

Get Started with Google Colab for Machine Learning and Deep Learning



Asep Muhidin, S.Kom, M.Kom.
asep.muhidin@pelitabangsa.ac.id

Webinar Teknik Informatika
Universitas Pelita bangsa





“Memory Error” – that all too familiar dreaded message in Jupyter notebooks when we try to execute a machine learning or deep learning algorithm on a large dataset. Most of us do not have access to unlimited computational power on our machines.



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So how do we build large deep learning models
without burning a hole in our pockets?

Google Colab! It's an
incredible online
browser-based
platform that allows us
to train our models on
machines for free

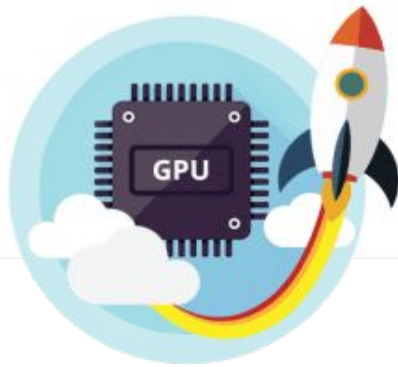


Free! Cloud Server
TPU & GPU



Google

colab



© easter science





What is Google Colab?

Google Colaboratory is a free online cloud-based Jupyter notebook environment that allows us to train our machine learning and deep learning models on CPUs, GPUs, and TPUs.



GPUs and TPUs on Google Colab

Google Colab gives us three types of runtime for our notebooks: CPUs, GPUs, and TPUs

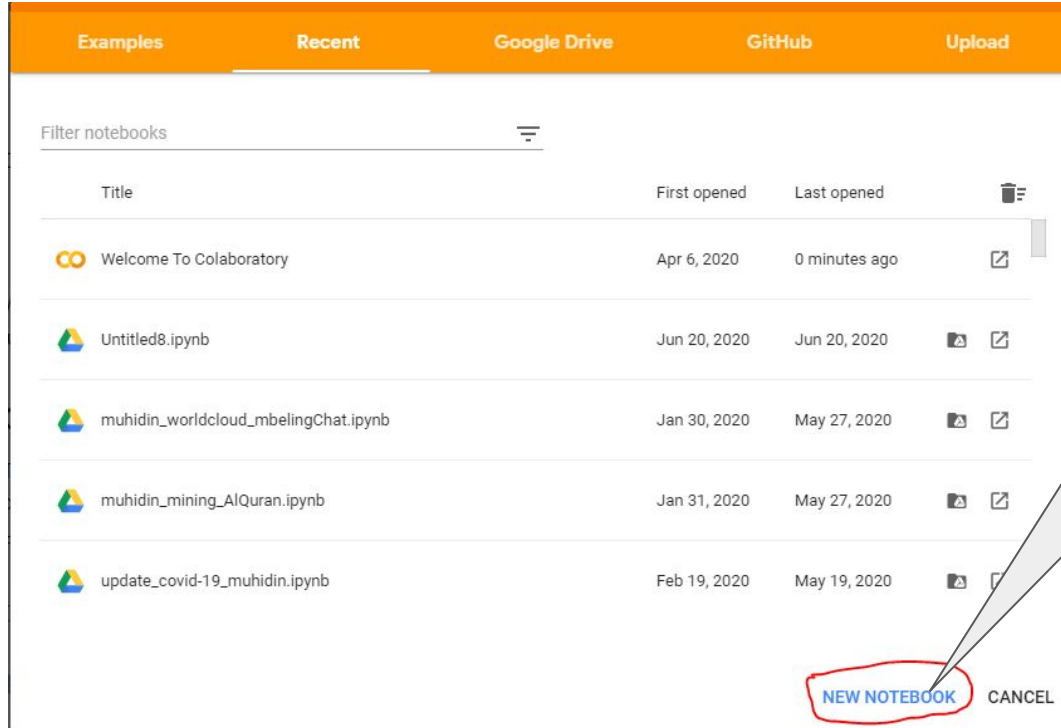
CPU	GPU	TPU
Intel Xeon Processor with two cores @ 2.30 GHz and 13 GB RAM	Up to Tesla K80 with 12 GB of GDDR5 VRAM, Intel Xeon Processor with two cores @ 2.20 GHz and 13 GB RAM	Cloud TPU with 180 teraflops of computation, Intel Xeon Processor with two cores @ 2.30 GHz and 13 GB RAM

