UFV

Universidade Federal de Viçosa

Coleta e classificação de fotos utilizando Google Colab através da interface do Gradio

Matheus Freitas Martins

Orientador:
Prof. Ricardo Ferreira

INF 620 - Introdução à Inteligência Artificial
e ao Aprendizado de Máquina

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SUMÁRIO

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Colab + Gradio

› 02

Treinamento

Planos Colab

Colab (sem custo)

Colab Pro (R$ 58,00/mês)

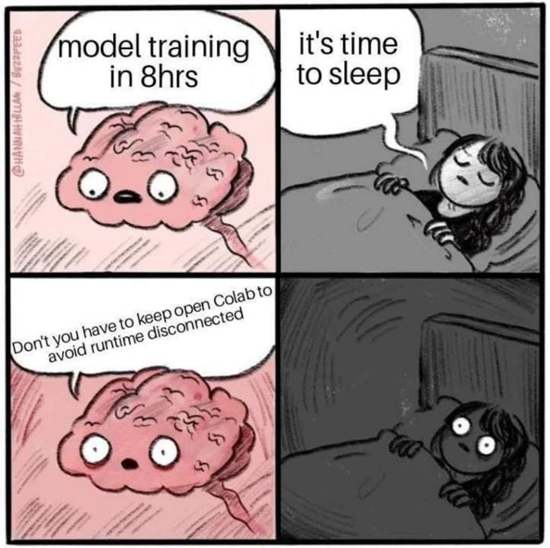
Colab Pro+ (R$ 258,00/mês)

A diferença dos planos variam por necessidades de:

1. GPUs mais rápidas;
2. Mais memória (RAM+Disco);
3. Tempos de execução mais longos;
4. Execução em segundo plano.

Os valores das assinaturas podem atualizar
Verifique o valor atual em: https://colab.research.google.com/signup

Impedir que o Colab desligue

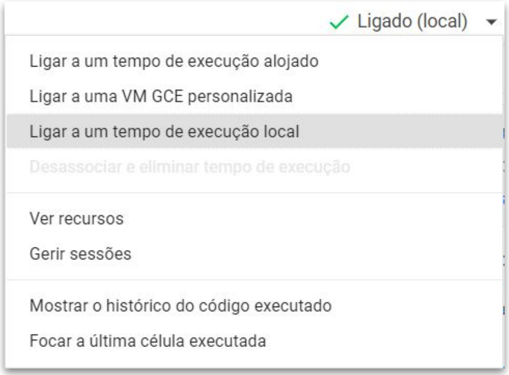


```
function ConnectButton(){
      console.log("Connect pushed");
      document.querySelector("#top-toolbar >
      colab-connectbutton").shadowRoot.querySelector("#connect")
      .click()
}
setInterval(ConnectButton,60000);
```

```
function  CaptchaButton(){
  console.log("Captcha done with.");
document.getElementsByTagName("colab-recaptcha-dialog")[
0].close()
}
setInterval(CaptchaButton,600000);
```

https://stackoverflow.com/questions/57113226/how-to-prevent-google-colab-from-disconnecting
https://datapeaker.com/pt/big--data/dicas-e-truques-do-colab-do-google-dicas-e-truques-do-colab-do-google/
https://www.youtube.com/watch?v=a7QVUpTCJtE
https://www.youtube.com/watch?v=78rSqtkw3Gk

Ligar a um tempo de execução local (outra alternativa)


✓ Ligado (local)
Ligar a um tempo de execução alojado
Ligar a uma VM GCE personalizada
Ligar a um tempo de execução local
Desassociar e eliminar tempo de execução
Ver recursos
Gerir sessões
Mostrar o histórico do código executado
Focar a última célula executada

1. Certifique-se de que a extensão do **Jupyter jupyter_http_over_ws** está ativada e atualizada na sua máquina.

```
pip install --upgrade jupyter_http_over_ws>=0.0.7 && jupyter serverextension enable --py jupyter_http_over_ws
```

