

Google Colab Tutorial

2019.04.08

NLP LAB,
Department of Computer Engineering,
Kyung Hee University.

khuphj@gmail.com

Index

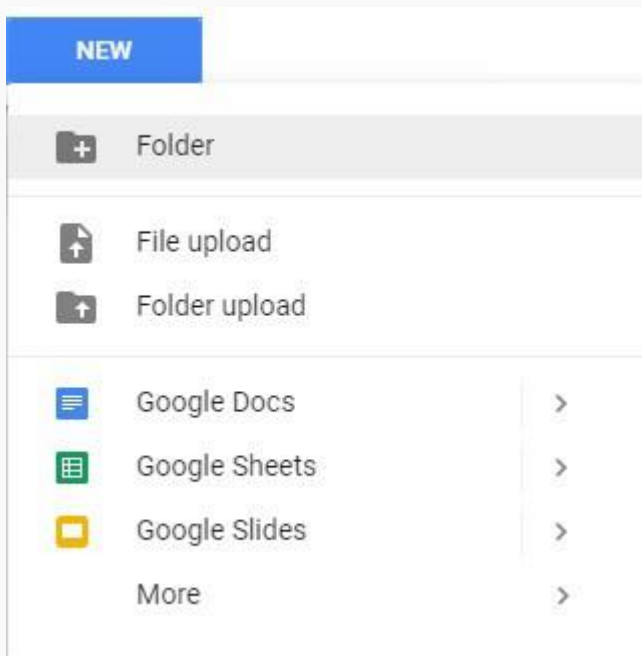
- What is Google Colab ?
- How to use Colab
- Example

What is Google Colab ? (1/1)

- Google Colab is a free cloud service and now it supports free GPU!
- Google Colaboratory is Full name
- Google Colab = Google Drive + Jupyter Notebook
- Spec
 - OS : Ubuntu 18.04.2 LTS
 - CPU: Intel(R) Xeon(R) CPU @ 2.30GHz
 - RAM: 13G
 - HDD: 23G
 - GPU: Tesla K80

How to use Colab (1/7)

- Getting Google Colab Ready to Use



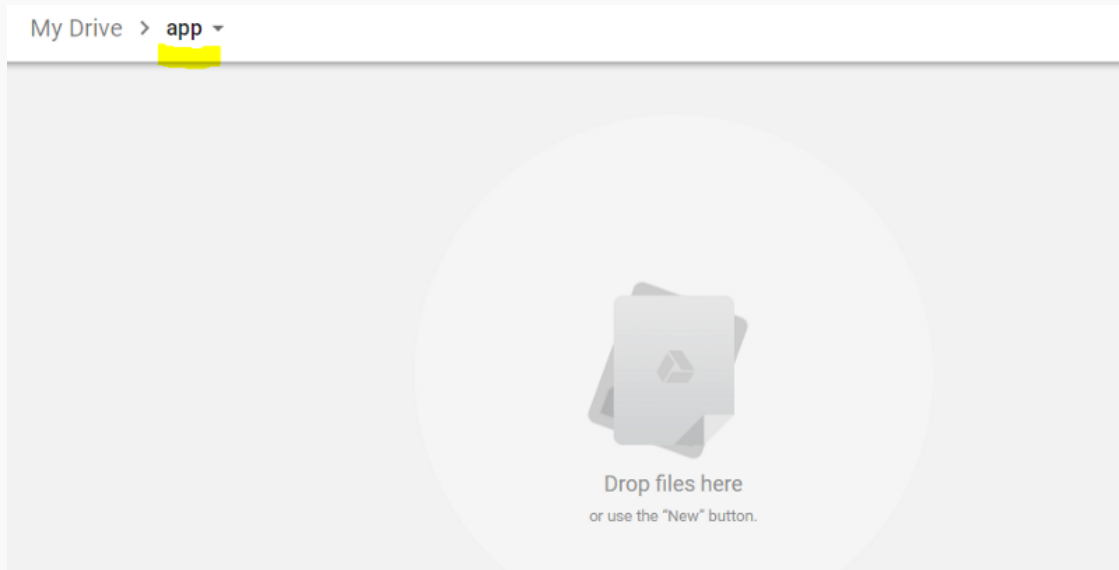
- Since Colab is working on your own Google Drive, we first need to specify the folder we'll work.