Colab gives us 12 hours of continuous execution time. After that, the whole virtual machine is cleared and we have to start again



Getting Started with Google Colab

You can go to Google Colab using this link (<https://colab.research.google.com/>) . This is the screen you'll get when you open Colab:



The screenshot shows the Google Colab interface with a navigation bar at the top containing 'Examples', 'Recent', 'Google Drive', 'GitHub', and 'Upload'. Below the navigation bar is a 'Filter notebooks' input field. A table lists several notebooks with columns for 'Title', 'First opened', and 'Last opened'. At the bottom of the interface, a 'NEW NOTEBOOK' button is highlighted with a red circle, and a callout arrow points from it to a text box on the right. A 'CANCEL' button is also visible next to the 'NEW NOTEBOOK' button.

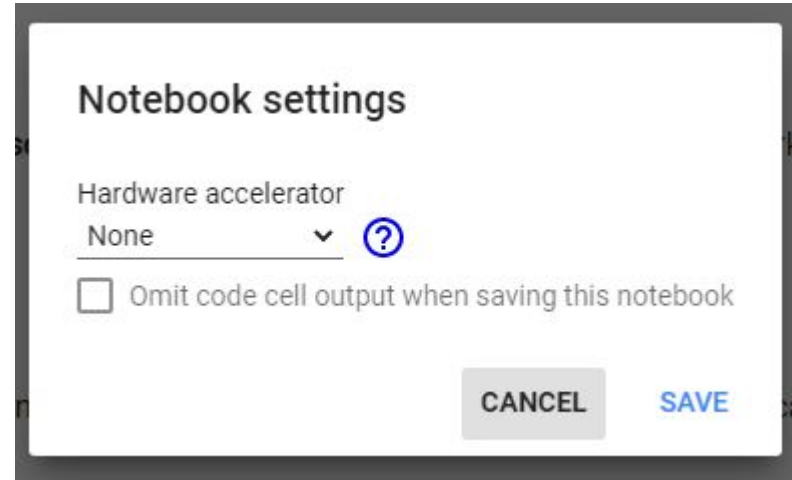
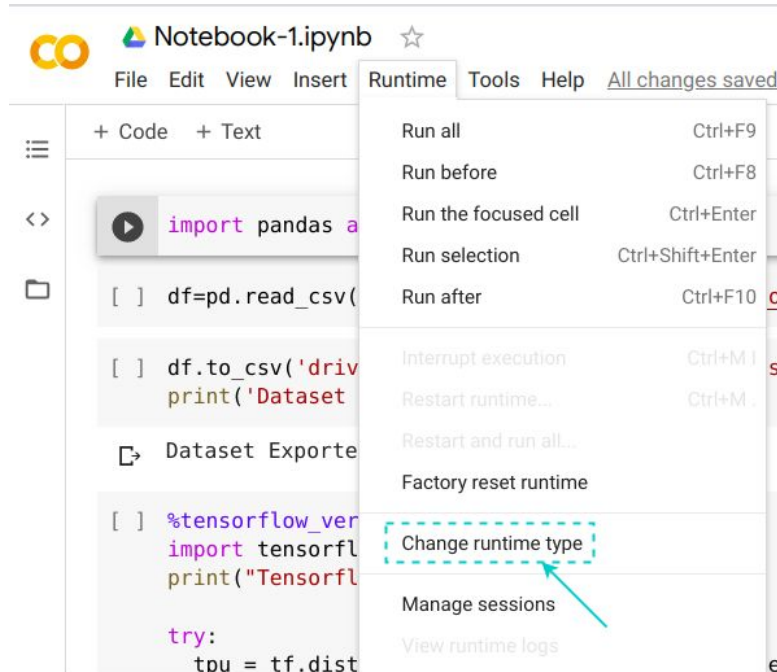
Title	First opened	Last opened
Welcome To Colaboratory	Apr 6, 2020	0 minutes ago
Untitled8.ipynb	Jun 20, 2020	Jun 20, 2020
muhidin_worldcloud_mbelingChat.ipynb	Jan 30, 2020	May 27, 2020
muhidin_mining_AlQuran.ipynb	Jan 31, 2020	May 27, 2020
update_covid-19_muhidin.ipynb	Feb 19, 2020	May 19, 2020

