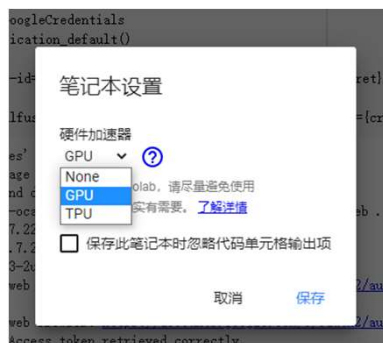


Google Colaboratory

1. Google Driveで新しいipynbファイル(workspace)を作成する



2. ワークスペースに接続する、GPU/TPUを使うかどうかを選択できます（無料）



3.無料で利用できるGPU、12時間後に自動的に切断されます

*Tesla T4

*VRAM 15079MiB(14.7GiB)

```
%tensorflow_version 1.x
import tensorflow as tf
tf.test.gpu_device_name()
!nvidia-smi
```

Sun Aug 2 19:04:28 2020

NVIDIA-SMI 418.67				Driver Version: 418.67		CUDA Version: 10.1	
GPU	Name	Persistence-M	Bus-Id	Disp.A	Volatile Uncorr. ECC		
Fan	Temp	Perf	Pwr:Usage/Cap	Memory-Usage		GPU-Util	Compute M.
0	Tesla T4	off	00000000:00:04.0	off	0		
N/A	70C	P0	33W / 70W	111MiB / 15079MiB	0%	Default	

Processes:					GPU Memory
GPU	PID	Type	Process name		Usage

実行

まず、実行したいプログラムファイルを事前にアップロードする。
以下命令でGoogle Driveに接続する。

```
!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}
```

- 青いリンクで本人認証する

```
➡ E: Package 'python-software-properties' has no installation candidate
Selecting previously unselected package google-drive-ocamlfuse.
(Reading database ... 144487 files and directories currently installed.)
Preparing to unpack .../google-drive-ocamlfuse_0.7.22-0ubuntu3~ubuntu18.04.1_and64.deb ...
Unpacking google-drive-ocamlfuse (0.7.22-0ubuntu3~ubuntu18.04.1) ...
Setting up google-drive-ocamlfuse (0.7.22-0ubuntu3~ubuntu18.04.1) ...
Processing triggers for man-db (2.8.3-2ubuntu0.1) ...
Please, open the following URL in a web browser: https://accounts.google.com/o/oauth2/auth?client\_id=325559405
. . . . .
Please, open the following URL in a web browser: https://accounts.google.com/o/oauth2/auth?client\_id=325559405
Please enter the verification code: Access token retrieved correctly.
```

- 以下の命令でGoogle Driveにあるファイルに接続する

```
!mkdir -p drive
!google-drive-ocamlfuse drive
import os
import sys
os.chdir('drive/Colab Notebooks')
```

Google Colabの命令はLinuxと大体同じ
端に%が要ります。

```
[3] %ls
```

```
↳ colab_onnx/
```

```
[4] cd colab_onnx/
```

```
↳ /content/drive/Colab Notebooks/colab_onnx
```

```
[5] %ls
```

```
↳ main/
```

```
[6] cd main/
```

```
↳ /content/drive/Colab Notebooks/colab_onnx/main
```

```
[10] ls
```

```
↳ __init__.py  model.py      train_and_evaluate_org.py
    main.py    __pycache__/  train_and_evaluate.py
```

- Colaboでプログラムを実行してみます

```
%tensorflow_version 1.x  
!python3 train_and_evaluate.py
```

```
EPOCH 1 ...  
Validation Accuracy = 0.972  
  
EPOCH 2 ...  
Validation Accuracy = 0.977  
  
EPOCH 3 ...  
Validation Accuracy = 0.982  
  
EPOCH 4 ...  
Validation Accuracy = 0.984  
  
EPOCH 5 ...  
Validation Accuracy = 0.984  
  
EPOCH 6 ...  
Validation Accuracy = 0.986  
  
EPOCH 7 ...  
Validation Accuracy = 0.987  
  
EPOCH 8 ...  
Validation Accuracy = 0.986  
  
EPOCH 9 ...  
Validation Accuracy = 0.987  
  
EPOCH 10 ...  
Validation Accuracy = 0.989  
  
Model saved
```