I created a folder named “app” on my Google Drive.

Of course, you can use a different name or choose the default Colab Notebooks folder instead of app folder.

How to use Colab (2/7)

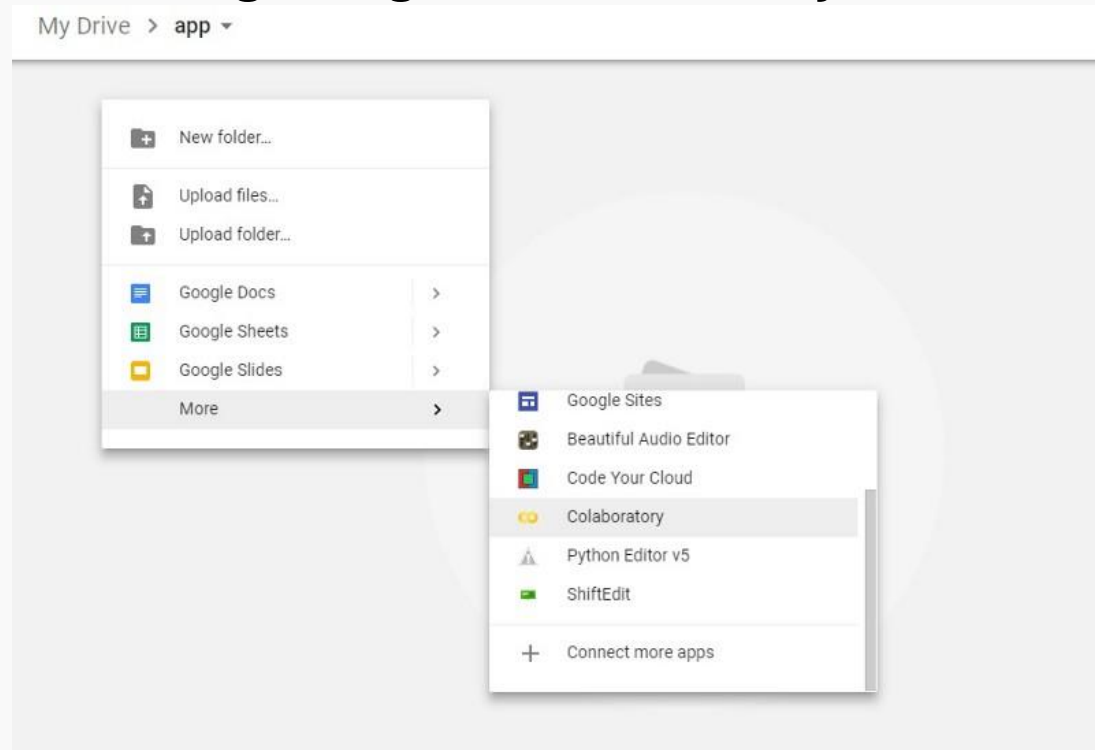
- Getting Google Colab Ready to Use



- I created an empty “app” folder

How to use Colab (3/7)

