



Deep Learning Introduction:

Lab session

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Synopsis

- In the lab sessions you will develop 4 exercises, from very simple to a more advanced one developing a CNN classifying skin moles into seven cancer categories.
- You will use the keras¹ library on top of tensorflow².
- You will a GPU-accelerated platform running in cloud provided along with gmail account. Your code and data will be stored at your GDrive.

Note : *You will be able to run your code from anywhere provided you have an internet connection and a navigator.*

- You need a Gmail account. Connect to Gmail in a navigator. Then you can access the Colab platform at <https://colab.research.google.com/> → (Tab Google Drive)
- Your notebooks should reside in the 'Colab Notebooks' directory in your GDrive.

1. a high-level library for neural network programming <https://keras.io/>

2. An open-source machine learning framework <https://www.tensorflow.org/>

Lab assignments

- The exercise assignments are provided as incomplete jupyter notebooks .ipynb containing all necessary helper functions and a pdf containing an example solution you should obtain. You only need to concentrate on coding the deep learning part.
- For the skin cancer the notebook will fetch all the data from a shared GDrive link. (The data are heavy but as long as you copy it inside the google cloud it is fast.)
- Open the assignments and save a copy in your Colab. The solution is an example solution of what you should obtain.

Lab session 5 :

- ① Exercise 1 : [assignment], [solution]
- ② Exercise 2 : [assignment], [solution]
- ③ Exercise 3 : [assignment], [solution]

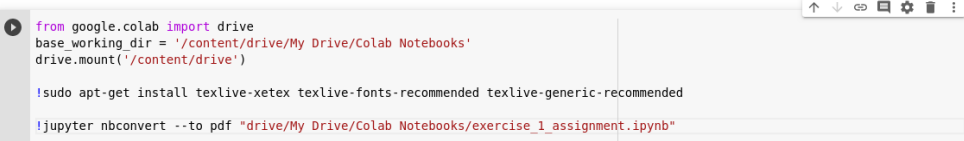
Lab session 6 :

- ④ Exercise 4 : [assignment], [solution]³

3. Make sure you activate a GPU accelerator for this exercise in your Colab jupyter.

Lab Report

- The following code at the end of your jupyter allows exporting it in pdf.



```
from google.colab import drive
base_working_dir = '/content/drive/My Drive/Colab Notebooks'
drive.mount('/content/drive')

!sudo apt-get install texlive-xetex texlive-fonts-recommended texlive-generic-recommended

!jupyter nbconvert --to pdf "drive/My Drive/Colab Notebooks/exercise_1_assignment.ipynb"
```

- Once you generated your pdf, rename it – put your names in the filename.

A pdf report from each exercise is due at the latest on January 5, 2020 on Moodle (hard deadline).