



# Google Colab

A gentle introduction



Politecnico  
di Torino

DBG  
MG

Luca Catalano, Daniele Rege Cambrin and Eleonora Poeta

# What is Google Colab?

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It offers a convenient, free, and powerful platform for coding, collaborating, and executing Python projects, particularly in data science and machine learning domains.

```
mirror_mod = modifier_ob.  
#set mirror object to mirror  
mirror_mod.mirror_object  
operation == "MIRROR_X":  
mirror_mod.use_x = True  
mirror_mod.use_y = False  
mirror_mod.use_z = False  
operation == "MIRROR_Y":  
mirror_mod.use_x = False  
mirror_mod.use_y = True  
mirror_mod.use_z = False  
operation == "MIRROR_Z":  
mirror_mod.use_x = False  
mirror_mod.use_y = False  
mirror_mod.use_z = True  
  
#selection at the end -add  
mirror_ob.select= 1  
modifier_ob.select=1  
context.scene.objects.active  
obj("Selected" + str(modifier_ob.  
mirror_ob.select = 0  
= bpy.context.selected_obj  
data.objects[one.name].select  
  
print("please select exactly  
  
-- OPERATOR CLASSES ----  
  
types.Operator):  
# X mirror to the selected  
object.mirror_mirror_x"  
mirror X"  
  
context):  
context.active_object is not
```

# Why Google Colab?

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No setup required

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Notebooks are saved in Google Drive, making it easy to access and share.

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Supports popular libraries like pandas, numpy, and scikit-learn for machine learning and data analysis tasks.

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Offers access to GPUs and TPUs for accelerating computations, particularly useful for deep learning tasks



# Search Google Colab on Internet



Q google colab

- Q google colab
- Q google colab **python**
- Q google colab **pricing**
- Q google colab **cos'è**
- Q google colab **stable diffusion**
- Q google colab **gpu**
- Q google colab **alternatives**
- Q google colab **focus**
- Q google colab **deepfake**
- Q google colab **free**

Cerca con Google    Mi sento fortunato

Segnala previsioni inappropriate  
[Ulteriori informazioni](#)



# Search Google Colab on Internet

The screenshot shows a Google search interface. The search bar contains the text "google colab". Below the search bar, there are tabs for "Tutti", "Immagini", "Video", "Notizie", "Libri", and "Altro". To the right of these tabs is a "Strumenti" button. Below the tabs, there are several filter buttons: "Python", "Download", "AI", "Pro", "Notebook", "Price", "Stable Diffusion", and "Android". Below the filters, it says "Circa 58.900.000 risultati (0,25 secondi)". The first search result is highlighted with a yellow border. It is for "Google Colab" with the URL "https://colab.research.google.com". The title of the result is "Welcome To Colaboratory - Colab - Google". The description says: "With Colab you can import an image dataset, train an image classifier on it, and evaluate the model, all in just a few lines of code. Colab notebooks execute ...". Below the first result, there are several other search results, each with a title and a short description:

- Google Colab**  
Con Colab puoi sfruttare tutta la potenza delle librerie Python ...
- Welcome to Colab!**  
With Colab you can import an image dataset, train an image ...
- Run in Google Colab**  
Colab is a Python development environment that runs in the ...
- Pro**  
Tightly integrated with Google Cloud services like BigQuery ...
- Google Colaboratory**  
The Basics ... Colab is a hosted Jupyter Notebook service that ...

At the bottom of the search results, there is a link: "Altri risultati in google.com »".



# Welcome to Google Colab

Un benvenuto a Colaboratory

File Modifica Visualizza Inserisci Runtime Strumenti Guida

Condividi

Sommario

- Introduzione
- Data science
- Machine learning
- Altre risorse
- Esempi in primo piano

+ Sezione

Apri blocco note

Esempi >

Recenti >

Google Drive >

GitHub >

Carica >

Cerca blocchi note

Titolo	Aperti per ultimi	Aperti per primi	
Un benvenuto a Colaboratory	09:03	22 apr 2022	
slides_01.ipynb	16 aprile	16 aprile	
slides_01.ipynb	16 aprile	16 aprile	
4) Pytorch_transfer_learning_exercises.ipynb	16 aprile	7 aprile	
Untitled0.ipynb	14 aprile	14 aprile	
2021-09-27-connect-to-colab-from-local-vsc...	14 aprile	14 aprile	
Untitled0.ipynb	11 aprile	11 aprile	

+ Nuovo blocco note

Annulla

Colab, o "Colaboratory", ti permette di scrivere ed eseguire Python nel tuo browser con