Click on the NEW NOTEBOOK button to create a new Colab notebook. You can also upload your local notebook to Colab by clicking the upload button:



Google Colab Runtimes – Choosing the GPU or TPU Option

The ability to choose different types of runtimes is what makes Colab so popular and powerful. Here are the steps to change the runtime of your notebook:



Using Terminal Commands on Google Colab

You can use the Colab cell for running terminal commands. Most of the popular libraries come installed by default on Google Colab. Yes, Python libraries like Pandas, NumPy, scikit-learn are all pre-installed.

If you want to run a different Python library, you can always install it inside your Colab notebook like this:

```
!pip install library_name
```



Cloning Repositories in Google Colab

You can also clone a Git repo inside Google Colaboratory. Just go to your GitHub repository and copy the clone link of the repository:

Examples

Recent

Google Drive

GitHub


Upload


Enter a GitHub URL or search by organization or user

☐ Include private repos

https://github.com/asepmuhidin/webinar-it

Q


Repository: 


Branch: 

asepmuhidin/webinar-it

master

Path

 workshop_python_Basic.ipynb

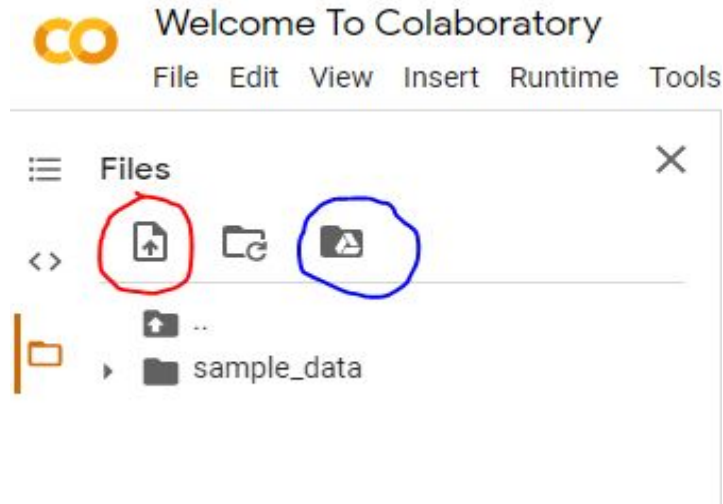


CANCEL



Uploading Files and Datasets

Here's a must-know aspect for any data scientist. The ability to import your dataset into Colab is the first step in your data analysis journey. The most basic approach is to upload your dataset to Colab directly. You can use this approach if your dataset or file is very small because the upload speed in this method is quite low. Another approach that I recommend is to upload your dataset to Google Drive and mount your drive on Colab.



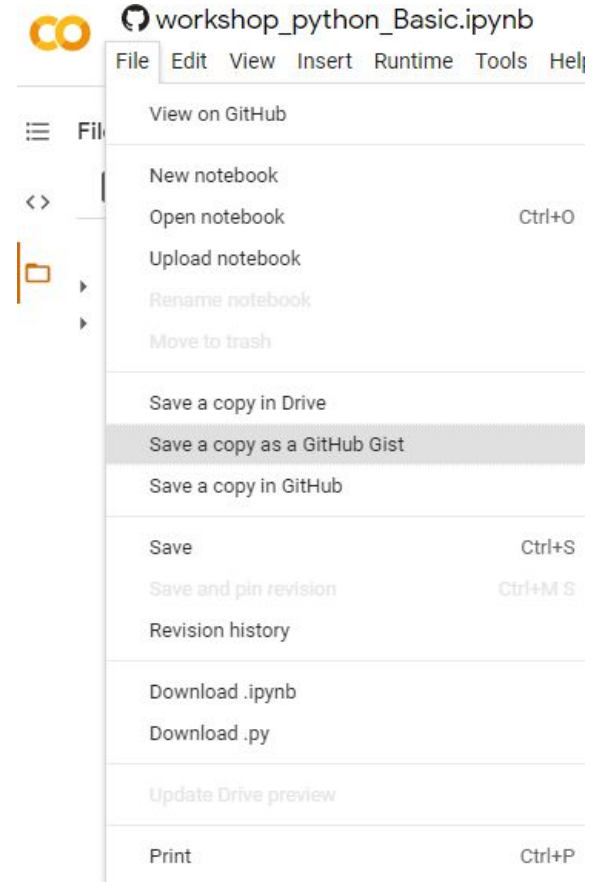
Salin kode ini, beralihlah ke aplikasi dan tempel di sini:

