BANGKOK UNIVERSITY
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BU-MIT
Multimedia Intelligent Technology

How to train YOLOv3 with Google colab

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Summary

1. Google Colaboratory

Colaboratory is a Jupyter notebook environment that requires no configuration and runs entirely in the cloud.

It allows you to write and execute code, backup and share your analyses, and access powerful IT resources. All this for free, directly from your browser.

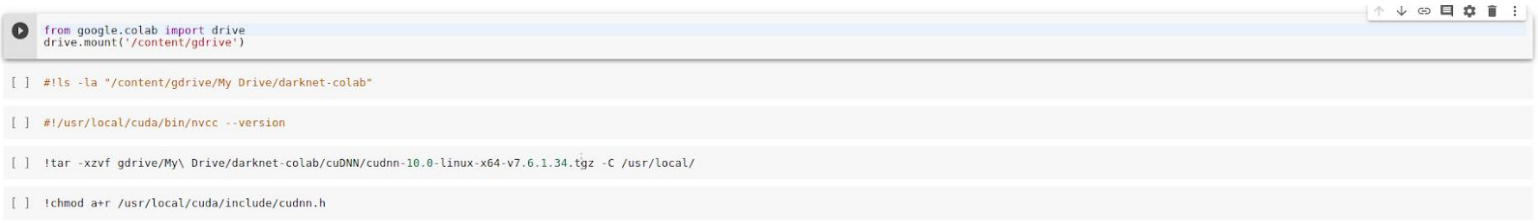
It provides a runtime fully configured for deep learning and free-of-charge access to a robust 12GB-RAM GPU.

But there are some disadvantages such as:

- You work with a remote VM. You don't have direct access to the VM filesystem. You have to upload your files in order to be used and download the files created during the training.

- Your Virtual Machine (VM) will shutdown after 12 hours that means that your VM and all files are lost (except if you save them in your Google drive as we will do) after 12 hours and you will have to reconfigure your runtime in order to start training again.

This is what it looks like:



We have some cells where you can write and execute some python code on the VM.

2. Configuration

To configure and understand how to use Google Colab to train your YOLOv3 neural network with darknet I suggest you to read this:

https://colab.research.google.com/drive/1ITGZsfMaGUpBG4inDIQwIJVW476ibXk_#scrollTo=Cqo1gtPX6BXO

It's very well explained and this is what I used to create my notebook and train my neural network.

3. What I've done

My project is about doing à video analysis application using You Only Look Once (YOLO) technology, which is an artificial intelligence system, to detect two-wheelers who do not wear helmets while driving.

You can access my notebook here:

https://colab.research.google.com/drive/18G9Vvop254As43gVXhPCXvP-6u6lsgqD

I used the COCO dataset and the Open Images dataset to train to recognize persons, motorbikes and the helmets.

I had to buy a storage extension for Google drive because my dataset was too voluminous for the 15 Gb of the free version.

As you can see I followed each step of the tutorial except that I had a problem because of the size of my dataset indeed there were too many images in the same folder and darknet couldn't access to the images so I had to create a script ("`split_coco()`" function) in order to split the dataset in subfolders and create the files for YOLO where are listed all the images for the training and testing part.

Before launching the "`./darknet`" command you need to wait for 10/15 mins, if your dataset is big, to let the time to Google colab to warm up and indexing all the files. If you don't wait you will get some I/O errors when you will launch the command.

Once the command has been launched everything should work fine.