# File name

The screenshot shows the top interface of a Google Colab notebook. At the top left, the Colab logo is visible. Next to it, the file name "Untitled0.ipynb" is displayed in a yellow box, with a star icon to its right. Below the file name, there are several menu items: "File", "Mediana", "Visualizza", "Inserisci", "Runtime", "Strumenti", and "Guida". On the top right, there are icons for "Commenta", "Condividi", and a settings gear. Below the top bar, there are tabs for "+ Codice" and "+ Testo". On the right side of the top bar, there is a "Connetti" dropdown menu and an upward arrow. The main content area of the notebook contains the text: "You can change the name of the file by clicking here. The file is automatically saved in your Google Drive." On the left side of the notebook, there is a vertical sidebar with icons for a menu, search, a code editor icon, a lock, and a folder. At the bottom left of the sidebar, there is a code editor icon.



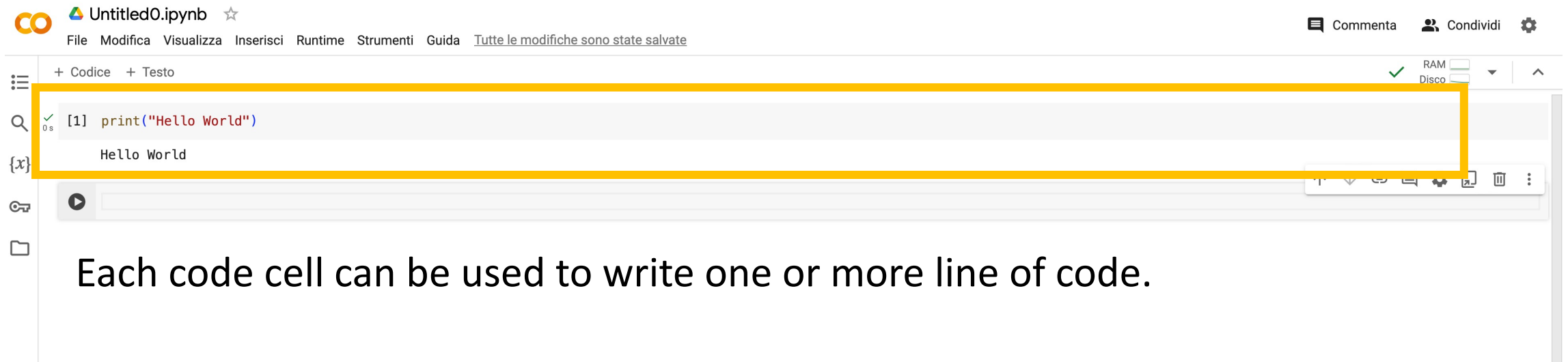
# Code cell

The screenshot displays a Jupyter Notebook interface. At the top left, there is a logo and the text "Untitled0.ipynb" with a star icon. Below this is a menu bar with options: "File", "Modifica", "Visualizza", "Inserisci", "Runtime", "Strumenti", and "Guida". On the top right, there are icons for "Commenta", "Condividi", and a settings gear. Below the menu bar, there are tabs for "+ Codice" and "+ Testo", and a "Connetti" dropdown menu. The main area shows a code cell with a play button icon and a vertical cursor. The text inside the cell reads: "This is called python cell and you can use it to write your code". A yellow rectangular box highlights the top part of the code cell, including the play button and the first line of text.





# Code in Python



Each code cell can be used to write one or more line of code.

The output of the cell can be seen under the selected cell.



# Run a cell

The screenshot shows a Jupyter Notebook interface. At the top, there is a header with the logo, the filename "Untitled0.ipynb", and a star icon. Below this is a menu bar with options: "File", "Modifica", "Visualizza", "Inserisci", "Runtime", "Strumenti", and "Guida". On the right side of the header, there are icons for "Commenta", "Condividi", and a settings gear. Below the header, there is a toolbar with icons for search, a play button (highlighted with a yellow box), and other actions. The main area of the notebook contains a code cell with the text: "To execute the cell, you can click on the 'play' button or use the keyboard combination 'Shift + Enter'."



# Add a code or text cell

The screenshot shows a Jupyter Notebook interface. At the top, there's a header with the CO logo, the file name 'Untitled0.ipynb', and a star icon. Below the header, there are navigation options: '+ Codice' and '+ Testo'. The main area contains a code cell with the text `print("Hello World")` and its output, 'Hello World'. Below the code cell, there are two buttons: '+ Codice' and '+ Testo', which are highlighted with a yellow box. A tooltip below the '+ Codice' button reads 'Aggiungi cella di codice' and '⌘/Ctrl+M B'. On the right side, there are icons for 'Commenta', 'Condividi', and a settings gear. At the bottom right, there are icons for navigation and a trash can.

