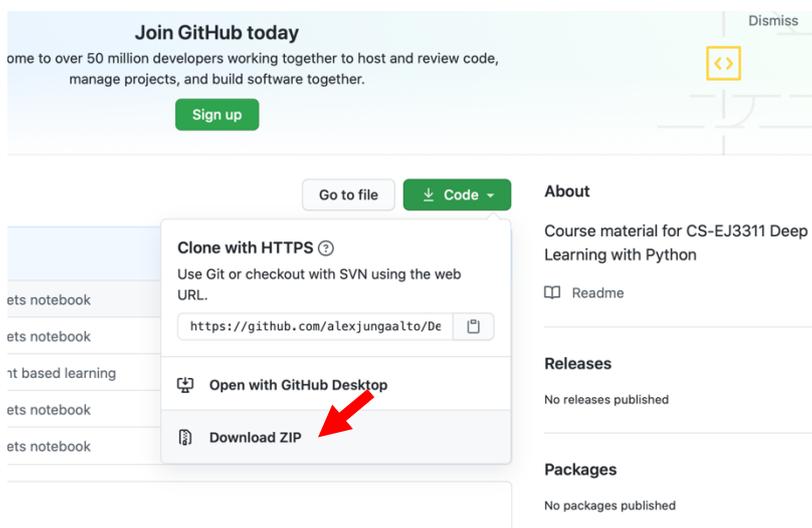


In order to run Jupyter Notebooks on Google Colab you need:

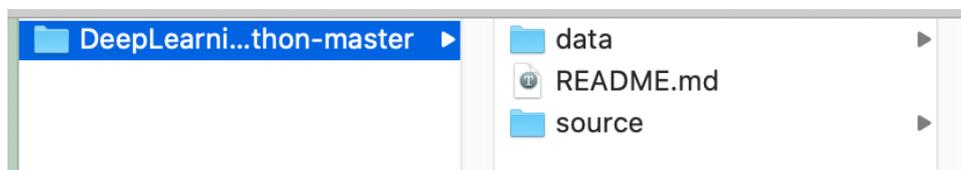
1. Download the course material
2. Set up a Google Drive account (if you have gmail or Google account, you already have access to Google drive)
3. Add Colab app to your Google Drive
4. Upload “dlpython” with course material to Google Drive

1. Download the course data

- Go to: <https://github.com/alexjungaalto/DeepLearningPython>
- Go to “Code” → “Download ZIP”



- Unzip the folder
- Make sure that folder structure is:



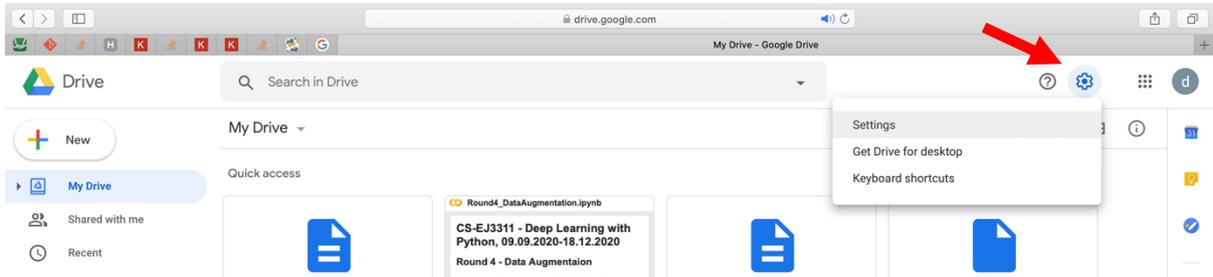
2. Create Gmail/ Google account

- Go to: <https://www.google.com/intl/en/gmail/about/> or <https://support.google.com/accounts/answer/27441?hl=en>
- Follow instructions