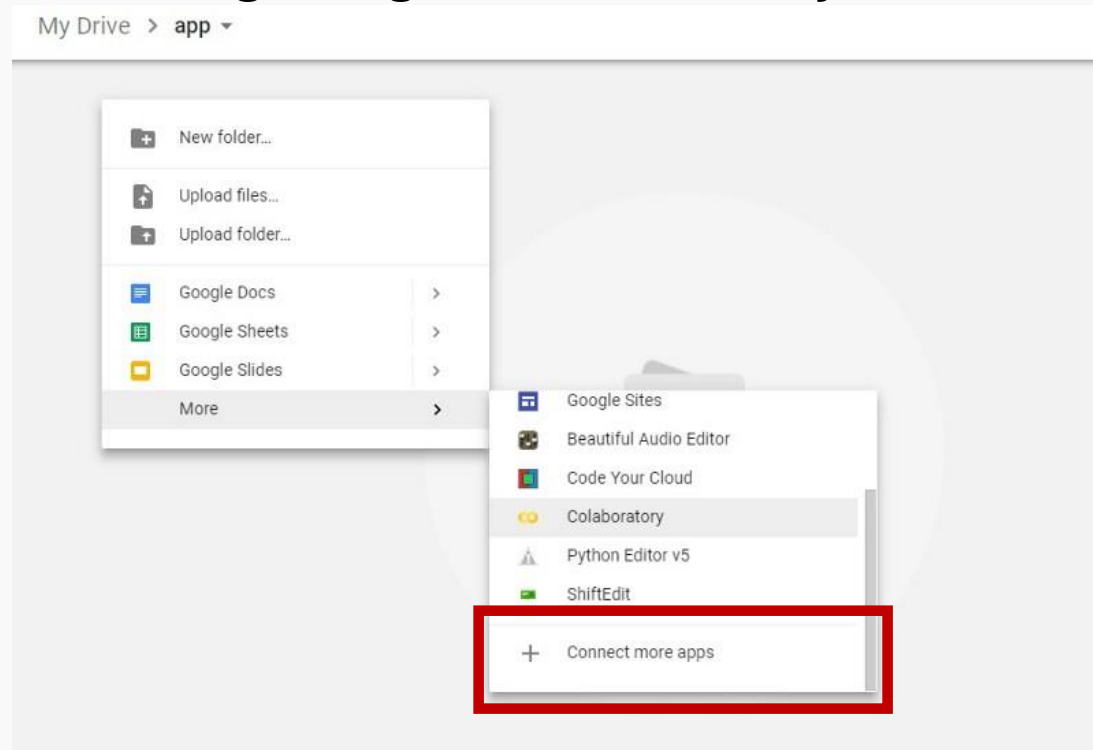
- Getting Google Colab Ready to Use



- Right click > More > Colaboratory

How to use Colab (4/7)

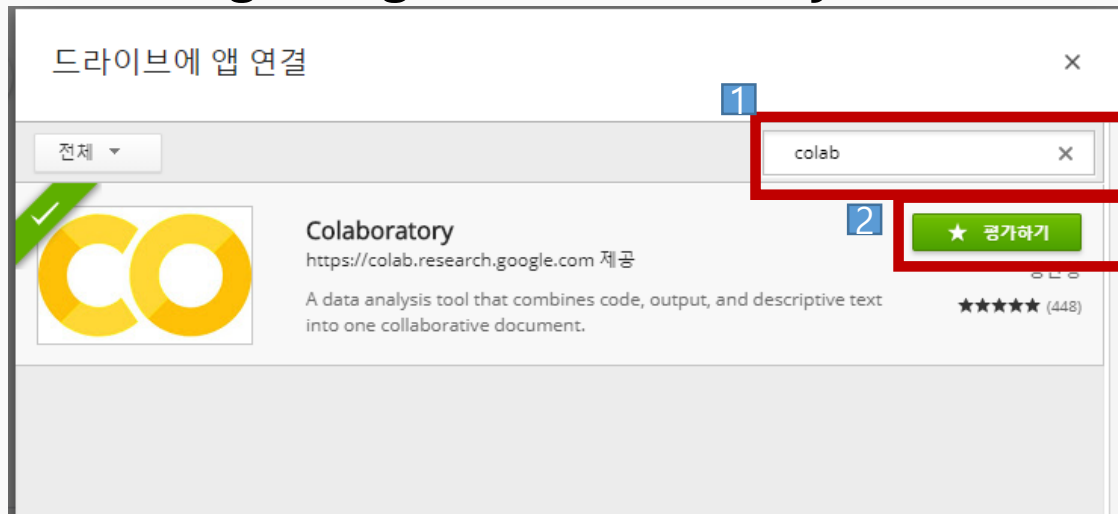
• Getting Google Colab Ready to Use



- If you do not see 'Colab' Click the +connect more app
- Else you skip the slide 6

How to use Colab (5/7)