Utilize code cells for writing and executing Python code. Simply click on the highlighted button to add a new code cell.

Output of executed code cells, as well as declared variables and functions, are automatically stored in memory.

This allows easy access to previously executed code results and variables without needing to rerun the entire notebook.



# Add a code or text cell



Text cells, denoted as "text" cells, are handy for adding comments or sectioning your notebook.

Write in them using Markdown for formatted text or plain text for straightforward documentation.



# Storage of Google Colab

A screenshot of the Google Colab web interface. At the top left, the Colab logo is followed by the text "Untitled0.ipynb" and a star icon. Below this is a menu bar with options: "File", "Modifica", "Visualizza", "Inserisci", "Runtime", "Strumenti", and "Guida". On the right side of the top bar, there are icons for "Commenta", "Condividi", and a settings gear. Below the top bar, there is a navigation area with "+ Codice" and "+ Testo" on the left, and "Connetti" with a dropdown arrow and an upward arrow on the right. A search bar is located below the navigation area. On the left side of the main workspace, there is a vertical sidebar with several icons: a hamburger menu, a magnifying glass, a code block icon "{x}", a link icon, and a folder icon. The folder icon is highlighted with a yellow square. To the right of the folder icon, the text "Here you can see your file on Google Colab" is displayed. At the bottom left of the sidebar, there is a double arrow icon "&lt;&gt;".

Here you can see your file on Google Colab



# Storage of Google Colab

Untitled0.ipynb ☆

File Modifica Visualizza Inserisci Runtime Strumenti Guida [Tutte le modifiche sono state salvate](#)

File

sample\_data

```
[1] print("Hello World")
```

Hello World

Disco 81.53 GB disponibili

0 s data/orc

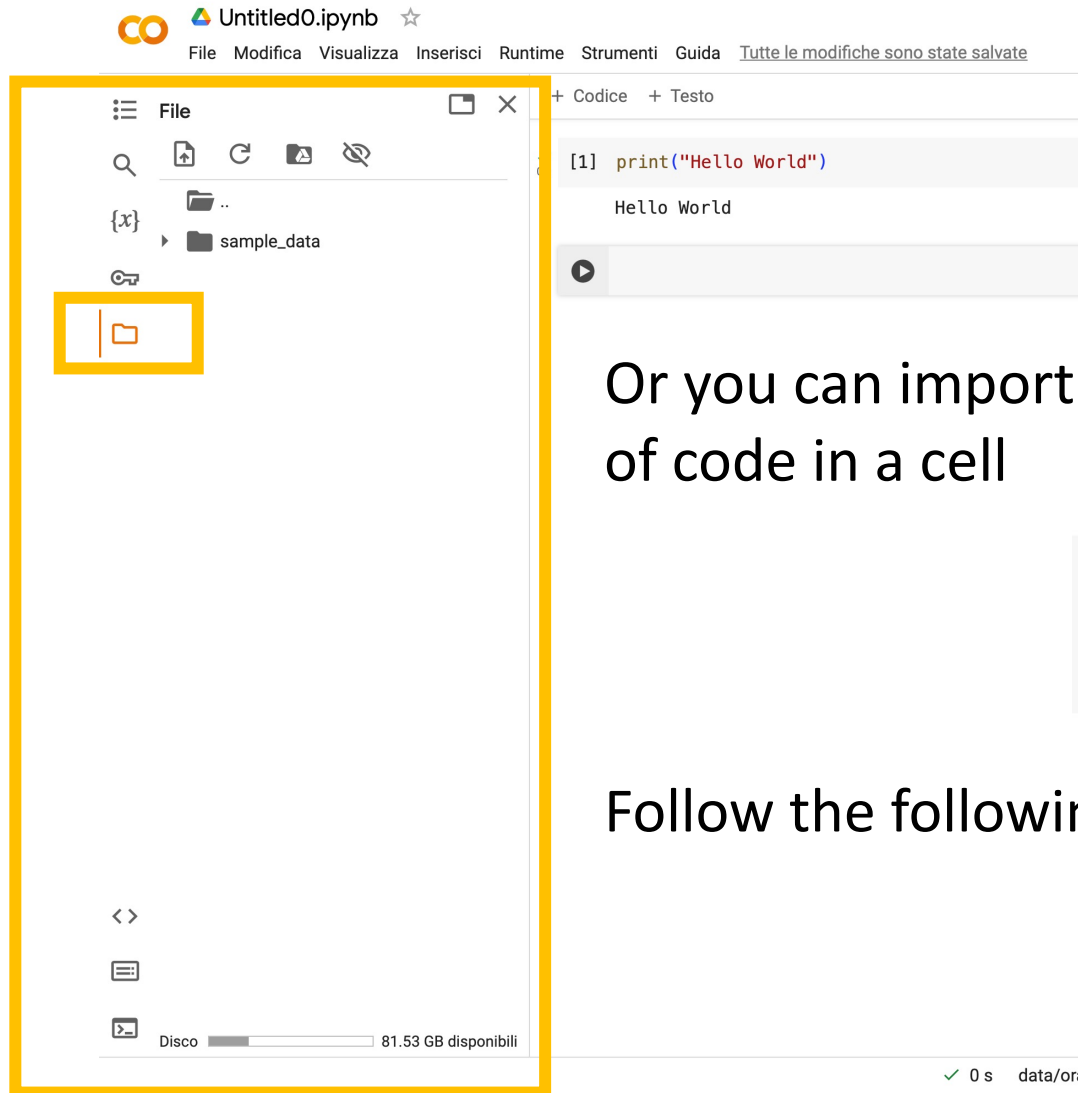
Your files are stored here. You can import other files using the drag and drop technique.