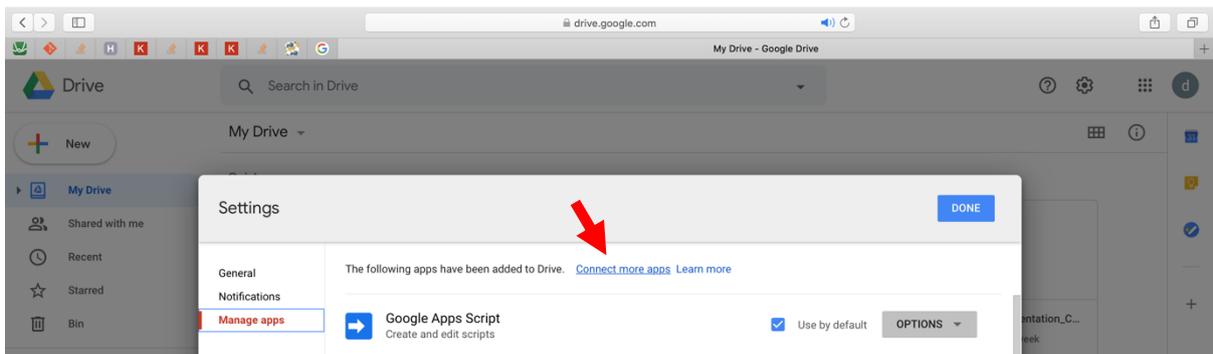
3. Adding Colab app to Google Drive

After setting up your Google account or Gmail account you will need to add Collaboratory application to your Google Drive:

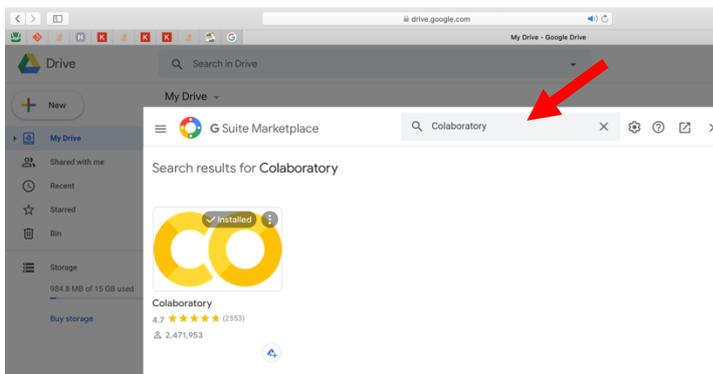
- Settings



- Manage apps → Connect more apps



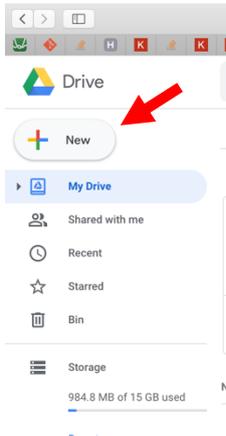
- Search and install Colaboratory



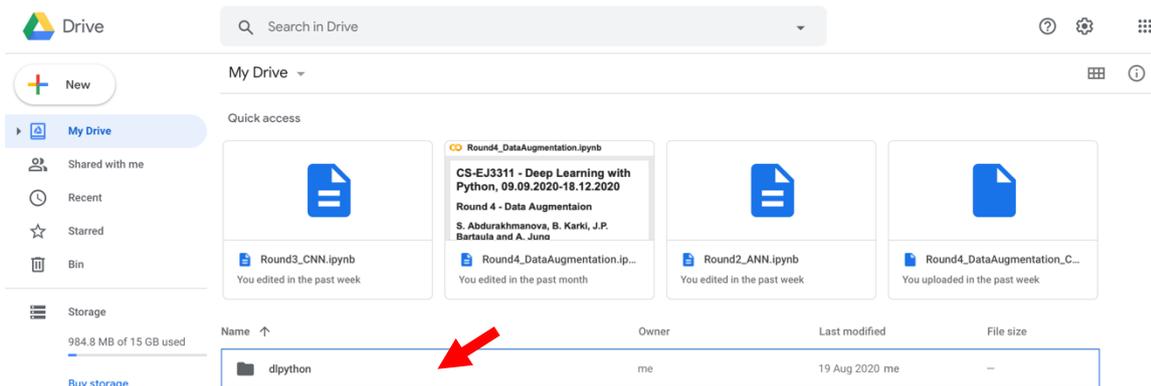
3. Uploading the course material to Google Drive