2. Certifique-se de que o servidor do bloco de notas na máquina está em execução na **porta 8888** e a aceitar pedidos de https://colab.research.google.com.

```
jupyter notebook --NotebookApp.allow_origin='https://colab.research.google.com' --port=8888 --NotebookApp.port_retries=0
```

Gradio + PyDrive

1. Install Gradio from pip.

```
!pip install -q gradio
```

2. Install PyDrive from pip.

```
!pip install -U -q PyDrive
```

Gradio: https://gradio.app/
PyDrive: https://pythonhosted.org/PyDrive/index.html#

3. Imports

```
import gradio as gr
from pydrive.drive import GoogleDrive
from pydrive.auth import GoogleAuth
from google.colab import auth
from oauth2client.client import GoogleCredentials
from PIL import Image, ImageOps
```

4. Authenticate and create the PyDrive client.

```
auth.authenticate_user()
gauth = GoogleAuth()
gauth.credentials = GoogleCredentials.get_application_default()
```

5. Create GoogleDrive instance with authenticated GoogleAuth instance.

```
drive = GoogleDrive(gauth)
```

Gradio + PyDrive

6. Creating and updating file

```
file1 = drive.CreateFile({'parents': [{'id': '%s'%caminho}]}) # Create GoogleDriveFile instance.

file_object = objeto

file1.SetContentFile(file_object) # Set content of the file.

file1.Upload()
```

Gradio: https://gradio.app/
PyDrive: https://pythonhosted.org/PyDrive/index.html#

Google Drive API (outra alternativa)

Google Drive API in Python | Getting Started
https://www.youtube.com/watch?v=9K2P2bWEd90

Google Drive API in Python | Upload Files
https://www.youtube.com/watch?v=cCKPjW5JwKo

How to upload and replace files in Google Drive with Python and Drive API
https://www.youtube.com/watch?v=TisIsz4XVuY&t=360s

1. Importing the service creation method from the API (Google.py)

```
from Google import Create_Service
```

2. Generate JSON file in Google Console

```
APIs e serviços > Credenciais > CRIAR CREDENCIAIS >
IDs do cliente OAuth 2.0 > App para computador >
Criar > FAZER O DOWNLOAD DO JSON >
renomear arquivo para: client_secrets.json
```

Jupyter Lab/Notebook: https://jupyter.org/
Google Console: https://console.cloud.google.com/
Google.py: https://learndataanalysis.org/google-drive-api-in-python-getting-started-lesson-1/
Developers Google: https://developers.google.com/drive/api/quickstart/python

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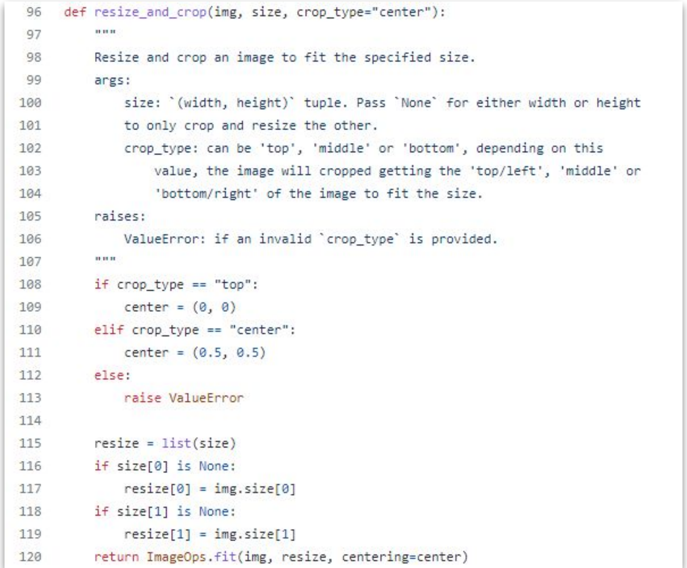
Gradio Repository on GitHub

gradio-app/gradio (Public)