Please remember that:

- if you want to import a folder you should zip it before drag and drop on Google Colab
- if you want to import a single file you should drag and drop it on Google Colab as is



# Storage of Google Colab



Or you can import your file in your google drive and then use this line of code in a cell

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

Follow the following instruction to accept Condition and Terms



# Storage of Google Colab

The screenshot shows the Google Colab interface. On the left, a file explorer window is open, displaying a folder named 'sample\_data'. A yellow box highlights the file explorer area. On the right, a code cell contains the following code:

```
[1] print("Hello World")
```

The output of the code cell is 'Hello World'. A yellow warning sign is overlaid on the bottom right of the screenshot, indicating that all files in this space will be deleted when the tab window is closed.



All the file in this space will be deleted when you close the tab window





# Storage of Google Colab

The screenshot displays the Google Colab interface. On the left, a file explorer window titled "File" is open, showing a directory structure with folders named "..", "drive", and "sample\_data". A yellow box highlights the "drive" folder. On the right, a code editor window titled "+ Codice + Testo" shows the following Python code:

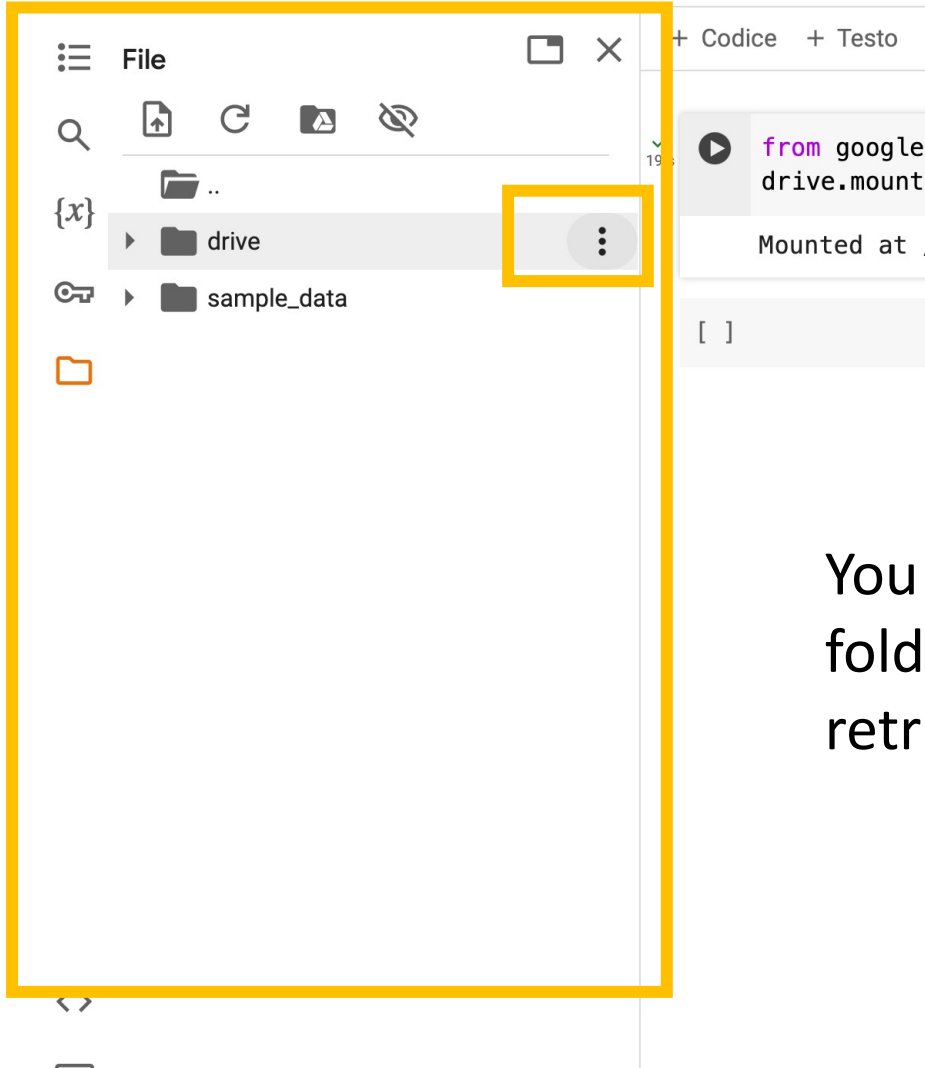
```
[5] from google.colab import drive
drive.mount('/content/drive')
```