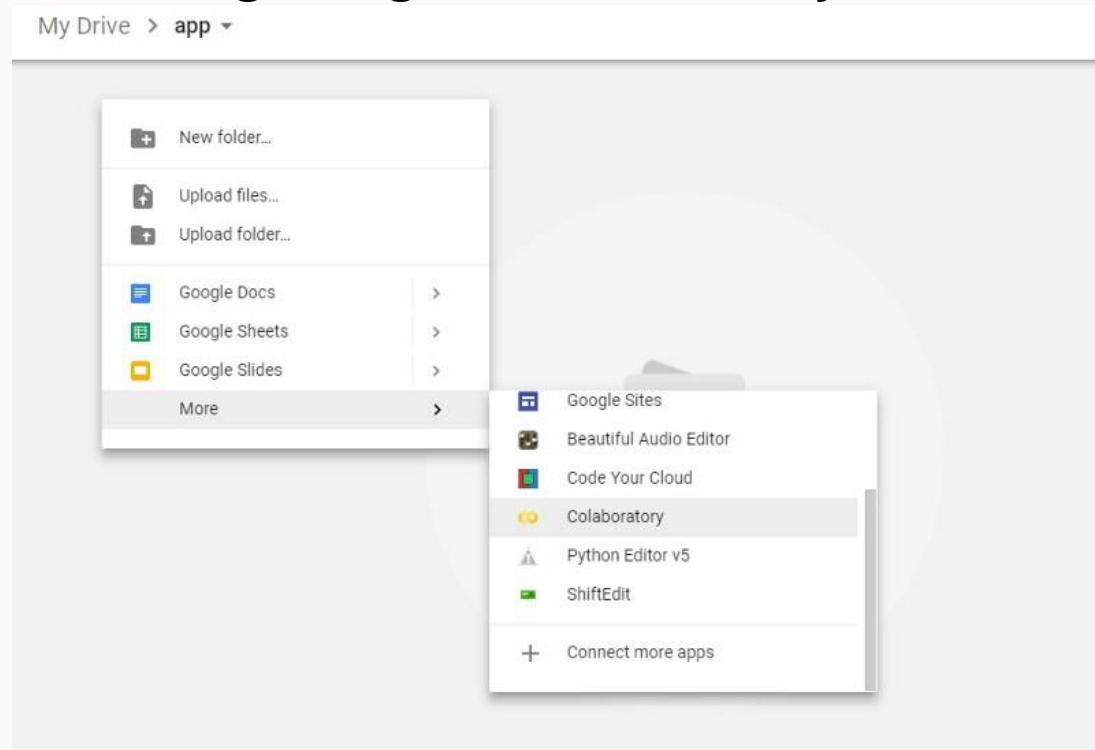
• Getting Google Colab Ready to Use



- First, Search 'colab'
- Next Click the [2]box
- So you can see the google colaboratory option

How to use Colab (6/7)