https://github.com/gradio-app/gradio

Resize and crop function

gradio/gradio/processing_utils.py



```python
def resize_and_crop(img, size, crop_type="center"):
    """
    Resize and crop an image to fit the specified size.
    args:
        size: `(width, height)` tuple. Pass `None` for either width or height
        to only crop and resize the other.
        crop_type: can be 'top', 'middle' or 'bottom', depending on this
            value, the image will cropped getting the 'top/left', 'middle' or
            'bottom/right' of the image to fit the size.
    raises:
        ValueError: if an invalid `crop_type` is provided.
    """
    if crop_type == "top":
        center = (0, 0)
    elif crop_type == "center":
        center = (0.5, 0.5)
    else:
        raise ValueError

    resize = list(size)
    if size[0] is None:
        resize[0] = img.size[0]
    if size[1] is None:
        resize[1] = img.size[1]
    return ImageOps.fit(img, resize, centering=center)
```

Dataset da Cozinha

https://drive.google.com/drive/folders/1VDgW-NWLZocq1aJEC8C-v_DzbUCmAAlg?usp=sharing

468 Imagens →

- 103 🥄
- 125 🥛
- 79 🔪
- 69 🍴
- 92 ⚪

1º Colab

https://colab.research.google.com/drive/1hq8M3FfRn3sxz8tZ1m7AEkCm-iBhFmL4?usp=sharing

SUMÁRIO

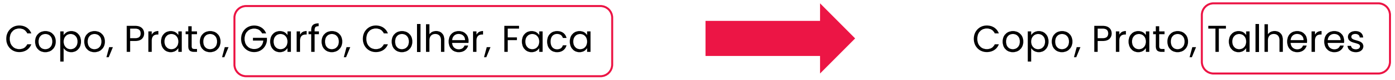
01

Colab + Gradio

› **02**

Treinamento

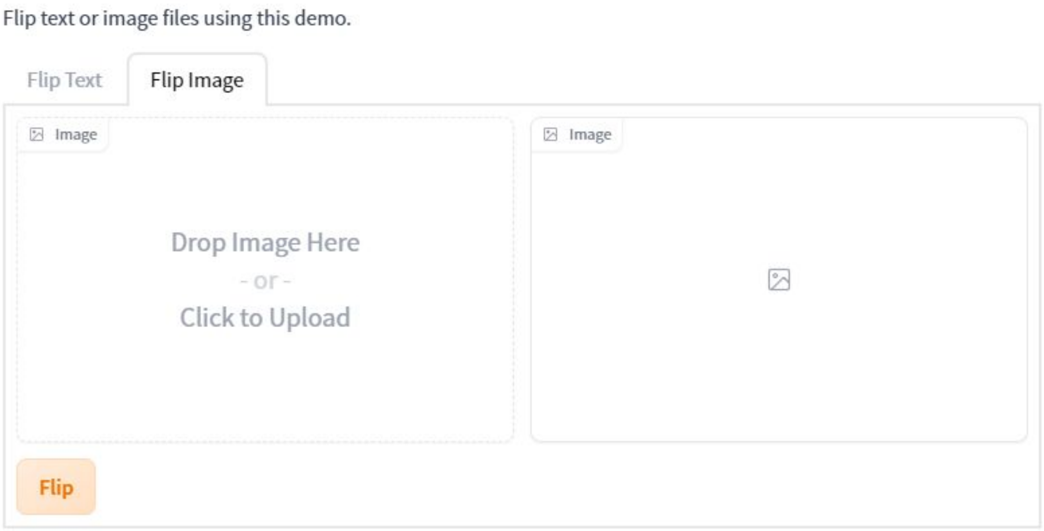
Dificuldade/Desafio



Copo, Prato, Garfo, Colher, Faca

Copo, Prato, Talheres

Gradio Blocks



Flip text or image files using this demo.

https://gradio.app/introduction_to_blocks/

2º Colab

https://colab.research.google.com/drive/15rnK9PsIh2-WIlV3UU4mcnuTGZi1Lssr?usp=sharing

Versão melhorada utilizando apenas 3 classes
com Data Augmentation + Save Model

https://colab.research.google.com/drive/17gRF6ok9rDNwrC75wQQynH0lwvIPMWa-?usp=sharing

DÚVIDAS?

matheus.f.martins@ufv.br