The output of the code execution is "Mounted at /content/drive". Below the code editor, there is a play button icon.

Now, you should see in your storage space a folder called “drive”



# Copy a path



You can find the "option" button on the right side of the folder. Click on it and then select "Copy path" to retrieve the path for use in your Python code.



# PRO Player: bash commands

A screenshot of the CO PRO Player interface. At the top, there's a header with the CO logo, the file name 'Untitled0.ipynb', and a star icon. Below this, there are navigation links: 'Commenti', 'Guida', and 'Tutte le modifiche sono state salvate'. On the right side of the header, there are icons for 'Commenta', 'Condividi', and a settings gear. The main area contains a code cell with the text `print("Hello World")` and its output 'Hello World'. Below the code cell, there's a terminal window with a play button icon. A yellow box highlights the '+ Codice' and '+ Testo' buttons in the top left corner. Another yellow box highlights the '+ Codice' and '+ Testo' buttons in the terminal area. A tooltip 'Aggiungi cella di codice' with the keyboard shortcut '⌘/Ctrl+M B' is visible over the terminal buttons. On the right side of the terminal area, there are icons for navigation and settings.

Within a code cell, you can execute bash commands using the "!" symbol before the command itself. However, for the change directory command (cd), you should use the "%" symbol.



# PRO Player: bash commands

Some useful commands in a code cell include:

- **!pip install <library name>**: This command is handy for installing additional libraries that Colab may not have by default
- **!unzip <folder\_name.zip>**: Useful when you need to extract a folder that you've uploaded to the storage space by dragging and dropping
- **%cd <path\_name>**: Helpful when you want to change directories within your code execution environment.



# PRO Player: We love GPUS

If you NEED GPU computations, you can change your runtime by following the instructions provided above

The screenshot shows the Google Colab interface. At the top, there's a navigation bar with 'File', 'Modifica', 'Visualizza', 'Inserisci', 'Runtime', 'Strumenti', and 'Guida'. A message says 'Tutte le modifiche sono state salvate'. On the right, there are buttons for 'Commenta', 'Condividi', and a settings gear icon. Below the navigation bar, there's a file explorer on the left showing a folder named 'drive' and a file named 'sample\_data'. The main area contains a code cell with the following code:

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

The output of the code cell shows 'Mounted at /content/drive'. A context menu is open over the code cell, with the option 'Cambia tipo di runtime' highlighted. Other options in the menu include 'Connetti a un runtime separato', 'Connetti a una VM GCE personalizzata', 'Connetti a un runtime locale', 'Visualizza risorse', 'Gestisci sessioni', 'Disconnetti runtime ed eliminane i dati', 'Mostra cronologia codice eseguito', and 'Imposta lo stato attivo sull'ultima cella eseguita'.



Please note that GPUs are available for free but with a limited number of hours per day. Therefore, it's essential to use them judiciously and only when they're truly necessary.



# PRO Player: We love GPUS

**Cambia tipo di runtime**

Tipo di runtime

Python 3

Acceleratore hardware ?

CPU  T4 GPU  A100 GPU  V100 GPU

L4 GPU  TPU (deprecated)  TPU v2

Vuoi accedere alle GPU premium? [Acquista unità di calcolo aggiuntive](#)

Annulla **Salva**

Select "T4 GPU"



Please note that GPUs are available for free but with a limited number of hours per day. Therefore, it's essential to use them judiciously and only when they're truly necessary.