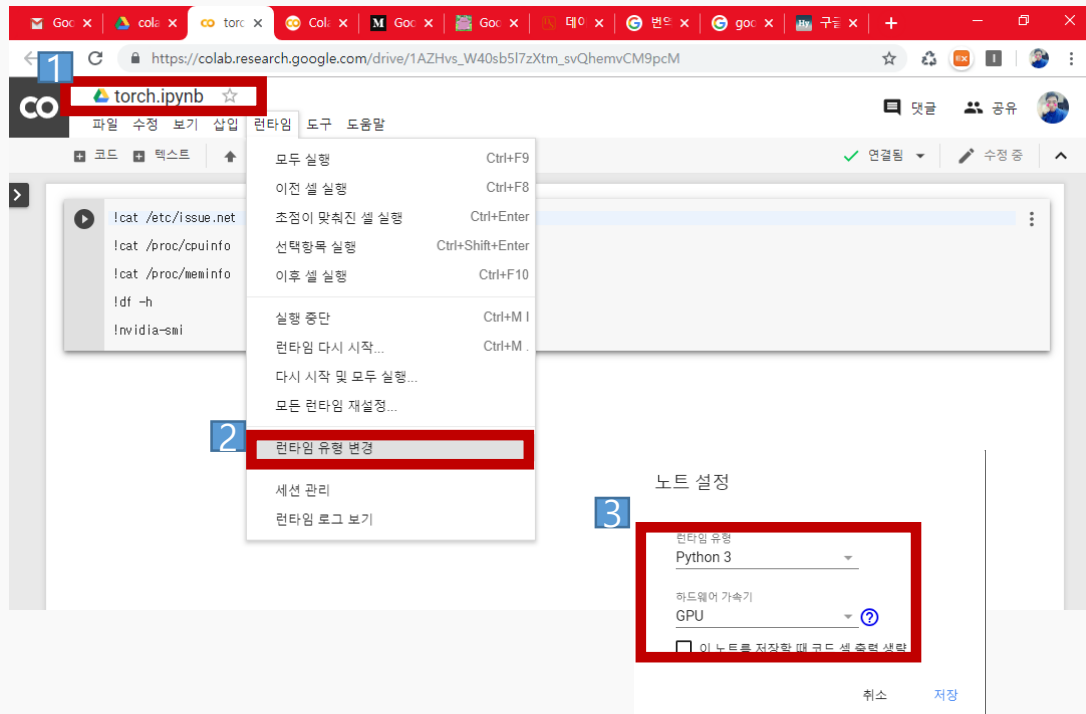
- Getting Google Colab Ready to Use



- Right click > More > Colaboratory

How to use Colab (7/7)

• Getting Google Colab Ready to Use



- 1 :
rename file
- 2,3 :
Runtime>Change runtime
type and select GPU as
Hardware accelerator.

Example (1/6)

• Basic Data Types

```
[1] x = 3
```

```
[2] print(type(x)) # Prints "<class 'int'>"
```

```
<type 'int'>
```

```
[3] print(x)      # Prints "3"
```

```
3
```

```
▶ print(x + 1)    # Addition; prints "4"
```

```
4
```

- Execute : Ctrl + Enter
- Execute + Next Cell : Shift + Enter
- Available Slider variable

```
▶ sliderTest = 2 #@param {type:"slider", max: 10}
```

sliderTest:  2  

Example (2/6)

- Check google colab spec

```

!cat /etc/issue.net
!cat /proc/cpuinfo
!cat /proc/meminfo
!df -h
!nvidia-smi

C- Ubuntu 18.04.2 LTS
processor       : 0
vendor_id      : GenuineIntel
cpu family     : 6
model          : 63
model name     : Intel(R) Xeon(R) CPU @ 2.30GHz
stepping       : 0
microcode      : 0x1
cpu MHz        : 2300.000
cache size     : 46080 KB
physical id    : 0
siblings       : 2
core id        : 0
cpu cores      : 1
apicid         : 0
initial apicid : 0
fpu            : yes
fpu_exception  : yes
cpuid level    : 13
wp             : yes
flags          : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat pse36 clflush mmx fxsr sse sse2 ss ht syscall n
bugs           : cpu_meltdown spectre_v1 spectre_v2 spec_store_bypass l1tf
bogomips       : 4600.00
clflush size   : 64
cache_alignment : 64
address sizes   : 46 bits physical, 48 bits virtual
power management:

processor       : 1
vendor_id      : GenuineIntel
cpu family     : 6
model          : 63
model name     : Intel(R) Xeon(R) CPU @ 2.30GHz
stepping       : 0
microcode      : 0x1
cpu MHz        : 2300.000
cache size     : 46080 KB
physical id    : 0
siblings       : 2
core id        : 0
cpu cores      : 1
apicid         : 1
initial apicid : 1
fpu            : yes
fpu_exception  : yes
cpuid level    : 13
wp             : yes
flags          : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat pse36 clflush mmx fxsr sse sse2 ss ht syscall n
bugs           : cpu_meltdown spectre_v1 spectre_v2 spec_store_bypass l1tf
bogomips       : 4600.00
clflush size   : 64
cache_alignment : 64
address sizes   : 46 bits physical, 48 bits virtual
power management:
  
```

- OS
!cat /etc/issue.net
- CPU
!cat /proc/cpuinfo
- Memory
!cat /proc/meminfo
- Disk
!df -h
- GPU
!nvidia-smi

