

HOW TO USE PAPERSPACE GRADIENT

This is a simple tutorial how to use Gradient from paperspace to run Deep Learning jupyter notebooks. Comments are welcome. Feel free to drop an email to me: Thanh-Le Ha (thanh-le.ha@kit.edu or thanhlehavn@gmail.com).

OVERVIEW

Gradient is a machine learning cloud service offered by [Paperspace](#). It has free CPUs and GPUs (Quadro M4000) and it allows easy setups for running DL models. We will use Paperspace's Gradient notebooks service for the exercises.

The advantages of Paperspace's Gradient compared to other free-GPU cloud services like [Google Colab](#) or [Kaggle Kernel](#) are a) you have almost everything installed, you do not need to mount your data so your scripts are ready to run after some clicks and b) your data, your models and your libraries are there after the machine being shut down. The biggest disadvantage of Gradient is that with the free account we can only have one notebook (one project with different jupyter notebooks). Another limitation is that Gradient is getting more popular, so if you use the free resources (GPUs and CPUs), you might experience some shortage.

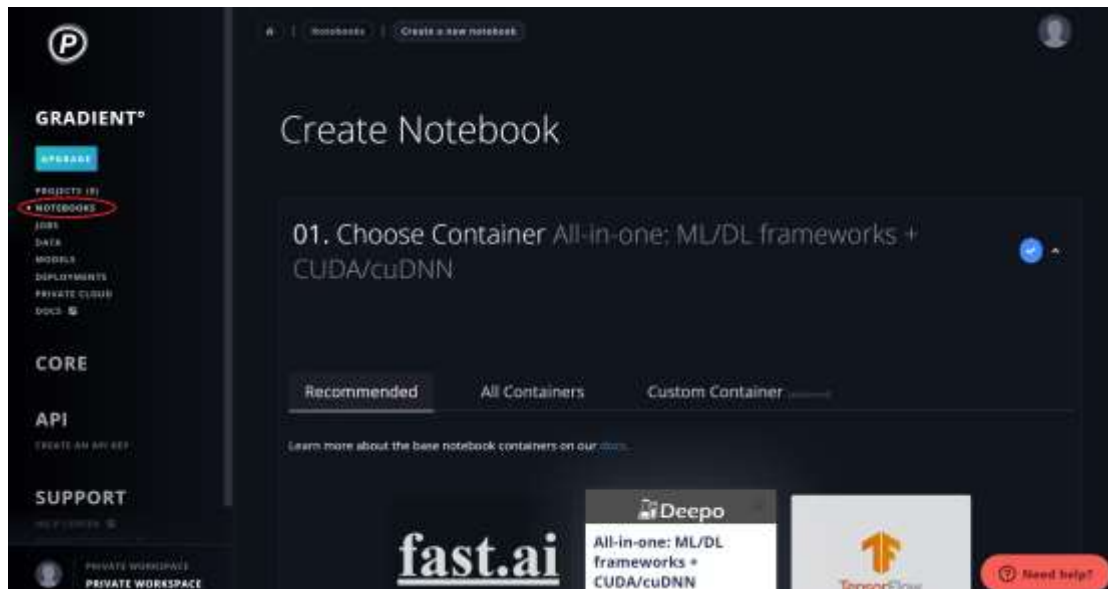
STEPS

Clone the notebooks

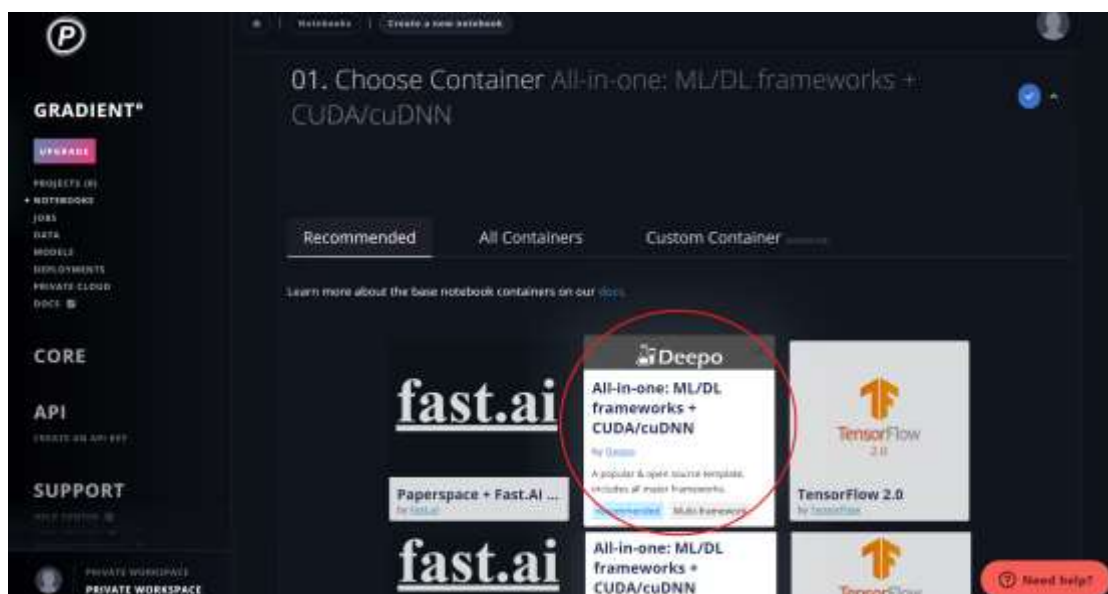
First, you should clone the MLWorkshop repository, which contains 4 lectures: Numpy, Pytorch, CNN and RNN in jupyter notebook. I assume that you are familiar with it, if you haven't seen it before, there is a good introduction [here](#). Each lecture has a tutorial and maybe exercises with solutions. The repository would be updated so you should clone or even fork it from my github so that you can make some pull requests or you can modify it yourself. But please ask me (thanhlehavn@gmail.com) when you want to use it publicly elsewhere.

Sign up to Paperspace and Create a Gradient Notebook

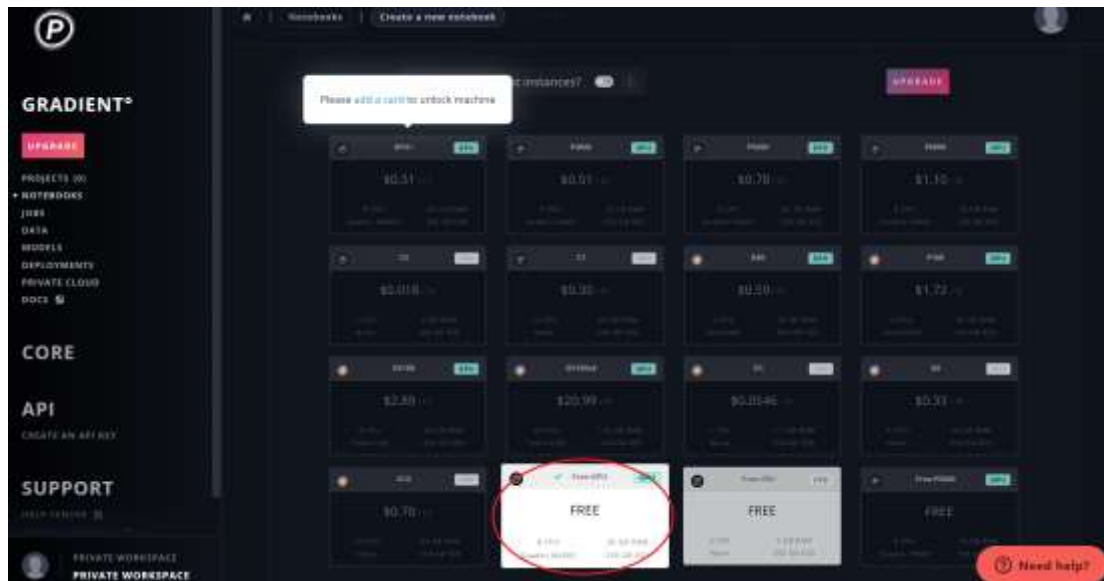
Go to <https://www.paperspace.com/account/signup> and sign up for a free account. When you are done, choose GRADIENT and then NOTEBOOKS:



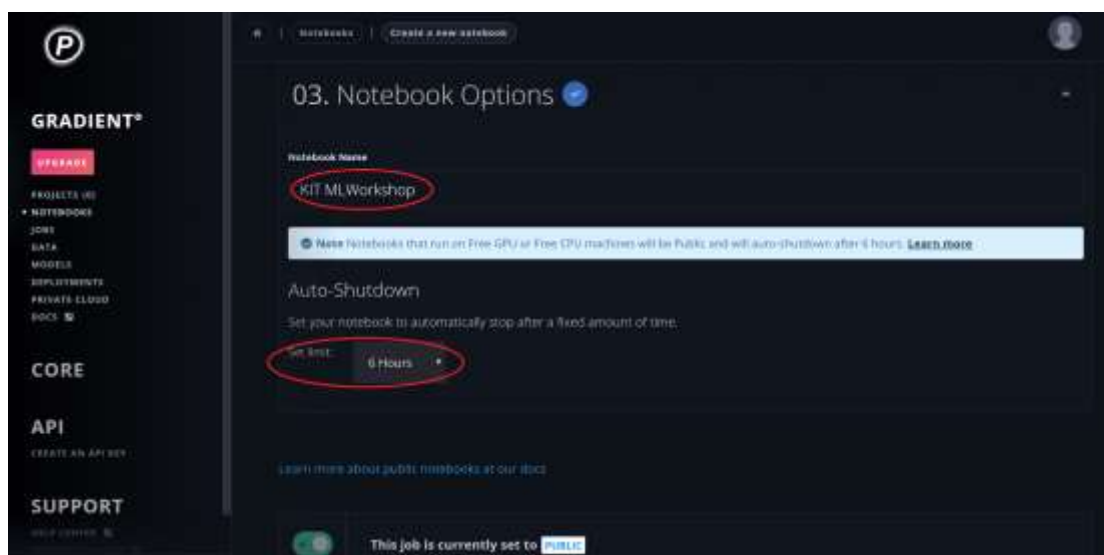
For the first step, we need to choose a container, click to choose Deepo (All-in-one: ML/DL frameworks + CUDA/cuDNN):



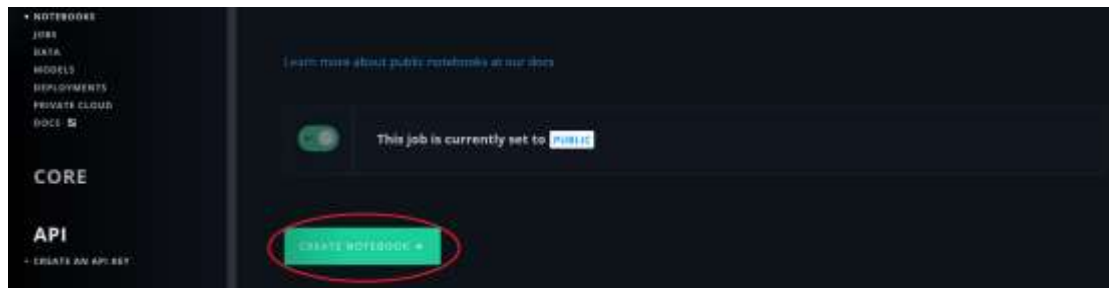
Then at the step of choosing a machine, you can go for a (public) free GPU. This is Quadro M4000:



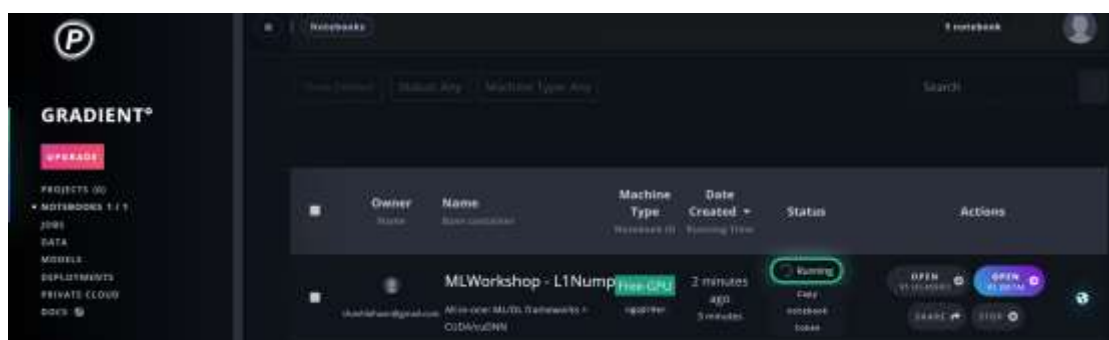
You can name the notebook as you like. Please note that with this free account, the machine would be shutting down every 6 hours, meaning that you cannot have a continuous training longer than 6 hours (you can still keep the models/data/outputs there). But it is enough for all the exercises of the workshop:



And then you can click to **CREATE NOTEBOOK** + and wait for Gradient creating the notebook for you in some seconds:

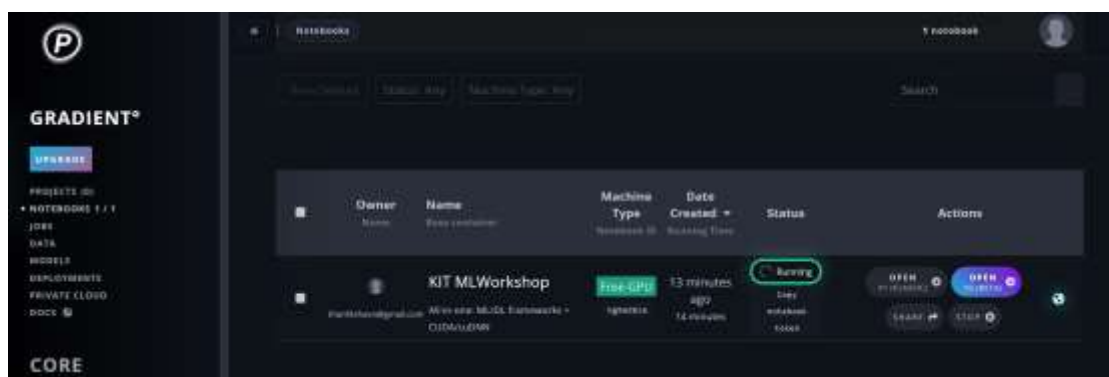


The result of this step would be something like this:



Open the notebook

Click to **OPEN V1 (CLASSIC)** to open your notebook (it might be changed in the future so please try both Open actions to see which works).

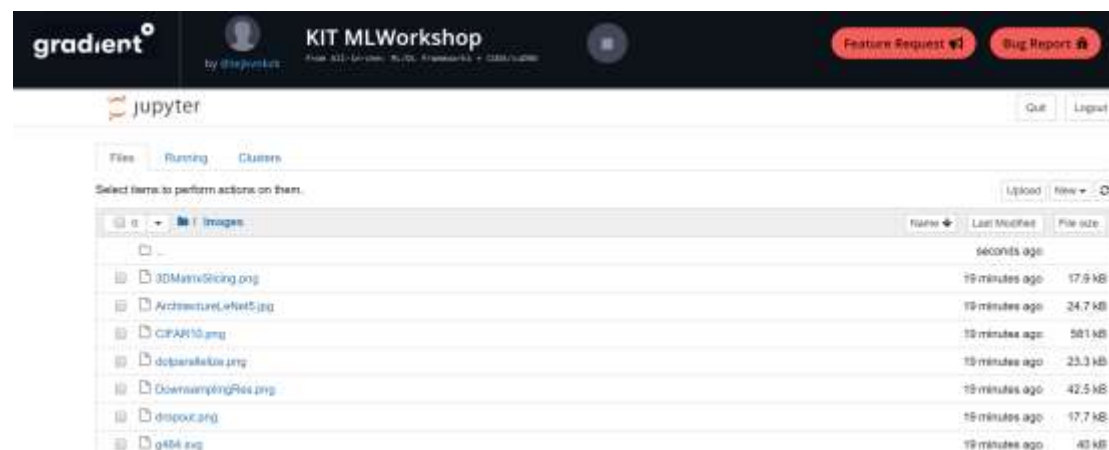
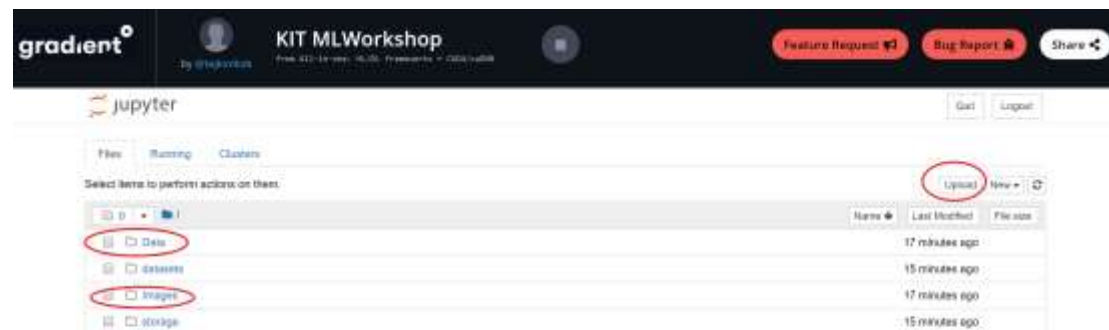


The familiar jupyter tree will be displayed like this:

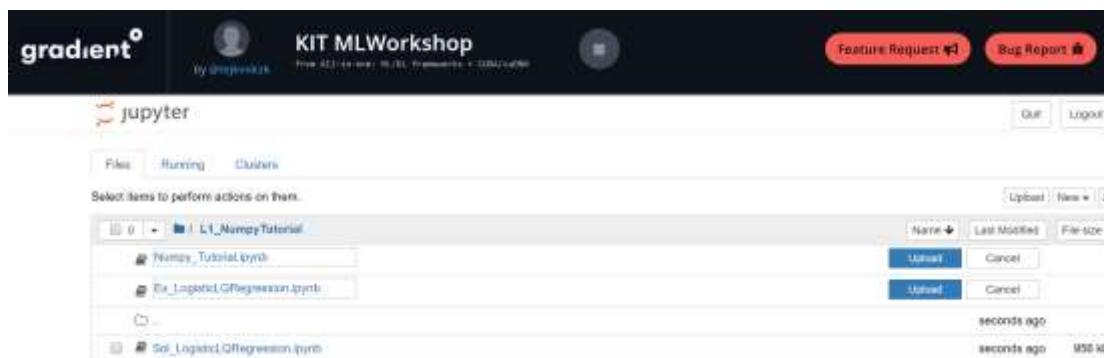
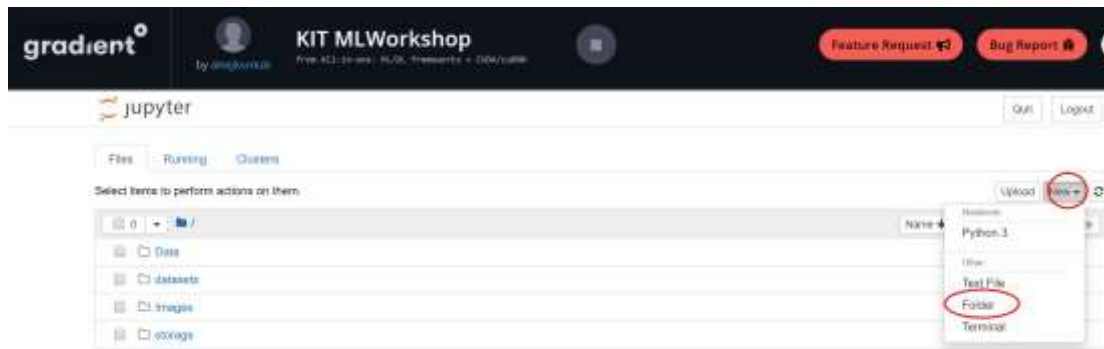


Import the notebook directories from the repository

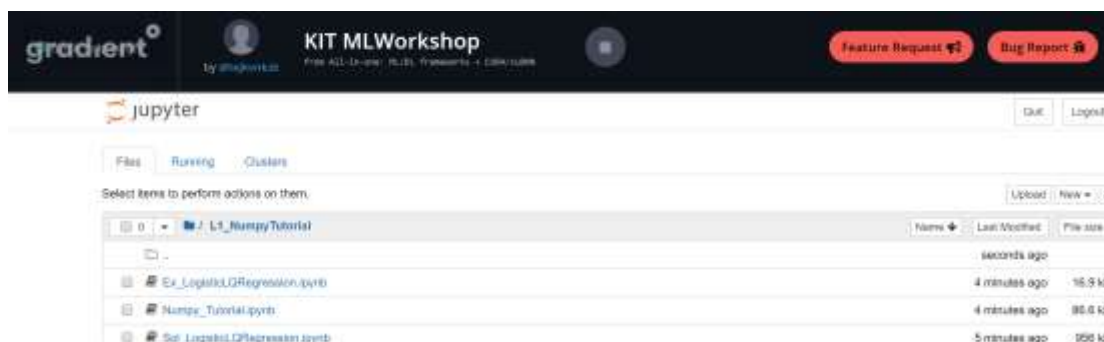
Now you can just inside the jupyter tree create two folders: 'Data' and 'Images'. You need to do New -> Folder. Then you choose that newly-created folder and rename it, e.g. 'Data'. Then you can go to 'Data', and upload the file 'mnist_seven.csv' from the repository into it. Do the same to the images in 'Images' data. Whenever you get new files from the repository, just do the upload. You need to do this to every of the four lectures. After doing those steps, your Gradient notebook should look like this:



And for the first lecture, you need to create the directory 'L1_NumpyTutorial' and upload the files into it as well:



Finally, it should look like this:



Now you are ready to run any of those ipynb files. You should start with 'Numpy_Tutorial.ipynb'. Have fun running and working on the exercises.

Thanh-Le Ha.