- New → folder upload

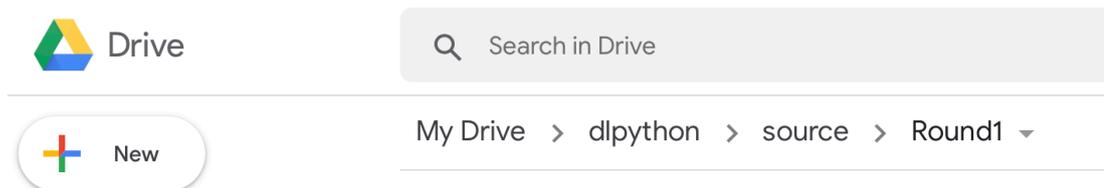
NB! Upload only folder containing `source` and `data` subdirectories.



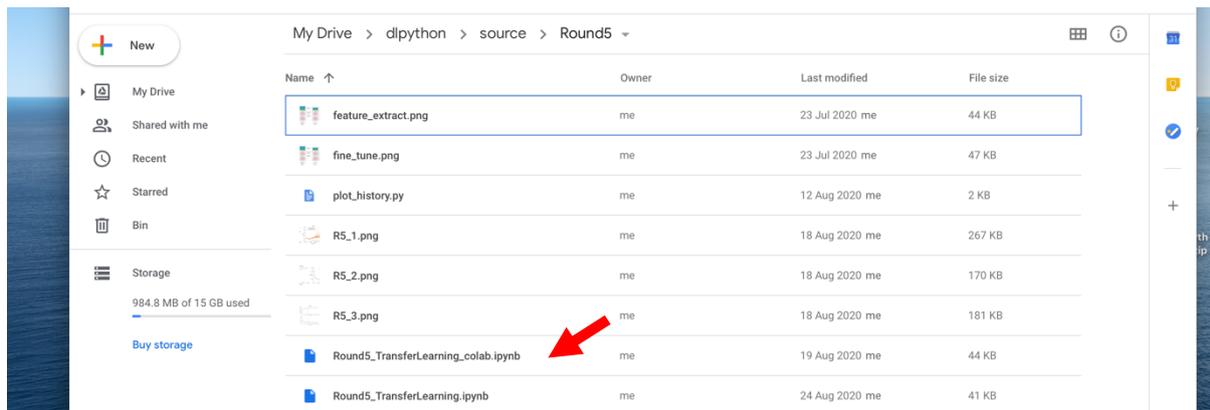
- NB! Rename your folder to “dlpython”



- Make sure that directory structure is: My Drive → dlpython, e.g.:



- Open jupyter notebook (_colab.ipynb file) in Colab.



How to mount Google Drive (R4 & R5)

- Run the code

Round5 TransferLearning colab.ipynb

File Edit View Insert Runtime Tools Help All changes saved

Table of contents

```

# library for generating plots
import matplotlib.pyplot as plt

# for reproducibility
from numpy.random import seed
seed(1)
tf.random.set_seed(1)

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

import sys
sys.path.append('/content/drive/My Drive/dlpython/source/Round5')

```

What is Transfer Learning ?

Transfer learning is a machine learning technique in which model trained for one particular task is used as a starting point for training model for another task. Transfer learning enables us to utilize the knowledge (such as learned weights, features) from previously learned tasks and apply it to the new, but related task.