4/1gEdf1H0AMTxxr1lw4Gcnt-
iKjHPnNW2Jm56SFrgmeDC1WbrkPXal-g



Saving Your Notebook

All the notebooks on Colab are stored on your Google Drive. The best thing about Colab is that your notebook is automatically saved after a certain time period and you don't lose your progress.



Exporting Data/Files from Google Colab

You can export your files directly to Google Drive, or you can export it to the VM instance and download it.

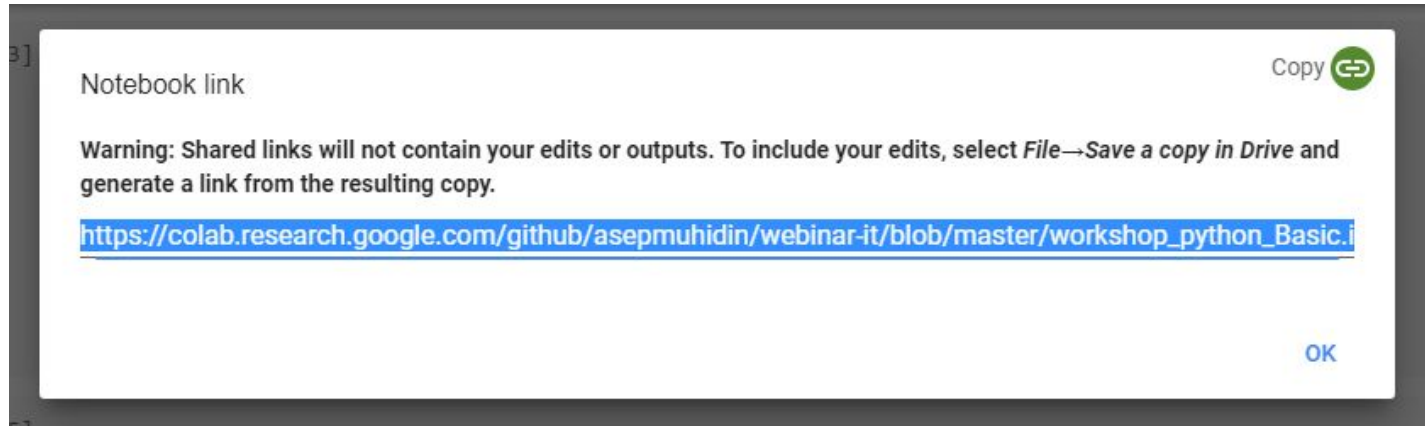
```
import pandas as pd
## nama    umur  email
# Ahmad    24    ahmad@gmail.com
nama=['Ahmad','Susi','Joko','Cindy']
umur=[34,23,20,22]
email=['ahmad@gmail.com','sus@gmail.com','joko@gmail.com','cind@gmail.com']
participants={'nama':nama,'umur':umur,'email':email}

participants=pd.DataFrame(participants, index=None);
participants.to_excel('participans.xls')
```



Sharing Your Notebook

Google Colab also gives us an easy way of sharing our work with others.



THE END

Sources :

1. <https://www.analyticsvidhya.com/blog/2020/03/google-colab-machine-learning-deep-learning/>
2. <https://github.com/asepmuhidin/webinar-it>
3. <https://towardsdatascience.com/getting-started-with-google-colab-f2fff97f594c>

Alhamdulillah ❤️

to be continued.. إن شاء الله