Example (3/6)

- My drive ls (list) code

```
1 from google.colab import drive
2 drive.mount('/content/drive/')
```

mount_google_drive.py hosted with ❤ by GitHub

[view raw](#)



```
from google.colab import drive
drive.mount('/content/drive/')
```

... Go to this URL in a browser: <https://accounts.google.com/o/oauth2/auth?c>

Enter your authorization code:

```
1 !ls "/content/drive/My Drive/"
```

ls_google_drive.sh hosted with ❤ by GitHub

[view raw](#)

Example (4/6)

- Package install

Keras

```
!pip install -q keras
import keras
```

PyTorch

```
from os import path
from wheel.pep425tags import get_abbr_impl, get_impl_ver,
get_abi_tag
platform = '{}{}-{}'.format(get_abbr_impl(), get_impl_ver(),
get_abi_tag())

accelerator = 'cu80' if path.exists('/opt/bin/nvidia-smi') else
'cpu'

!pip install -q http://download.pytorch.org/whl/{accelerator}/torch-0.3.0.post4-\({platform}\)-linux\_x86\_64.whl torchvision
import torch
```

or try this:

```
!pip3 install torch torchvision
```

- ! Option add
- Another example
!ls
!ipconfig
etc...

Example (5/6)

- konlpy example

```
!apt-get update
!apt-get install g++ openjdk-8-jdk
!pip3 install konlpy

from konlpy.tag import Twitter
twitter = Twitter()
twitter.pos("질문이나 건의사항은 깃헙 이슈 트래커에 남겨주세요")

/usr/local/lib/python3.6/dist-packages/konlpy/tag/_okt.py:16: UserWarning: "Twitter" has changed to "Okt" since KoNLP
warn("'Twitter' has changed to 'Okt' since KoNLPy v0.4.5.')
[('질문', 'Noun'),
 ('이나', 'Josa'),
 ('건의', 'Noun'),
 ('사항', 'Noun'),
 ('은', 'Josa'),
 ('깃', 'Noun'),
 ('헙', 'Verb'),
 ('이슈', 'Noun'),
 ('트래커', 'Noun'),
 ('에', 'Josa'),
 ('남겨주세요', 'Verb')]
```

- You can library install using by apt-get
- Simply pos tagging example by konlpy module

Example (6/6)

- pytorch example

```
!python3 'drive/My Drive/app/torch_example.py'
```

```
PyTorch version: 1.0.1.post2
/usr/local/lib/python3.6/dist-packages/torchvision/datasets/mnist.py:53: UserWarning: train_data has been renamed data
  warnings.warn("train_data has been renamed data")
torch.Size([60000, 28, 28])
/usr/local/lib/python3.6/dist-packages/torchvision/datasets/mnist.py:58: UserWarning: test_data has been renamed data
  warnings.warn("test_data has been renamed data")
torch.Size([10000, 28, 28])
<Figure size 1000x1000 with 1 Axes>
/usr/local/lib/python3.6/dist-packages/torchvision/datasets/mnist.py:43: UserWarning: train_labels has been renamed targets
  warnings.warn("train_labels has been renamed targets")
Labels: [5 0 4 1 9 2 1 3 1 4 3 5 3 6 1 7 2 8 6 9 4 0 9 1 1 2 4 3 2 7 3 8 6 9 0 5 6
0 7 6 1 8 7 9 3 9 8 5 9 3 3 0 7 4 9 8 0 9 4 1 4 4 6 0]
```

- Copy torch_example.py to your app folder.
- Command !python3 'YOUR/PATH/torch_example.py'
- Or paste the torch_example.py file code to colab jupyter notebook

Reference

- Google Colab Welcome page
<https://colab.research.google.com/notebooks/welcome.ipynb#scrollTo=9J7p406abzgl>
- Google Colab Free GPU Tutorial
<https://medium.com/deep-learning-turkey/google-colab-free-gpu-tutorial-e113627b9f5d>
- PyTorch Introduction with Colab
<https://colab.research.google.com/drive/1gJAAN3UI9005ecVmxPun5ZLCGu4YBtLo>

Q & A