- Open the link

```

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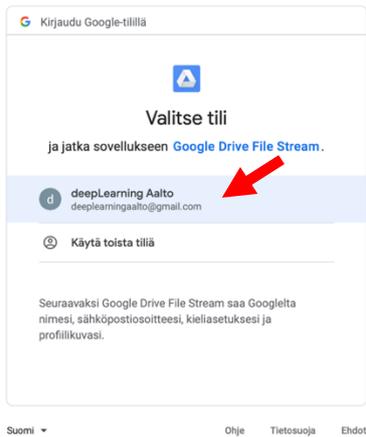
... Go to this URL in a browser: https://accounts.google.com/o/oauth2/auth?client_id=947318989803-6bn6qk8qdgf4n4g

Enter your authorization code:

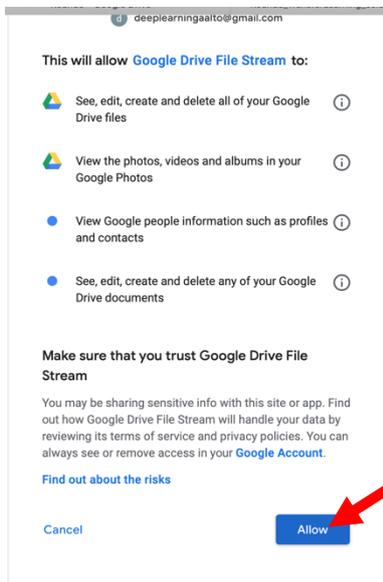
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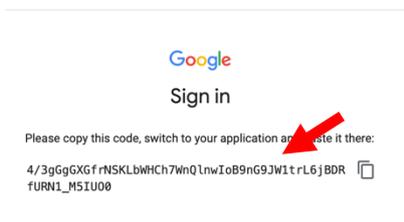
- Choose the drive



- Click "Allow"



- Copy the code (NB! Use Ctrl-C Ctrl-V, NOT copy icon)



- Paste the code, press Enter

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tf.random.set_seed(1)

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Go to this URL in a browser: https://accounts.google.com/o/oauth2/auth?client_id=947318989803-6bn6gk8qdgf4n4g

Enter your authorization code:
.....

- Check that drive is mounted

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```

Go to this URL in a browser: https://accounts.google.com/o/oauth2/auth?client_id=947318989803-6bn6gk8qdgf4n4g

Enter your authorization code:
.....

Mounted at /content/drive

How to connect to GPU

- Go to “Runtime” tab and choose “Change running type”

Round5 TransferLearning colab.ipynb

File Edit View Insert Runtime Tools Help Last saved at 3:03 PM

+ Code + Text

```
# provides function to load data
import tensorflow as tf

# import ImageDataGenerator
from tensorflow.keras.preprocessing.image import ImageDataGenerator

# function to prepare training and validation data
from tensorflow.keras.preprocessing.image import ImageDataGenerator

# provides mathematical operations
import numpy as np

# library to interface with the operating system
import os

# function for computing accuracy
# from sklearn.metrics import accuracy_score

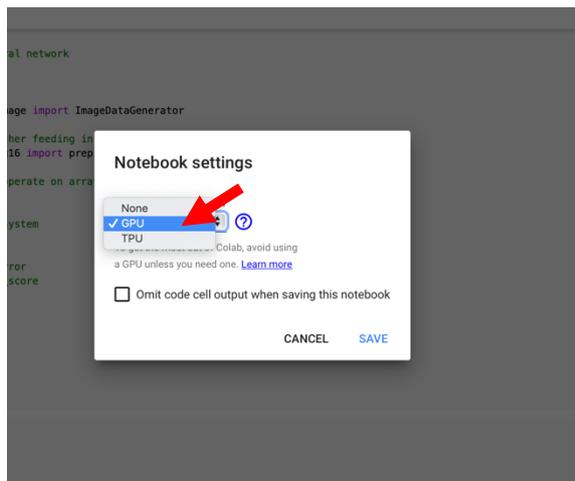
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Runtime menu options:

- Run all ⌘/Ctrl+F9
- Run before ⌘/Ctrl+F8
- Run the focused cell ⌘/Ctrl+Enter
- Run selection ⌘/Ctrl+Shift+Enter
- Run after ⌘/Ctrl+F10
- Interrupt execution ⌘/Ctrl+M
- Restart runtime ⌘/Ctrl+M
- Restart and run all
- Factory reset runtime
- Change runtime type
- Manage sessions
- View runtime logs

- Select GPU option



Resources:

Colab video tutorial - <https://www.youtube.com/watch?v=inN8seMm7UI>

Colab notebook - <https://colab.research.google.com/notebooks/welcome.ipynb>