7.43.0-2build2) ...
Setting up lsb-release (9.20160110ubuntu5) ...
Setting up libgirepository-1.0-1:amd64 (1.54.1-1) ...
Setting up libkmod2:amd64 (24-1ubuntu2) ...
Setting up gir1.2-glib-2.0:amd64 (1.54.1-1) ...
Processing triggers for libc-bin (2.26-0ubuntu2.1) ...
Setting up libapparmor1:amd64 (2.11.0-2ubuntu17.1) ...
Setting up unattended-upgrades (0.98ubuntu1.1) ...
```

Colaboratory 사용법

- 링크가 나오면 클릭해서 들어간 후 나오는 code를 복사하여, 아래 verification code 적는 칸에 적고 Enter(여러번 해야할 수 있음)

```
Warning: apt-key output should not be parsed (stdout is not a terminal)
Selecting previously unselected package libfuse2:amd64.
(Reading database ... 19816 files and directories currently installed.)
Preparing to unpack .../libfuse2_2.9.7-1ubuntu1_amd64.deb ...
Unpacking libfuse2:amd64 (2.9.7-1ubuntu1) ...
Selecting previously unselected package fuse.
Preparing to unpack .../fuse_2.9.7-1ubuntu1_amd64.deb ...
Unpacking fuse (2.9.7-1ubuntu1) ...
Selecting previously unselected package google-drive-ocamlfuse.
Preparing to unpack .../google-drive-ocamlfuse_0.6.21-0ubuntu2_amd64.deb ...
Unpacking google-drive-ocamlfuse (0.6.21-0ubuntu2) ...
Setting up libfuse2:amd64 (2.9.7-1ubuntu1) ...
Processing triggers for libc-bin (2.26-0ubuntu2.1) ...
Setting up fuse (2.9.7-1ubuntu1) ...
Setting up google-drive-ocamlfuse (0.6.21-0ubuntu2) ...
Go to the following link in your browser:

    https://accounts.google.com/o/oauth2/auth?redirect_uri=urn%3Aietf%3Awg%3Aoauth%3A2.0%3Aoob&prompt=select_account&response

Enter verification code:
```

Colaboratory 사용법

- 아래 명령어로 google drive mount

!mkdir -p drive

!google-drive-ocamlfuse drive

```
[13] !mkdir -p drive
     !google-drive-ocamlfuse drive
```

```
[21] cd drive
```

```
/drive
```

```
[23] cd Colab
```

```
/drive/Colab
```

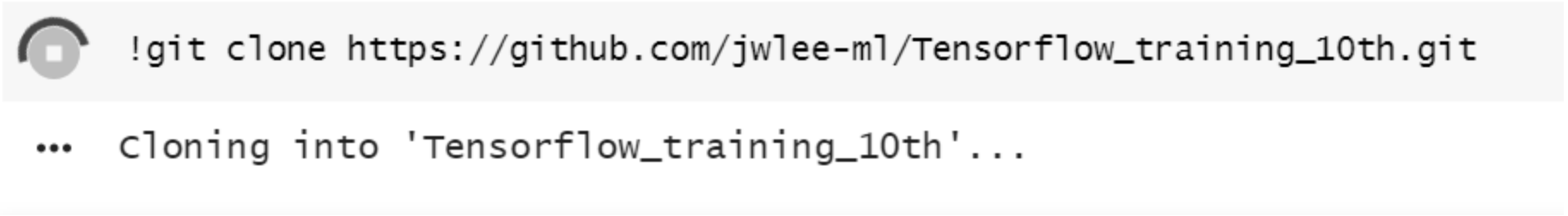
```
[24] !ls
```

```
1_1.numpy_basic.ipynb  Untitled0.ipynb
```

Colaboratory 사용법

- git clone (주의! 오래걸릴 수 있음)

!git clone https://github.com/jwlee-ml/Tensorflow_training_10th.git



Colaboratory 사용법

- 내 Google Drive에 가보면 clone이 되어 새 폴더가 생성된 것을 확인할 수 있음